To:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Ryan Sullivan, Vice President Service and O&M
Date:	June 20, 2020
Subject:	NERT – GWETS Operation Monthly Report – May 2020

At the request of the Nevada Environmental Response Trust (Trust), Envirogen Technologies, Inc. (ETI) is providing this summary of the groundwater extraction and treatment system (GWETS) operation and performance during May 2020.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in May 2020. Flow from PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing all flow meters associated with the FBR plant. The flow rate to the IX system averaged approximately 181 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,065 gpm during May 2020. At the end of the month, the GW-11 Pond volume was at 36.0 million gallons (MG), which would allow 18.4 days of available additional storage in the event of an emergency FBR plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond decreased by 3.7 MG from the end of April 2020. Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the IX system averaged 0.37 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 86 mg/L for the month, with a maximum concentration of 89 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of April 2020 averaged 77 mg/L, with a maximum concentration of 81 mg/L. Fluctuations in the influent perchlorate concentrations are due to the changes in the AP-5 treatment feed rate and not a result of groundwater changes.

Enhanced Operational Metrics

Tables 1 and 2 provide a summary of the current GWETS operational metrics data for flow rates, perchlorate and chromium concentrations, and mass removal. These tables also include data associated with the AP-5 decant liquids. Figure 2 graphically presents historical perchlorate and chromium mass flux information. Attachment A provides a summary of the NPDES permit analytes with numerical discharge limits.

Operational Issues

All routine plant repairs conducted by ETI were performed in accordance with the NERT Perchlorate Treatment System Operations Manual. The following is a list of operational issues and major repairs and/or equipment replaced during this reporting period.

1. GW-11

There were no operational issues with GW-11 in the month of May.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant resumed in the month of May. Treatment began the month with a flow rate of 5.0 gpm and increasing to 6.0 gpm by the end of the month.

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

Diversion Events / Well Shutdowns

- Effluent diversion to GW-11 occurred on May 7, 2020 from 1:59pm to 3:43pm as a precautionary measure due to concerns of effluent quality. Adjustments were made to the process and flow returned to the outfall. Approximately 120,000 gallons of effluent were diverted to GW-11.
- Influent diversion to GW-11 occurred on May 28, 2020 from 6:45am to 1:50pm due to maintenance efforts. Approximately 87,000 gallons of water was diverted to GW-11.
- Effluent diversion to GW-11 occurred on May 28, 2020 from 2:25pm to May 29, 2020 at 6:38am due to maintenance efforts associated with repairs to the effluent pipeline. Approximately 1,033,000 gallons of effluent were diverted to GW-11.

3. Spills

There were no reportable spills in the month of May.

4. Maintenance

- Major maintenance performed by ETI in the month included:

I. Replaced the air end on the GWTP press pump.
II. Replaced the pully on Media Return #3.
III. Replaced cloths on GWTP press.
IV. Replaced pH probes on FBR's 2, 4, and 6.
V. Changed the I/P (current to pressure) control module on FBR 3 feed valve.
VI. Installed a new spool piece on the discharge pipe to the outfall at the EQ area.
VII. Replaced the gasket on the discharge of the North turbine pump at Lift Station 1.
VIII. Replaced the handle on the discharge valve for the North turbine pump at Lift Station 1.

IX. Replaced the pressure line on the recycle piping of FBR 2.
X. Changed out the Ferric Chloride chemical feed pump.

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

I. Cleaned the sight glasses for media return piping.
II. Pressure washed the GWTP press cloths and plates.
III. Flushed the sump pit at the D-1 area.
IV. Flushed the turbidity meters and calibrated them.
V. Cleaned the air filters on the Lift Station 3 Air Conditioning cabinets.
VI. Tested and calibrated the level sensors on the chemical feed totes.

GWETS Upgrades and Facility Projects

Unit 4 Chromium Water Treatment Plant – Envirogen received comments regarding the deliverable documents that were submitted to the Trust in July 2019 for this project. The revised documents dealing with the Controls Specification, Process Drawings, and Mechanical Details were re-submitted to the Trust in September. Envirogen is awaiting further direction from the Trust regarding this matter.

GWETS Extension –The signed Work Authorization for engineering and fabrication of the GWETS Extension was returned to the Trust on January 28, 2020. The O&M Work Authorization proposal for the GWETS Extension was submitted to the Trust on March 10, 2020. Envirogen is awaiting further direction from the Trust regarding the O&M Work Authorization.

GWETS Staffing

ETI continues with 24-hour staffing of the GWETS at the direction of the Trust and continues to follow the security procedures in the Standard Operating Procedures (SOP).

Tables

Operational Metrics

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics				
Location ID	**Average Flow Rate (gpm)**	**Perchlorate (mg/L)[6 7]**	**Chromium (TR) (mg/L)[6 7]**	**Chromium(VI) (mg/L)[6 7]**
SWF Total Extraction[1]	750 [5]	7.2	0.0020	0.0022
AWF Total Extraction[1]	466 [5]	62	0.16	0.15
IWF Total Extraction[1]	61 [5]	397	6.4	6.3
AP Area Total Extraction[1]	11.3 [5]	544	0.111	0.098
GWTP Effluent[2]	62	456	0.48	ND
GW-11 Influent[1]	5.91	62	0.07	0.030
FBR Influent[2 3]	1,065	86	0.033	0.029
T-205 Effluent (AP-5 Wash Water)[3 4 8]	5.5	NA	NA	NA

Notes:

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

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

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

3: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

4: Flow weighted average concentration based on mass flow meter readings.

5: Sum of daily average flow for individual wells.

6: All concentrations reported are monthly flow weighted averages.

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

8: AP-5 sediment mixing and solids washing activities were completed on January 4, 2020. Wash water is still being transferred to T-205 to be processed

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics			
Location ID	**Perchlorate (lbs/month)[3]**	**Chromium (TR) (lbs/month)[3]**	**Chromium (VI) (lbs/month)[3]**
SWF Total Extraction	2,013	0.57	0.61
AWF Total Extraction	10,796	27	25
IWF Total Extraction	9,027	145	144
AP Area Total Extraction	2,299	0.47	0.42
GWTP Effluent	10,578	11	ND
GW-11 Influent	136.6	0.163	0.0661
FBR Influent[1]	33,989	13	11.3
T-205 Effluent (AP-5 Wash Water)[1 2 4]	0.0	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed.

1: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

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

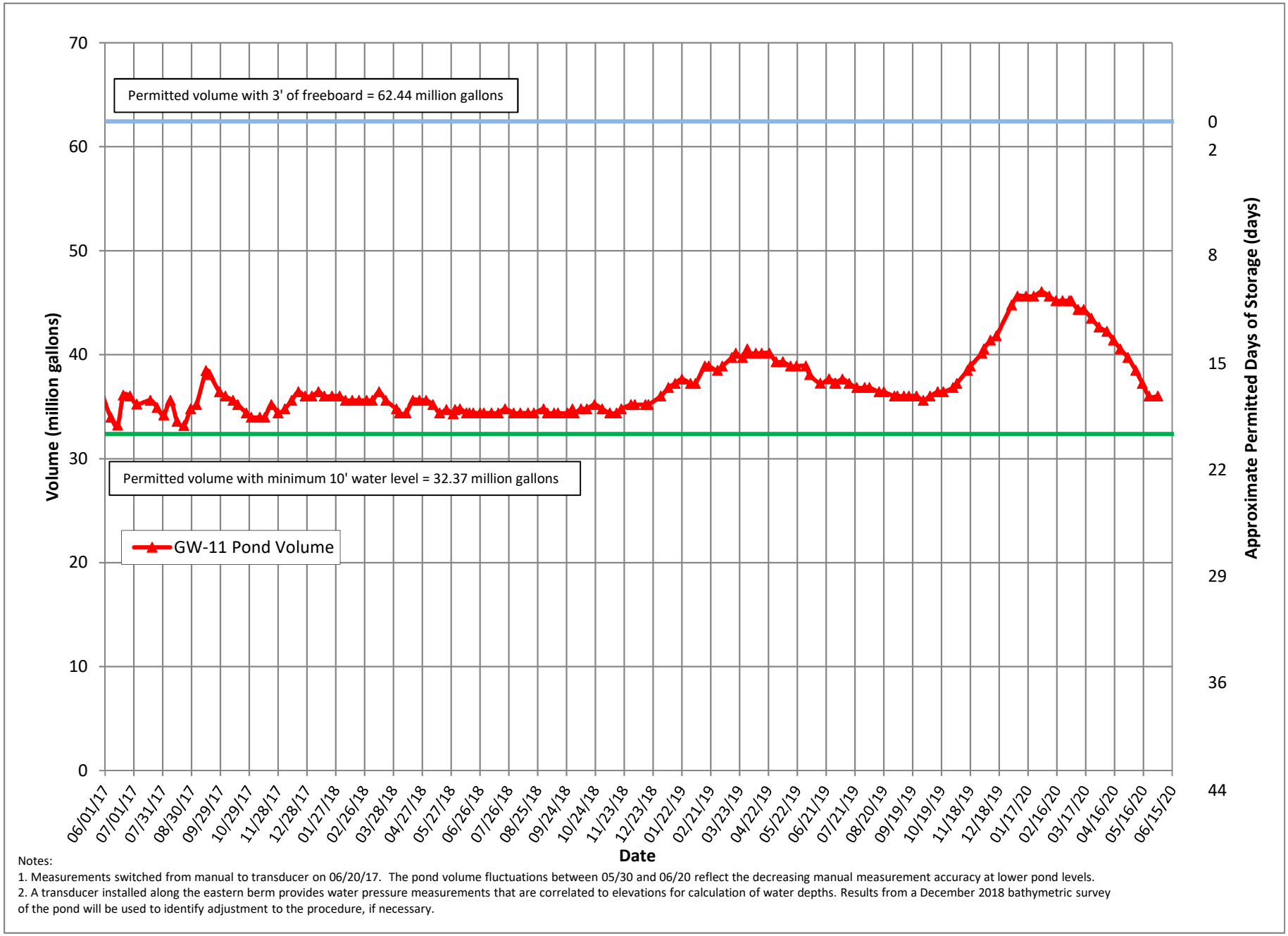
3: Total mass extracted is calculated from flow weighted average concentration and average flow (see Table 1).

4: AP-5 sediment mixing and solids washing activities were completed on January 4, 2020. Wash water is still being transferred to T-205 to be processed.

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 5/31/2020

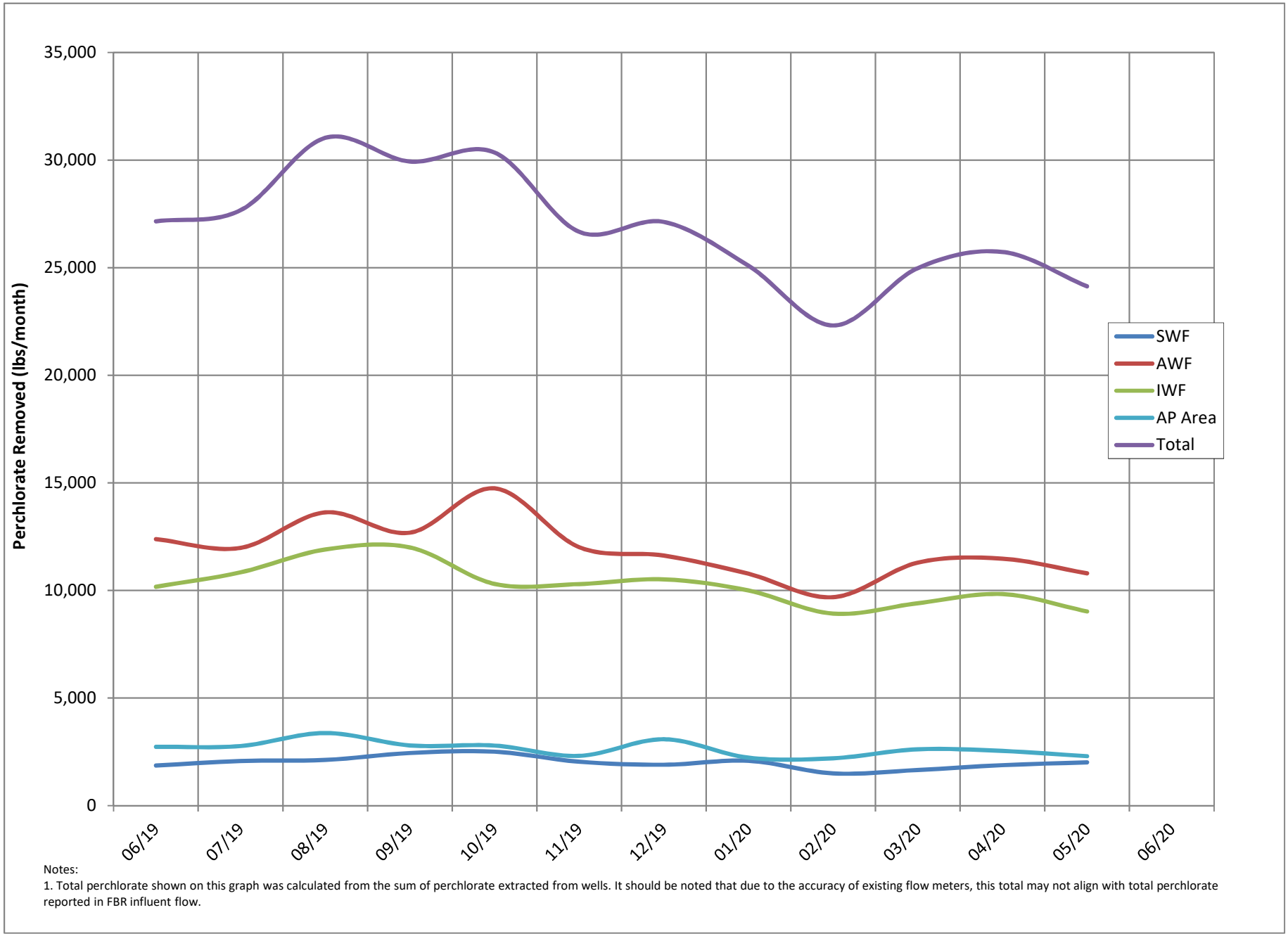


Notes:

1. Measurements switched from manual to transducer on 06/20/17. The pond volume fluctuations between 05/30 and 06/20 reflect the decreasing manual measurement accuracy at lower pond levels.
2. A transducer installed along the eastern berm provides water pressure measurements that are correlated to elevations for calculation of water depths. Results from a December 2018 bathymetric survey of the pond will be used to identify adjustment to the procedure, if necessary.

Figure Updated: 6/3/2020

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: 6/16/2020

Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

WORKING TRACKING SPREADSHEET
DRAFT - NOT TO BE SUBMITTED TO AGENCY

Treated Effluent at Outfall 001

	Continuous: Flow Rate 30-Day Avg. (MGD)	Continuous: Flow Rate Daily Maximum (MGD)	Daily Samples, composited weekly: Perchlorate 30-Day Avg. (µg/L)	Perchlorate 30-Day Avg. (lbs/day)	Weekly Grab Samples: pH Daily Min. (S.U.)	pH Daily Max. (S.U.)	Hexavalent Chromium Daily Max. (µg/L)	Total Chromium Daily Max. (µg/L)	Manganese Daily Max. (µg/L)	Total Iron Daily Max. (µg/L)	Total Inorganic Nitrogen (TIN) Daily Max. (mg/L)	Total Suspended Solids (TSS) Daily Average (mg/L)	TSS 30-Day Avg. (lbs/day)	Total Ammonia as N 30-Day Avg. (lbs/day)	Total Phosphorus as P 30-Day Avg. (lbs/day)	Weekly, collected separately: BOD_5 (inhibited) 30-Day Avg. (mg/L)	BOD_5 Daily Max. (mg/L)	BOD_5 30-Day Avg. (lbs/day)	Quarterly: Total Dissolved Solids (TDS) Daily Max. (mg/L)
Limit	**2.52**	**2.88**	**18**	**0.38**	**6.5**	**9.0**	**10**	**100**	**5,000**	**10,000**	**20**	**135**	**2,839**	**20***	**10***	**25**	**40**	**525**	**8,000**
January 2020	1.82	1.89	3	0.04	6.61	6.87	1.1	19	290	540	0.85	5.0	80	6	3.3	1.3	2.1	20	
February 2020	1.85	1.91	1.3	0.019	6.68	6.91	ND (<0.25)	7.6	170	980	1.1	4.9	70	2.3	1.6	ND (<2.0)	ND (<2.0)	16	4,100
March 2020	1.86	1.91	1.3	0.019	6.55	7.11	0.36	5.4	220	1,100	ND (<0.50)	7	110	1.3	1.7	ND (<2.0)	ND (<2.0)	15	
April 2020	1.85	1.88	1.3	0.019	6.59	7.12	ND (<0.25)	6.4	160	1,300	ND (<0.50)	12	180	1.0	1.3	1.2	2.2	19	
May 2020	1.81	1.91	1.3	0.019	6.51	6.98	ND (<0.25)	6.8	150	830	11	9	130	8	2.4	ND (<2.0)	3.3	24	4,500
June 2020 (month to date)	1.80	1.90	NA	NA	6.80	6.80	ND (<0.25)	7.5	110	740	0.58	11	160	8.5	1.8	2.1	2.1	NA	

Daily Grab Sample Dates	Composite Sample Date	Perchlorate	µg/L	lbs/day	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	lbs/day	Total Phosphorus as P	mg/L	lbs/day	BOD_5 Sample Date	BOD_5	mg/L	lbs/day	TDS Sample Date	TDS mg/L
12/29 - 1/4	1/4/2020	4.4	4.4	0.063	12/30/2019	6.63	ND (<0.25)	4.6	300	63	4.5	14	196	--	4.5	63	--	0.27	3.8	12/30/2019	ND (<2.0)	1.0	14		
1/5 - 1/11	1/11/2020	12, <0.079	6	0.09	1/6/2020	6.61	ND (<0.25)	2.7	290	58	0.85	4.9	70	--	0.85	12	--	0.22	3.1	1/8/2020	ND (<2.0)	1.0	15		
1/12 - 1/18	1/18/2020	ND (<2.5)	1.3	0.019	1/13/2020	6.63	ND (<0.25)	19	210	66	ND (<0.50)	3.2	49	--	0.25	3.8	ND (<0.025)	0.013	0.19	1/15/2020	ND (<2.0)	1.0	16		
1/19 - 1/25	1/25/2020	ND (<2.5)	1.3	0.019	1/20/2020	6.87	ND (<0.25)	5.8	210	140	ND (<0.50)	9.2	142	--	0.16	2.5	--	0.12	1.9	1/22/2020		2.1	32		
1/26 - 2/1	2/1/2020	ND (<2.5)	1.3	0.019	1/27/2020	6.76	1.1	ND (<2.5)	200	540	ND (<0.50)	2.7	41	--	0.35	5.4	--	0.51	7.8	1/29/2020	ND (<2.0)	1.0	15		
2/2 - 2/8	2/8/2020	ND (<2.5)	1.3	0.019	2/3/2020	6.91	ND (<0.25)	3.0	150	980	1.1	6.7	103	--	0.11	1.7	--	0.093	1.4	2/6/2020	ND (<2.0)	1.0	16	2/4/2020	4,100
2/9 - 2/15	2/15/2020	ND (<2.5)	1.3	0.019	2/10/2020	6.68	ND (<0.25)	7.6	170	820	ND (<0.50)	6.4	97	--	0.18	2.7	--	0.095	1.4	2/12/2020	ND (<2.0)	1.0	15		
2/16 - 2/22	2/22/2020	ND (<2.5)	1.3	0.019	2/17/2020	6.87	ND (<0.25)	4.5	160	510	ND (<0.50)	3.0	46	--	0.15	2.3	--	0.12	1.8	2/19/2020	ND (<2.0)	1.0	15		
2/23 - 2/29	2/29/2020	ND (<2.5)	1.3	0.020	2/24/2020	6.81	ND (<0.25)	3.6	140	770	ND (<0.50)	3.5	54	--	0.17	2.6	--	0.11	1.7	2/26/2020	ND (<2.0)	1.0	16		
3/1 - 3/7	3/7/2020	ND (<2.5)	1.3	0.020	3/2/2020	7.01	ND (<0.25)	4.8	190	920	ND (<0.50)	5.8	91	--	0.17**	2.7	--	0.13	2.0	3/4/2020	ND (<2.0)	1.0	15		
3/8 - 3/14	3/14/2020	ND (<2.5)	1.3	0.019	3/9/2020	6.55	ND (<0.25)	4.7	220	890	ND (<0.50)	6.1	96	--	0.12**	1.9	--	0.11	1.7	3/12/2020	ND (<2.0)	1.0	15		
3/15 - 3/21	3/21/2020	ND (<2.5)	1.3	0.019	3/16/2020	7.11	ND (<0.25)	5.4	190	1,100	ND (<0.50)	11	173	ND (<0.10)	0.05**	0.79	--	0.077	1.2	3/18/2020	ND (<2.0)	1.0	16		
3/22 - 3/28	3/28/2020	ND (<2.5)	1.3	0.019	3/23/2020	6.74	ND (<0.25)	3.6	220	1,000	ND (<0.50)	6.2	97	--	0.14**	1.5	--	0.13	2.0	3/25/2020	ND (<2.0)	1.0	15		
3/29 - 4/4	4/4/2020	ND (<2.5)	1.3	0.019	3/30/2020	6.61	0.36	3.5	140	740	ND (<0.50)	5.5	86	ND (<0.10)	0.05**	0.76	--	0.082	1.3	4/1/2020	ND (<2.0)	1.0	15		
4/5 - 4/11	4/11/2020	ND (<2.5)	1.3	0.019	4/6/2020	7.12	ND (<0.25)	6.2	160	1,200	ND (<0.50)	12	187	--	0.19**	1.9		0.12	1.9	4/8/2020	ND (<2.0)	1.0	16		
4/12 - 4/18	4/18/2020	ND (<2.5)	1.3	0.019	4/13/2020	7.08	ND (<0.25)	6.4	110	1,300	ND (<0.50)	14	217	ND (<0.10)	0.05**	0.77	--	0.063	1.0	4/15/2020		2.2	34		
4/19 - 4/25	4/25/2020	ND (<2.5)	1.3	0.020	4/20/2020	6.93	ND (<0.25)	5.6	150	1,200	ND (<0.50)	13	203	ND (<0.10)	0.05**	0.78	--	0.084	1.3	4/22/2020	ND (<2.0)	1.0	16		
4/26 - 5/2	5/2/2020	ND (<2.5)	1.3	0.019	4/27/2020	6.59	ND (<0.25)	3.3	130	860	ND (<0.50)	8.4	129	ND (<0.10)	0.05**	0.77	--	0.074	1.1	4/29/2020	ND (<2.0)	1.0	15		
5/3 - 5/9	5/9/2020	ND (<2.5)	1.3	0.019	5/4/2020	6.98	ND (<0.25)	4.0	130	440	ND (<0.50)	5.1	81	--	0.15**	8.5	--	0.083	1.3	5/6/2020	ND (<2.0)	1.0	16	5/7/2020	4,500
5/10 - 5/16	5/16/2020	ND (<2.5)	1.3	0.020	5/11/2020	6.51	ND (<0.25)	6.8	150	690	ND (<0.50)	9.4	146	--	0.14	2.2	--	0.12	1.9	5/13/2020	ND (<2.0)	1.0	16		
5/17 - 5/23	5/23/2020	ND (<2.5)	1.3	0.019	5/18/2020	6.98	ND (<0.25)	4.6	140	600	1.9	6.1	94	--	1.9	29	--	0.20	3.1	5/20/2020	ND (<2.0)	1.0	15		
5/24 - 5/30	5/30/2020	ND (<2.5)	1.3	0.017	5/26/2020	6.98	ND (<0.25)	6.6	120	830	11	14	208	--	0.51	7.8	--	0.22	3.3	5/27/2020		3.3	50		
5/31 - 6/6	6/6/2020	NA	NA	NA	6/1/2020	6.80	ND (<0.25)	7.5	110	740	0.58	11	162	--	0.58	8.5	--	0.12	1.8	6/3/2020		2.1	NA		
					6/8/2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6/10/2020		NA	NA		

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in Irvine, California, unless otherwise indicated.
** Additional samples were collected and analyzed for ammonia during this week and results were included in the 30-day average loading calculation.
NA = Not Available To Date
ND = Not Detected above laboratory reporting limit; concentration in adjacent cell to right is one-half the reporting limit (per Permit condition)
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.
-- = Analyte detected; see column adjacent to right
* Total phosphorus discharge limitation of 10 lbs/day applies between March 1 and October 31; Ammonia discharge limitation of 20 lbs/day applies between April 1 and September 30; no limits apply the rest of the year.
Last Updated: June 12, 2020

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		3	Ongoing assembly of parts for the new turbine installation.
1.04		*Area in and around Lift Station 1*	Running			
2		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running			
2.02		*Lift Station 3 Lift Pump A*	Standby			
2.03		*Lift Station 3 Lift Pump B*	Running			
2.04		*Area in and around Lift Station 3*	Running		3	Installed a temporary A/C unit for the turbine cabinet.
3		**Lift Station *2* and Transmission Pipelines**				
3.01		*Influent Pipeline*	In operation			
3.02		*Effluent Pipeline*	Running		1	Installed a new spool piece on the discharge to the outfall at the EQ.
3.03		*Lift Station 2 Lift Pump A*	Running		3	Oil change on the turbine.
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		2	Pressure washed and replaced all the clothes on the press.
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		3	Changed out the air filter to the press feed pump.
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			
5.06	PID10A	*Raw Water Feed Pump - P102A*				
5.07	PID10A	*Raw Water Feed Pump - P102B*				

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
5.08	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			
6.08	PID01A	*First Stage Separator Tank - T2011*	Running			
6.09	PID01A	*Media Return Pump - P2011*	Running		3	Replaced the pump for blown trunnions.
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		2	The slam valve was replaced with a rebuilt actuator.
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			
7.06	PID01B	*First Stage FRB Pump - P1014*	Running			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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		2	Took the FBR offline to replace the slam valve actuator and install new air line fittings.
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		3	Replaced the media return pump.
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			

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9.12	PID07B	*FBR 7 Electron Donor Assembly Pump - P737*	Running			
9.13	PID07B	*FBR 8 Electron Donor Assembly Pump - P738*	Running			
10		**Aeration and DAF System**				
10.01	PID04	*Aeration Tank*	In operation			
10.02	PID04	*Aeration Blower - B401*	Running			
10.03	PID04	*Bio filter*	In operation			
10.04	PID04	*Nutrient Solution*	Running			
10.05	PID04	*Bio filter Sump*				
10.06	PID04	*Nutrient Pump - P401*	Running			
10.07	PID04	*Bio filter Sump Pump - P402A*	Standby			
10.09	PID04	*Bio filter Blower*	Running			
10.10	PID05	*DAF Pressure Tanks*	In operation			
10.11	PID05	*DAF Vessel - D501*	Running			
10.12	PID05	*DAF Pressure Pump - P501*	Running			
10.13	PID05	*DAF Float Pump - P502*	Running			
10.14	PID05	*DAF Vessel - D551*	Running			
10.15	PID05	*DAF Pressure Pump - P551*	Running			
10.16	PID05	*DAF Float Pump - P552*	Running			
10.17	PID05	*Screw Conveyer Drive*	Standby			
10.18	PID05	*Skimmer Drive*	Running			
11		**Pumping System (Old Effluent)**				
11.01	PID06	*Effluent Tank 601*	In operation			
11.02	PID06	*Effluent Pump - P601*	Running			
11.03	PID06	*Effluent Pump - P602*	Standby			
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*				
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			
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			

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14.02	PID16	*Solids Storage Effluent Pump - P1601*	Running			
14.03	PID16	*Solids Cond. Tank*	In operation		2	The tank was drained and the level transmitter was inspected, calibrated and re-installed.
14.04	PID09	*Sludge Mixer*	Running			
14.05	PID09	*Filter Press Pump - P901*	Running			
14.06	PID09	*Filter Press Pump - P902*				
14.07	PID09	*West Press*	Standby			
14.08	PID09	*East Press*	Running			
14.09	PID09	*Filtrate Tank*	In operation			
14.10	PID09	*Filtrate Tank Effluent (recycle) Pump - P903*	Running			
		Chemical Systems				
15		**Electron Donor System**				
15.01	PID07B	*Electron Donor Tank*	In operation			
15.02	PID07B	*Booster Pump P739A*	Running			
15.03	PID07B	*Booster Pump P739B*	Standby			
17	PID07C	*Micro Nutrient System*	In operation			
18	PID07C	*Hydrogen Peroxide System*	In operation			
19	PID07C	*De-Foam System*	In operation			
20	PID15	*Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)*	In operation			
21	PID07A	*Nutrient (Urea) System (Tank only - pumps included in FBRs)*	In operation			
22	PID07A	*pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)*	In operation			
23	PID07C	*Ferric Chloride*	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			

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26.06	PID08	*Oil Removal Filter*	In operation			
26.07	PID08	*Particulate Filter*	In operation			
27	PID16	*Oxygen System*	In operation			
28		*GWETS Plant Controls/ Siemens Controls*	In operation			
29		*Well Control System/ Allen Bradley Controls*	In operation			
30		*MCC FBR Pad*	In operation			
31		*MCC in D-1*	In operation			
32		*MCC in EQ area*	In operation			
		Miscellaneous Systems				
33		*Operations Office/Network*	In operation			
34		*Laboratory Analyzers*	In operation			
35		*Security Systems*	In operation			
		Shelf Spares				
		Media Return Pump Rebuild Kit	In stock			
		pH Feed Pump	In stock			
		Nutrient Feed Pump	In stock			
		Electron Donor Feed Pump	In stock			
		Phosphoric Acid Feed Pump	In stock			
		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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