

То:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Michael Del Vecchio, Director of Engineering and Project Management
Date:	September 9, 2024
Subject:	NERT – GWETS Operation Monthly Report – July 2024

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 July 2024.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in July 2024. Flow from PC-118, PC-119, C-120, PC-121, and PC-133 were routed to the IX system, bypassing all flow meters associated with the FBR plant for July. The flow rate to the IX system averaged approximately 262 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 919 gpm. At the end of the month, the filled GW-11 Pond volume was at 34.8 million gallons (MG) would allow 19.2 days of 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 has decreased since the end of June 2024; Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration in the IX system averaged 1.7 mg/L for the month. The influent perchlorate concentration in the FBR plant averaged 46.8 mg /L for the month, with a maximum concentration of 50 mg/L. The influent perchlorate concentration to the FBRs for June 2024 averaged 43 mg/L, with a maximum concentration of 65 mg/L.

During July, ETI continued implementing a preventative maintenance program to refurbish all front and back-side FBRs. Through this program, FBRs will be systematically emptied and dismantled to determine the extent of refurbishment. Additional information on this program is presented later in this report.

Enhanced Operational Metrics

Tables 1 and 2 summarize the current GWETS operational metrics data for flow rates, perchlorate and chromium concentrations, and mass removal. Figure 2 graphically presents historical perchlorate mass flux information. Attachment A summarizes 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, major repairs, and/or equipment replaced during this reporting period.

1. GW-11

There were no operational issues with GW-11 in July.

2. Biological Plant

There were influent/effluent diversions during the reporting period associated with general maintenance or FBR refurbishment activities as well as extraction well short-term shutdown events. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- Influent diversion occurred on July 5, 2024, from 9:10 a.m. to 10:55 a.m. at Lift Station 2 and from 8:40 am to 10:53 am at Lift Station 3 due to an unplanned power outage caused by Nevada Energy. As a precaution, the plant was placed in recycling mode until the power was restored at the lift stations. Once lab testing was completed and effluent compliance was confirmed, the effluent was returned to the outfall.
- Influent diversion occurred on July 10, 2024, from 1:46 a.m. to 10:24 p.m. due to a communication loss at lift stations 1,2 & 3. As a precaution, the plant was placed in recycling mode until maintenance activities to restore communication with the lift stations were conducted and lab testing was completed. Once effluent compliance was confirmed, the effluent was returned to the outfall.
- Effluent diversion occurred on July 10, 2024, from 10:38 p.m. to 1:32 a.m. due to elevated levels of perchlorate in the effluent following a recent period when the FBRs were in recycling mode to facilitate maintenance activities. As a precaution, adjustments were made to the plant, lab testing was completed, effluent compliance was confirmed, and the effluent was returned to the outfall.
- Influent diversion occurred on July 21, 2024, from 10:45 pm to July 22, 2024, at 2:45 am due to a defective level control actuator. As a precaution, the plant was placed in recycling mode until the maintenance activities were conducted. Lab testing was completed, effluent compliance was confirmed, and the effluent was returned to the outfall.
- Effluent diversion occurred on July 23, 2024, from 8:24 p.m. to 1:48 a.m. due to elevated levels of perchlorate in the effluent following a recent period when the FBRs were in recycling mode to facilitate maintenance activities. As a precaution, adjustments were made to the plant, lab testing was completed, effluent compliance was confirmed, and the effluent was returned to the outfall.
- Influent diversion occurred on July 30, 2024, from 3:30 a.m. to 4:29 a.m. due to Tank-601 level control failure. As a precaution, the plant was placed in recycle mode until the maintenance activities were conducted, lab testing was completed, and effluent compliance was confirmed. The effluent was then returned to the outfall.

3. IX Treatment Plant

The concentration of perchlorate in shallow groundwater remains elevated in the western wells of the SWF. This increase is a result of the City of Henderson (City) discharging water to Birding Ponds 10 through 13 from late August through October 2023. The perchlorate concentrations in groundwater adjacent to the western leg of the SWF are expected to remain elevated for an extended period as a result of this activity.

4. Treatment System Extension (TSE)

In July 2024, operations at the TSE plant continued to be idled. In April, NERT advised ETI that discussions with TIMET have commenced to resume groundwater flow to the TSE. TIMET is in the process of hiring a new treatment plant operator. NERT developed a new version of the Cooperative Agreement to facilitate system restart and provided it to TIMET for their review. The timeline for restarting the system will be established during the negotiation of the updated Cooperative Agreement.

5. Effluent Filtration System (EFS)

During July 2024, the EFS operated normally and produced approximately 446,000 gallons of filtered GWETS effluent, which supported the utility water requirements of GWETS operations.

6. Chromium Treatment Subsystem (CTS)

During July 2024, the CTS operated normally and treated approximately 2,569,669 gallons of groundwater.

7. Spills

There were no reportable spills during July.

8. Maintenance

- Major maintenance performed by ETI in the reporting month included:
 - I. Repaired the refrigerated air dryer for the Kasner Compressor.
 - II. Repaired the separator #3 level control valve.
 - III. Replaced the electrical panel air conditioning unit at Lift Station #3.
 - IV. Repaired tank 601 level indicator.
 - V. A defective power supply for the IWF wells was replaced.
 - VI. The level transmitter on the Ultra Filtration EQ holding tank was replaced.
- Preventative maintenance performed by ETI in the reporting month included:
 - I. Tested and confirmed Lift Station communications with the main plant.
 - II. Inspected the combo valves and air relief valves associated with the influent and effluent pipelines.
 - III. Calibrated the ORP and pH sensors for all functioning FBRs.
 - IV. Inspected the influent and effluent pipeline.
 - V. Lubricated recycle pumps.
 - VI. Test FBR slam valve operation.
- FBR Refurbishment
 - VII. Completed internal repairs on FBR #3.

Attachment B summarizes all maintenance activities completed during the reporting period.

Facility Projects

- 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. All work except for the replacement of the DAF has been completed. Specific details on in-progress items are provided below:
 - I. (WA 23-03) Dissolved Air Flotation (DAF) Vessel replacement
 - 1. The replacement DAF was delivered in December 2023 and will be installed in September 2024
 - II. Concrete Repair at various locations on the FBR pad
 - 2. Scheduling work with selected contractor. Work is anticipated to be completed in October 2024
- 3. Improved Biological Treatment Plant Efficiency Consistent with Attachment D to the December 2021 GWETS Operation Monthly Report, Envirogen plans to take three 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. FBR A was placed into offline mode on April 13, 2022. After the ongoing FBR refurbishment is complete, the remaining two FBRs scheduled to be taken out of service will be addressed in the 3rd quarter of 2024.

Tables

Operational Metrics

Table 1 - Flow Rate and Perchlorate and Chromium Concentrations

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics									
Location ID	Average Flow Rate (gpm) ⁴	Perchlorate (mg/L) ⁵	Chromium (TR) (mg/L) ⁵	Chromium(VI) (mg/L)⁵					
SWF Total Extraction ¹	702	11	0.0045	0.0028					
AWF Total Extraction ¹	396	53	0.14	0.13					
IWF Total Extraction ¹	42	344	5.6	5.2					
AP Area Total Extraction ¹	7.4	539	0.17	0.16					
Chromium Treatment Subsystem Effluent ²	58	409	0.48	0.00031					
GW-11 Influent ¹	0.16	31	0.070	0.065					
FBR Influent ²	919	46	0.094	0.041					
Treatment System Extension Influent ^{2,3}	0.0	0.0	0.0	0.0					

Notes:

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: TSE offline from 07/01 to 07/31.

4: Sum of daily average flow for individual wells.

5: All concentrations reported are monthly flow weighted averages.

Table 2 - Perchlorate and Chromium Mass Flux

Nevada Environmental Response Tru	st I Groundwater Extraction and Tre	atment System I Monthly Stakehold	er Metrics
Location ID	Perchlorate (lbs/month) ¹	Chromium (TR) (lbs/month) ¹	Chromium (VI) (lbs/month) ¹
SWF Total Extraction	2,410	0.96	0.60
AWF Total Extraction	7,864	21	19
IWF Total Extraction	5,409	88	81
AP Area Total Extraction	1,482	0.48	0.44
Chromium Treatment Subsystem Effluent	8,774	10	0.0068
GW-11 Influent	31	0.070	0.065
FBR Influent ¹	15,721	32	14
Treatment System Extension Influent ^{1,2}	0.0	0.0	0.0

Notes:

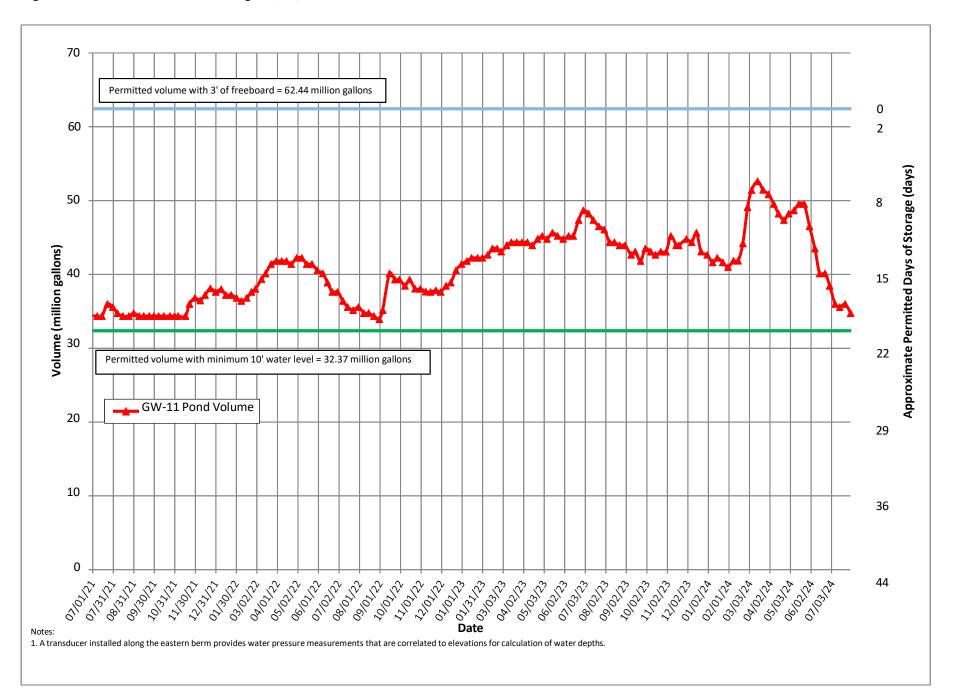
TR = Total Recoverable.

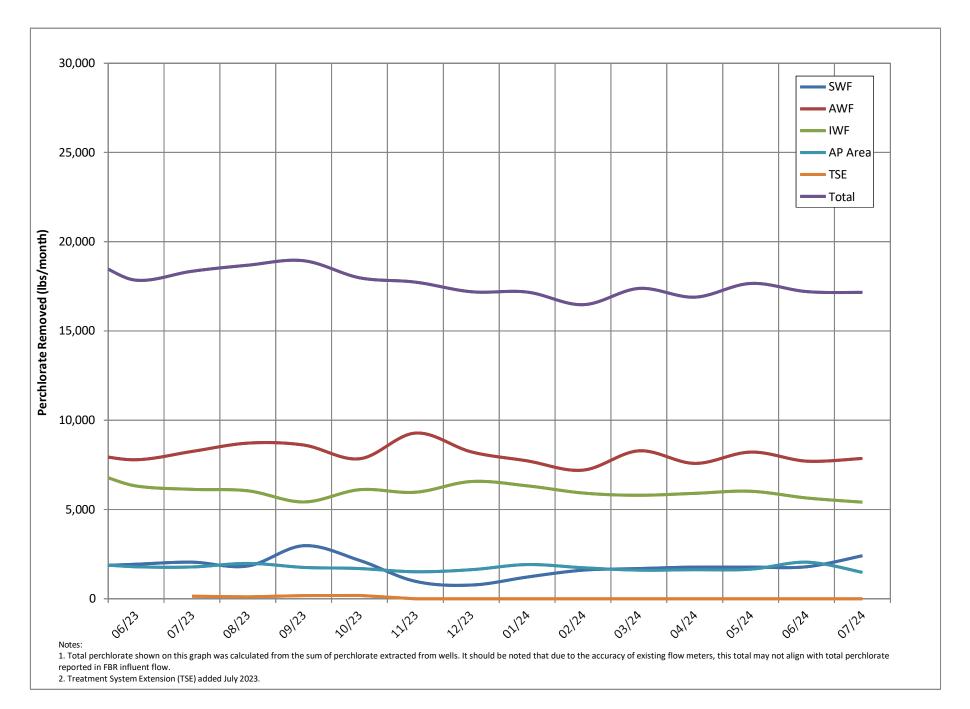
1: Total mass extracted is calculated from flow weighted average concentration and average flow (see Table 1).

2: TSE offline from 07/01 to 07/31.

Figures

Operational Metrics





Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

										Tre	ated Effluent at Ou	utfall 001													
	Conti	nuous	Daily Samples	, composited week	y I						Weekly Grab	Samples									Weekly,	collected sepa	rately		Quarterly
	Flov	/ Rate	Pe	rchlorate		рН	Hexavalent Chromium	Total Chromium	n Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Susp (ended So TSS)	lids T	tal Ammonia	as N	Total F	Phosphoru	s as P		в	D₅ (inhibited)			Total Dissolved Solids (TDS)
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Ανε (μg/L)	(lbs/day)		Daily Min. Daily Max. (S.U.) (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (μg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	30-Day Avg (mg/L)	Av (Ibs/	vg. 'day)	30-Day Avg. (Ibs/day)			0-Day Avg. (Ibs/day)			30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (Ibs/day)		Daily Max. (mg/L)
	2.52	2.88	18	0.38		6.5 9.0	10	100	5,000	10,000	20	135	2,8	839	20*			10*			25	40	525	. I <u>.</u>	8,000
January 2024	1.76	1.85	ND (<1.6)	0.012		6.98 7.21	ND (<0.150)	12	320	1200	1.8	20	2	80	1.8			5.3			4.7	13	63		
February 2024	1.35	1.88	ND (<1.6)			7.20 7.26	ND (<0.150)	35	310	1900	5.9	18	2		0.4			4.9			ND (<5.0)	ND (<5.0)	29		3,900
March 2024	1.59	1.85	ND (<1.6)			7.04 7.40	ND (<0.150)	59	430	1000	0.87	16		10	0.8			5.8			ND (<5.0)	ND (<5.0)	34		
April 2024	1.66	1.77	ND (<1.6)	0.011		7.04 7.15	0.414	57	420	1100	1.1	20	2	60	2.2			2.7			ND (<5.0)	ND (<5.0)	34		
May 2024	1.54	1.83	2.0	0.026		6.68 7.25	ND (<0.200)	39	580	1100	1.7	14	1	90	1.7			2.6			ND (<5.0)	ND (<5.0)	33		4,300
June 2024	1.74	1.85	0.9	0.013		6.92 7.22	ND (<0.200)	15	340	1000	2.5	19	2	80	2.8			3.3			3.4	6.2	51		
July 2024 (month to date)	1.62	1.86	ND (<1.6)	0.011		7.10 7.21	ND (<0.200)	19	430	1400	1.2	20	2	80	1.0			2.5			3.3	6.3	43		NA
	Daily Grab	Composite		μg/L lbs/day	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	Sample Date	mg	/L	lbs/day	Sample Date	mg/L
	Sample Dates 12/31 - 1/6	Sample Date 1/6/2024		0.8 0.012	1/3/2024	6.98	ND (<0.150)	12	260	830	0.89		16 2		0.12	1.7		0.44	6.4	1/3/2024	ND (<5.0)	2.5	36		
	1/7 - 1/13	1/13/2024		0.8 0.012	1/10/2024	7.18	ND (<0.150)	12	310	590	0.85			53 68	0.12	1.7		0.44	6.8	1/3/2024	ND (<5.0)	2.5	30		
	1/14 - 1/20	1/20/2024	· /	0.8 0.012	1/17/2024	7.01	ND (<0.150)	12	320	1200	0.80			58	0.13	0.9		0.48	6.0	1/17/2024	Footnote 1	13	171		
	1-21 - 1-27	1/27/2024		0.8 0.012	1/24/2024	7.21	ND (<0.150)	5.0	280	360	1.8		17 2		0.27	4.0		0.29	4.3	1/24/2024	ND (<5.0)	2.5	37		
	1/28 - 2/3	2/3/2024	. ,	0.8 0.011	1/31/2024	7.12	ND (<0.150)	8.3	270	770	0.63			96 ND (<0.03		0.3		0.19	2.8	1/31/2024	ND (<5.0)	2.5	37		
	2/4 - 2/10	2/10/2024		0.8 0.011	2/7/2024	7.20	ND (<0.150)	35	290	1900	0.81	:		79	0.051	0.6	Footnote 2		8.4	2/7/2024	ND (<5.0)	2.5	30		
	2/11 - 2/17	2/17/2024		0.8 0.009	2/14/2024	7.24	ND (<0.150)	8.8	310	1100	5.9	3	20 24	40 ND (<0.03		0.2		0.51	6.1	2/14/2024	ND (<5.0)	2.5	30		
	2/18 - 2/24	2/24/2024	ND (<1.6)	0.8 0.010	2/22/2024	7.24	ND (<0.150)	18	220	950	0.63	:	13 1	91 ND (<0.03	9) 0.0195	0.3		0.17	2.5	2/22/2024	ND (<5.0)	2.5	37	2/22/2024	3,900
	2/25 - 3/2	3/2/2024	ND (<1.6)	0.8 0.005	2/29/2024	7.26	ND (<0.150)	15	160	1800	1.50		16 1	14	0.045	0.3		0.36	2.6	2/29/2024	ND (<5.0)	2.5	18		
	3/3 - 3/9	3/9/2024	ND (<1.6)	0.8 0.009	3/7/2024	7.40	ND (<0.150)	17	290	440	0.69	:	14 14	40	0.059	0.6	Footnote 3	1.5	15	3/7/2024	ND (<5.0)	2.5	25		
	3/10 - 3/16	3/16/2024	· · · /	0.8 0.011	3/13/2024	7.11	ND (<0.150)	15	430	710	0.80	2		58	0.13	1.9		0.40	5.7	3/13/2024	ND (<5.0)	2.5	36		
	3/17 - 3/23	3/23/2024	. ,	0.8 0.012	3/20/2024	7.04	ND (<0.150)	25	430	1000	0.84			65 ND (<0.03	,	0.3		0.046	0.7	3/20/2024	ND (<5.0)	2.5	37		
	3/24 - 3/30	3/30/2024	. ,	0.8 0.012	3/27/2024		ND (<0.150)	59	430	940	0.87			81 ND (<0.03		0.3		0.15	2.3	3/27/2024	ND (<5.0)	2.5	38		
	3/31 - 4/6	4/6/2024	· /	0.8 0.011	4/3/2024	7.09	ND (<0.150)	44	420	1100	0.98			64	0.15	2.1		0.21	2.9	4/3/2024	ND (<5.0)	2.5	35		
	4/7 - 4/13	4/13/2024	· /	0.8 0.011	4/10/2024		0.414	57	330	970	0.98			46	0.16	2.0		0.23	2.8	4/10/2024	ND (<5.0)	2.5	31		
	4/14 - 4/20 4/21 - 4/27	4/20/2024 4/27/2024	. ,	0.8 0.012 0.8 0.011	4/17/2024 4/24/2024	7.04 7.15	ND (<0.150) ND (<0.150)	26 42	360 360	740 840	1.1 1.1			92 44	0.21 0.11	3.1 1.5		0.21 0.13	3.1 1.8	4/17/2024 4/24/2024	ND (<5.0) ND (<5.0)	2.5 2.5	37 34		
	4/21 - 4/27	5/4/2024	. ,	0.8 0.011	5/1/2024	7.06	ND (<0.150)	33	380	600	0.20	 ND (<10)		44 53	0.11	2.1		0.13	2.2	5/1/2024	ND (<5.0)	2.5	27		
	5/5 - 5/11	5/11/2024		0.8 0.009	5/8/2024	6.68	ND (<0.150)	18	420	930	1.2	. ,		87	0.20	1.0		0.21	2.6	5/8/2024	ND (<5.0)	2.5	31		
	5/12 - 5/18	5/18/2024		0.8 0.010	5/15/2024	7.22	ND (<0.150)	1.3	360	910	1.7			87 ND (<0.03		0.3		0.21	2.8	5/15/2024	ND (<5.0)	2.5	33		
	5/19 - 5/25	5/25/2024		6.7 0.088	5/22/2024	7.25	ND (<0.200)	39	580	1100	0.46			46 ND (<0.03	,	0.3		0.19	2.6	5/22/2024	ND (<5.0)	2.5	34	5/22/2024	4,300
	5/26 - 6/1	6/1/2024	ND (<1.6)	0.8 0.012	5/29/2024	7.19	ND (<0.200)	11	280	650	0.99	:	12 1	82	0.30	4.6		0.18	2.7	5/29/2024	ND (<5.0)	2.5	38	-, , -	,
	6/2 - 6/8	6/8/2024	ND (<1.6)	0.8 0.012	6/4/2024	7.20	ND (<0.200)	9.2	230	790	2.5	3	26 3	99	0.29	4.4		0.23	3.5	6/4/2024	ND (<5.0)	2.5	38		
	6/9 - 6/15	6/15/2024	1.3	1.3 0.018	6/11/2024	7.14	ND (<0.200)	15	260	670	2.1	:	15 2	17	0.31	4.5		0.29	4.2	6/11/2024	ND (<5.0)	2.5	36		
	6/16 - 6/22	6/22/2024	. ,	0.8 0.011	6/18/2024	6.92	ND (<0.200)	11	340	560	0.81		18 2		0.042	0.6		0.19	2.9	6/18/2024	ND (<5.0)	2.5	38		
	6/23 - 6/29	6/29/2024	ND (<1.6)	0.8 0.012	6/25/2024	7.22	ND (<0.200)	12	300	1000	1.0		17 24	48	0.12	1.8		0.19	2.8	Footnote 4	Footnote 5	6.2	93		
	6/30 - 7/6	7/6/2024	· /	0.8 0.012	7/2/2024	7.12	ND (<0.200)	13	340	880	1.2			78	0.10	1.5		0.27	4.2	7/2/2024	ND (<5.0)	2.5	39		
	7/7 - 7/13	7/13/2024	· /	0.8 0.010	7/9/2024	7.13	ND (<0.200)	6.7	320	1200	0.91		34 5		0.14	2.1		0.18	2.7	7/9/2024	ND (<5.0)	2.5	37		
	7/14 - 7/20	7/20/2024	. ,	0.8 0.011	7/16/2024	7.21	ND (<0.200)	6.3	270	520	0.46			54 ND (<0.03	,	0.2		0.090	1.2	7/16/2024	ND (<5.0)	2.5	32		
	7/21 - 7/27	7/27/2024	ND (<1.6)	0.8 0.010	7/23/2024	7.10	ND (<0.200)	19	340	1400	0.75			70 ND (<0.03	,	0.3		0.16	2.2	7/23/2024	ND (<5.0)	2.5	34		
	7/14 7/22	7/20/2024		0.0	7/30/2024		ND (<0.200)	17	430	890	NA			99 NA	NA	NA		0.20	2.3	7/30/2024	6.3	6.3	74		
	7/14 - 7/20 7/21 - 7/27	7/20/2024 7/27/2024	· /	0.8 0.011 0.8 0.010	7/16/2024 7/23/2024	7.21 7.10	ND (<0.200)	6.3 19	270 340	520 1400	0.46 0.75			54 ND (<0.03 70 ND (<0.03	,	0.2 0.3		0.090 0.16	1.2 2.2	7/16/2024 7/23/2024	ND (<5.0)	2.5 2.5	32 34		
	//21-//2/	//2//2024	(ס.ד<) טאי	0.010	7/30/2024	7.10	ND (<0.200) ND (<0.200)	19 17	340 430	890	0.75 NA		20 2 17 1		9) 0.0195 NA	0.3 NA		0.16	2.2	7/30/2024	ND (<5.0) 6.3	2.5 6.3	34 74		
	I				1/30/2024	/.15	ND (<0.200)	1/	450	990	NA		1/ L	NA CC	INA	INA		0.20	2.3	1/30/2024	0.5	0.5	/4		

Note: Analytical responsibilities are performed by Eurofins Environment Testing (Eurofins) in Phoenix, Arizona, and hexavalent chromium is analyzed by Pace Analytical (Pace) in Las Vegas, Nevada, unless otherwise indicated.

* Additional samples were collected this week.

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)

NS = Not Sampled or Not Analyzed

-- = 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.

¹ Average of 8.6 mg/L and 18.25 mg/L (rerun duplicates detected 34 mg/L and 2.5 mg/L [<5.0 mg/L], respectively).

² Average of 0.73 mg/L and 0.655 mg/L (rerun duplicates detected 0.64 mg/L and 0.67 mg/L, respectively).

 3 Average of 1.6 mg/L and 1.3 mg/L (rerun duplicates detected 1.3 mg/L and 1.3 mg/L, respectively).

⁴ Original sample taken 6/25/2024 was analyzed out of hold. Additional sample taken 6/28/2024.

⁵ Average of 2.5 mg/L (<5.0 mg/L) and 9.95 mg/L (additional sample detected 13 mg/L, and rerun duplicates detected 6.8 mg/L and 7.0 mg/L, respectively).

Last Updated: August 9, 2024

WORKING TRACKING SPREADSHEET DRAFT - NOT TO BE SUBMITTED TO AGENCY



Equipment Tracking Form

Sub-	P&ID	Description	Status ¹	Checked	Criticality ²
System			Olulus		Unitounty
		Main Plant Equipment			
		Seep Wells and Lift Station 1			
1.01		Seep Well Field, 9 wells	Running		
1.02		Lift Station 1 Lift Pump A	-		
1.03		Lift Station 1 Lift Pump E			
1.04		Area in and around Lift Station	Running		
		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 E	Running		
2.04		Area in and around Lift Station 3	Running		
		Lift Station 2 and Transmission Pipelines			
3.01		Influent Pipeline			
3.02		Effluent Pipeline	Running		
3.03		Lift Station 2 Lift Pump A	Running		
3.04		Lift Station 2 Lift Pump E			
3.05		Area in and around Lift Station	Running		
		Interceptor Wells and Cr Treatment Plant			
4.01		IWF Well Field, 30 wells			
4.02		Ferrous Sulfate Feed System			
4.03		Polymer Feed System	Running		
4.04		Clarifier	Running		
4.05		Filter Press	-		
4.06		GWTP Effluent Tank	Running		
4.07		Interceptor Booster Pump A	Running		
4.08		Interceptor Booster Pump E	,		
4.09		Area In And Around GWTF	Running		
		Equalization Area and GW-11 Pond			
5.01	PID10A	Pond GW-11	Running		
5.02	PID10A	Pond Water Pump - P101A	Running		
5.03	PID10A	Pond Water Pump - P101B	Standby		
5.04	PID10A	Equalization Tanks	Running		
5.05	PID10A	Area in and Around EQ	Running		
5.06	PID10A	Raw Water Feed Pump - P102A	Standby		
5.07	PID10A				
5.08	PID10A				
5.09	PID10B	Carbon Absorber - LGAC 201A	Offline		

1. Running - Unit is in operation

2. Standby – Spare or duplicate, not currently in operation

3. Maintenance – Out of service for maintenance

4. Offline – Not currently needed for use but can be placed in service.

Critical Codes

1. Critical – Cannot continue with operation until repairs made

2. Important – Can still operate safety and in compliance with permits, but risk is increased

3. Moderate - Work needs to be performed but plant can still operate with redundancy that is in place

Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	
5.10	PID10B	Carbon Absorber - LGAC 2018				
5.11	PID10E	Carbon Absorber - LGAC 2010	Offline			
		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR /	Offline			
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401				
6.04	PID14	P1401A	Offline			
6.05	PID01A	P1401B	Offline			
6.06	PID01A	FBR	Running			
6.07	PID02A	FBR	Standby			
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				
6.11	PID01A	First Stage FBR Pump - P1012				
6.12	PID01A	First Stage FRB Pump - P101A				
6.13	PID07A	FBR A pH Feed Pump - P71A				
6.14	PID07A	FBR 1 pH Feed Pump - P71				
6.15	PID07A	FBR 2 pH Feed Pump - P712	Offline			
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P724				
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P72				
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722				
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Offline			
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	0			
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	v			
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A				
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running			
6.24	PID07E	FBR 2 Electron Donor Assembly Pump - P732	Running			
		First Stage FBRs 3 & 4				
7.01	PID01B		Running			
7.02	PID01E		Running			
7.03	PID02E	First Stage Separator Tank - T2012	-		3	Repaired Level Control Actuator
7.04	PID01B	Media Return Pump - P2012	-			
7.05	PID01B	First Stage FBR Pump - P1013				
7.06	PID01E	First Stage FRB Pump - P1014				
7.07	PID01E	First Stage FBR Pump - P102A	-			
7.08	PID07A	FBR 3 pH Feed Pump - P713	-			
7.09	PID07A	FBR 4 pH Feed Pump - P714	Running			

- 1. Running Unit is in operation
- 2. Standby Spare or duplicate, not currently in operation
- 3. Maintenance Out of service for maintenance
- 4. Offline Not currently needed for use but can be placed in service.

Critical Codes

- 1. Critical Cannot continue with operation until repairs made
- 2. Important Can still operate safety and in compliance with permits, but risk is 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	
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723	Offline			
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P 724	Offline			
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	PID07E	FBR 3 Electron Donor Assembly Pump - P733	Running			
7.15	PID07E	FBR 4 Electron Donor Assembly Pump - P734	Running			
		Second Stage FBRs 5 & 6				
8.01	PID03A	FBR	Running			
8.02	PID03A	FBR	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	Running			
8.07	PID03A	Second Stage FBR Pump - P301A	Standby			
8.08	PID07A	FBR 5 pH Feed Pump - P715				
8.09	PID07A	FBR 6 pH Feed Pump - P716	Offline			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Offline			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Offline			
8.12	PID07E	FBR 5 Electron Donor Assembly Pump - P735	Running			
8.13	PID07E	FBR 6 Electron Donor Assembly Pump - P736	Running			
		Second Stage FBRs 7 & 8				
9.01	PID03E	FBR	Running			
9.02	PID03E	FBR	Running			
9.03	PID03D	Second Stage Separator Tank - T3012	Running			
9.04	PID03E	Media Return Pump - P3012	Running			
9.05	PID03E	Second Stage FBR Pump - P3017	Maintenance		3	Pump and seal rebuild.
9.06	PID03E	Second Stage FBR Pump - P3018	Running			
9.07	PID03E	Second Stage FBR Pump - P302A	Standby			
9.08	PID07A	FBR 7 pH Feed Pump - P717	Offline			
9.09	PID07A	FBR 8 pH Feed Pump - P718				
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727				
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728				
9.12	PID07E	FBR 7 Electron Donor Assembly Pump - P737				
9.13	PID07E	FBR 8 Electron Donor Assembly Pump - P738	Running			
10		Aeration and DAF System				
10.01	PID04	Aeration Tank	Running			
10.02	PID04	Aeration Blower - B401	Running			

1. Running - Unit is in operation

2. Standby – Spare or duplicate, not currently in operation

3. Maintenance - Out of service for maintenance

4. Offline – Not currently needed for use but can be placed in service.

Critical Codes

1. Critical – Cannot continue with operation until repairs made

2. Important - Can still operate safety and in compliance with permits, but risk is increased

3. Moderate - Work needs to be performed but plant can still operate with redundancy that is in place

Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	
10.03	PID04		Running			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump	Running			
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A				
10.09	PID04	Bio filter Blower				
10.10	PID05	DAF Pressure Tanks	Running			
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	Running		3	Repaired Tank Level Control
11.02	PID06	Effluent Pump - P601	Standby			•
11.03	PID06	Effluent Pump - P602	Running			
12		Sand Filter System				
12.01	PID17	Sand Filter	Running			
12.02	PID17	Filter Reject Tank	Running			
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		3	Replaced pressure transmitter
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-	Running			
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	Running			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	Running			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902	Standby			
14.07	PID09	West Press	Standby			

1. Running - Unit is in operation

2. Standby – Spare or duplicate, not currently in operation

3. Maintenance - Out of service for maintenance

4. Offline - Not currently needed for use but can be placed in service.

Critical Codes

1. Critical - Cannot continue with operation until repairs made

2. Important – Can still operate safety and in compliance with permits, but risk is increased

3. Moderate – Work needs to be performed but plant can still operate with redundancy that is in place

Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	
14.08	PID09	East Press	Running			
14.09	PID09	Filtrate Tank	Running			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			
		Chemical Systems				
1:		Electron Donor System				
15.01	PID07E	Electron Donor Tank	Running			
15.02	PID07E	Booster Pump P739A				
15.03	PID07E	Booster Pump P739B				
1	PID07C	Micro Nutrient System	-			
18	PID07C	Hydrogen Peroxide System	Running			
1	PID070	De-Foam System	Running			
20	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	Running			
2'	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	Running			
2:	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	Running			
2:	PID07C	Ferric Chloride	Running			
24	PID07E	Polymer Systems - DAF	Running			
2!	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	Running			
		Utility Systems				
20		Compressed Air System				
26.01	PID08	West Compressor	Running			
26.02	PID08	East Compressor	Maintenance			
26.03	PID08	O2 Compressor	Offline			
26.04	PID08	Compressed Air Receiver Tank	Running			
26.05	PID08	Air Dryer			3	Repaired Air Dryer
26.06	PID08	Oil Removal Filter				
26.07	PID08	Particulate Filter	Running			
2	PID16	Oxygen System	Offline			
2		GWETS Plant Controls/ Siemens Controls	-			
29		Well Control System/ Allen Bradley Controls	-		3	Replaced power supply
3		MCC FBR Pac	0			
3		MCC in D-	Running			
3:		MCC in EQ area	Running			

1. Running - Unit is in operation

2. Standby – Spare or duplicate, not currently in operation

3. Maintenance - Out of service for maintenance

4. Offline - Not currently needed for use but can be placed in service.

Critical Codes

1. Critical - Cannot continue with operation until repairs made

2. Important – Can still operate safety and in compliance with permits, but risk is 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	
		Miscellaneous Systems				
33		Operations Office/Network	Running		2	Replaced defective hard drive on SCADA computer.
34		Laboratory Analyzers	Running			
35		Security Systems	Running			
		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			

1. Running - Unit is in operation

2. Standby – Spare or duplicate, not currently in operation

3. Maintenance - Out of service for maintenance

4. Offline – Not currently needed for use but can be placed in service.

Critical Codes

1. Critical – Cannot continue with operation until repairs made

2. Important – Can still operate safety and in compliance with permits, but risk is increased

3. Moderate - Work needs to be performed but plant can still operate with redundancy that is in place