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MONTHLY REPORT OF THE OPERATIONS & MAINTENANCE ACTIVITIES (DECEMBER 2022)

**CLAREMONT POLYCHEMICAL
OPERABLE UNIT 5 GROUND
WATER TREATMENT
SYSTEM, OLD BETHPAGE, NY**

**MONTHLY REPORT OF THE OPERATIONS & MAINTENANCE
ACTIVITIES (DECEMBER 2022)
CLAREMONT POLYCHEMICAL OPERABLE UNIT 5 GROUND
WATER TREATMENT SYSTEM, OLD BETHPAGE, NY**

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Prepared by **Pawel Mecinski – GES**
Checked by **Michael Grifasi - Ramboll**
Approved by **Andrew Leitzinger - Ramboll**

Ramboll
333 West Washington Street
Syracuse, NY 13202
USA

T 315-956-6100
F 315-463-7554
<https://ramboll.com>

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LIST OF ACRONYMS AND ABBREVIATIONS

AS	Air Stripper
A/V	Air and Vacuum
ASF	Air Stripper feed
BNA	Base Neutral & Acid Extractables
CPC	Claremont Polychemical
CSE	Confined Space Entry
DOSR	Daily Operations Summary Report
EE	Electrical Engineer
GES	Groundwater & Environmental Services, Inc.
GPM	Gallons Per Minute
GWTS	Groundwater extraction, treatment, and reinjection system
HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C.
HMI	Human Machine Interface
HVAC	Heating, Ventilation, and Air Conditioning
MTBA	Tert-Butyl-Methyl ether
MW	Monitoring Well
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU4	Operable Unit 4
OU5	Operable Unit 5
PD	Plant Discharge
PDB	Passive Diffusion Bag
PFAS	Per- and polyfluoroalkyl substances
PFOS	Perfluorooctanesulfonic acid
PFOA	Perfluorooctanoic acid
PID	Photoionization Detector
PFF	Pressure Filter Feed
PLC	Programmable Logic Controller
ppm	parts per million
PW	Process Water
Ramboll	Ramboll Americas Engineering Solutions, Inc.
RW	Recovery Well, Process Well
SPEDES	State Pollutant Discharge Elimination System
SSHP	Site Safety and Health Plan
SU	Standard pH Units
SVOCs	Semi-Volatile Organic Compounds
TBA	Tert-butyl alcohol
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TSS	Total Suspended Solids
US Water	US Water Services Corporation
VOCs	Volatile Organic Compounds,

1. OPERATION AND MAINTENANCE ACTIVITIES

On behalf of Ramboll Americas Engineering Solutions, Inc. (Ramboll), Groundwater & Environmental Services, Inc. (GES) continued the daily operation and maintenance (O&M) of the Claremont Polychemical (CPC) Superfund Site Groundwater Treatment System (GWTS) Operable Unit 5 (OU5) during the month of December 2022. In addition, former Operable Unit (OU4) was inspected once per month to ensure security and building code compliance. For this report every time plant is mentioned it refers to OU5. OU4 will be referred to as such whenever discussed. This report covers the O&M activities for the system during the period defined as beginning at approximately 1000 hours, December 1, 2022, through approximately 1230 hours, January 3, 2023. O&M conducted during this reporting period was guided by the site O&M Manual.

The GWTS – treatment plant, grounds, and well systems - were maintained for the 33 days in this reporting period during which the treatment system experienced no downtime.

Readings of the key plant process parameters are normally recorded each workday. These readings and the Human Machine Interface (HMI) flow trend lines are used to monitor the system's performance and condition. Selected readings are recorded in the daily database which is an electronic file maintained in the monthly operating documents folder. If the plant is not occupied, the system is monitored remotely, however due to account transition from Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) to the New York State Department of Environmental Conservation (NYSDEC), the internet service was disconnected on August 9, 2022. The system has been running without internet service through December 2022. Efforts by Ramboll and others to restore internet service continued through the month.

The treatment process control and alarm systems are functional. The recovery well pumps, process pumps, and air stripper blower are operated in the automatic mode and are normally remotely controlled and monitored. RW4 recovery well submersible pump shut down on August 17th, 2022, and could not be restarted due to possible pump motor failure. RW5 recovery well pump was replaced on October 10, 2022 but was unable to be started on automatic mode due to signal interference issues. Currently, the pump will only run on manual hand mode. Further testing determined the wellhead pressure switch failure. A replacement pressure switch has been ordered with installation pending.

1.1 Daily Operations Summary Reports

The GWTS's daily operations and maintenance activities, project tasks, and observations during this period are briefly described in the Daily Operations Summary Report (DOSR). The DOSR is based in part on the treatment system's daily operating worksheets and logs which include:

- Daily Operating Log – flow readings and calculations (Form-01)
- Daily Site and Safety Inspection – plant condition checklist (Form-02)
- Daily Plant Activity Notes – plant manager's daily summary (Form-03)
- Sign-In Sheet – GES/Ramboll employee on-site hours (Form-15)
- Daily Process Data Sheet – point process readings (Form-30)
- Logbook CPC 5-8– plant operator's daily logbook
- Daily Database – daily process readings (December 22 Database.xlsx)

- NYSDEC Log-in Sheet – Entry/Exit Log with COVID-19 Acknowledgement

1.2 Summary of Maintenance Activities

The operation and maintenance of the treatment system, facility, and associated equipment is performed in accordance with the site O&M Manual. These tasks and inspections incorporate the equipment manufacturers' recommendations, operations experience, and good engineering and maintenance practices. A detailed accounting of the December activities is further provided in the plant operator's daily logbook.

Maintenance and project activities undertaken during the December period included:

- Routine and general maintenance tasks were conducted at the plant, on the grounds, and in the well fields.
- Single Air Stripper Feed (ASF) pumps were placed into hand mode and frequently switched to cycle their activity.
- The monthly process equipment tests were conducted.
- The Operable Unit 4 (OU4) comprehensive inspections were completed.
- The monthly Process/Recovery Well (RW) system inspection was completed.
- Basin 33 was inspected.
- The ASF pumps were lubricated, and the seals tightened.
- The OU5 comprehensive inspections were completed.
- The Pressure Filter Feed (PFF) pumps were lubricated, and the seals tightened.
- The fire alarm system components were inspected.
- The monthly electrical device survey was completed.
- The SUNY wellfield was inspected.

1.3 Maintenance Logs

The following operating logbooks are currently in use and maintained at OU5:

- CL-18 OU-4 Log (at OU4)
- CL-43 General Field Support Log (truck)
- CL-47 Misc. Projects Field Notebook (Pawel Mecinski)
- CPC 5-4 Project Support Logbook (site)
- CPC 5-8 Site Supervisor's Daily Logbook (Pawel Mecinski).

Except for log CPC 5-7, the completed logbooks associated with the project have been scanned, all are in storage at OU5, and are available for review.

2. TECHNICAL SUPPORT ACTIVITIES

2.1 GES/Ramboll Personnel

- GES maintained the system throughout the period.
- On December 12, 2022 through December 15, 2022, Liam Blake and Sara Hahne was on site for quarterly groundwater sampling activities
- On December 15 and 16, 2022, John Chantrek was on site to assist with RW5 troubleshooting and PLC reprogramming.
- On December 19 and 20, 2022, Sara Hahne was on site for quarterly groundwater sampling activities.

2.2 NYSDEC Personnel, Sub - contractors, and Other Visitors

- On December 7, 2022, Payson Long (NYSDEC) and Roy Plume (NYOFPC) were on site for annual system inspection and fire prevention compliance inspection.
- On December 13, 2022, Michael Flaherty (NCDPW) was on site to assist with gauging and sampling of Nassau County groundwater monitoring well network.

2.3 Deliveries

- On December 2 and 7, 2022, FedEx delivered sampling coolers for the upcoming remedial system and quarterly groundwater sampling event scheduled for December 2022.
- On December 8, 2022, UPS delivered boxes of sampling equipment and materials.

3. HEALTH AND SAFETY

Work at the Claremont GWTS OU5 was conducted in accordance with the approved and Ramboll adopted Site Safety and Health Plan (SSHP). Safety related activities during this period included:

- The water remained off at OU4. Both potable and non-potable lines were drained. (No sanitary water)
- Daily site safety inspections were completed as part of the routine O&M activities.

4. PLANNED ACTIVITIES AND SCHEDULES

The evaluation of the plant operating system and equipment is ongoing by GES/Ramboll. A list in the form of corrective actions or maintenance tasks has been generated as a monthly system status report. These reports are updated as needed and reviewed at least monthly. Both are electronically filed. The corrective action list is included at the end of this report as **Table 1 – Claremont Corrective Action Summary**.

Upcoming tasks include:

- OU4 remains without water to the fire sprinkler system due to no heat in the building.
- OU4 potable water line was shut off due to pipe ruptures from frozen pipes.
- RW5 remains offline due to PLC signal issues. The pump was replaced on October 10, 2022 but failed to start up in automatic mode. A replacement pressure switch has been ordered and will be installed in 2023.
- RW4 pump motor inspection and replacement due to recent failure.
- Air valve at MW-6 cluster in Bethpage State Park reinsertion.
- Drain valve and piping replacement at the PFF discharge line due to leaks.
- Investigate plant electric driven back-up heater failures.
- Close and exercise all globe valves at the non-operational recovery wells.

5. MONITORING WELL WATER ELEVATIONS

The monitoring well system's groundwater elevation data table was updated after the December quarterly GW elevation recording task. This database is available for review. The next set of

synoptic water level measurements will be scheduled for March 2023 and will be conducted by Ramboll.

6. TREATMENT SYSTEM FLOWS

During the December period, the plant continued to operate in the auto control mode. The volume of treated water discharged by the treatment system to the selected recharge basin was calculated from the plant influent and effluent flow meter readings. These readings are taken at the HMI and recorded in the daily database.

RW5 remained inoperable due to PLC signal issues, following pump replacement on October 10, 2022. RW3 continues to function normally. RW4 has been offline since August 17, 2022 with pump replacement pending.

During the month of December, the plant discharge was solely directed to Recharge Basin 33.

The total volume of treated water discharged from ~1000 hours December 1 to ~1230 hours January 3 was approximately 12,390,000 gallons. The data in **Table 2** is a summary of plant discharge flows.

A graphic representation of the system's daily plant discharge output is provided in **Figure 1** and the daily plant totalizer readings for December are provided in **Table 3**, both following the text of this report.

Under current conditions, the PLC and the control system are functioning as designed. Flows from the individual recovery wells are remotely read, transmitted, and totalized.

The flow summary for the individual components of the system can be found in **Table 4** at the end of this report.

7. CHEMICAL CONSUMPTION

The hydrochloric acid feed system is currently off-line, and the system is void of acid. There are four drums of virgin acid on site. No acid was used for water treatment purposes in December of 2022.

The sodium hydroxide storage system is currently not in use and the system is empty of caustic. There is no bulk sodium hydroxide on site and no caustic was used in December of 2022.

The sodium hypochlorite storage system is currently not in use and the system is empty of bleach. No bulk sodium hypochlorite is stored on site. No sodium hypochlorite was used in December of 2022.

8. WASTE DISPOSALS

Routine accumulation of waste materials continued from plant clean-up and organizational tasks. Waste removal is being handled by National Waste Services, LLC. Waste container was emptied on December 30, 2022.

9. MONTHLY DISCHARGE MONITORING REPORT

The GWTS is operated under an equivalency permit from the NYSDEC. **Table 5** presents the Claremont OU5 O&M Sampling and Measurement requirements and their frequency. The analytical results for the plant discharge sampling conducted on December 5, 2022 indicate that the analyzed parameters were compliant with permit limits (**Table 6**).

The OU5 GWTS plant's water discharge permit is in the process of being renewed by the NYSDEC.

10. PENDING ISSUES AND CONSIDERATIONS

Mechanical repairs have been made to the plant HVAC system at OU4. Upon testing, the gas supply appeared to be shut off. Ramboll is currently planning demolition of the OU4 building.

The sprinkler system at OU4 remains drained of water. The potable and non-potable water lines at OU4 have been drained.

The discrepancies/inaccuracies in the plant flow meter readings at OU5 may be due to the inappropriate configuration of the local piping. Future calibration or adjustment of pulse reading may be required.

Following PLC troubleshooting at RW5, a new replacement pressure switch was ordered for the pump wellhead.

RW4 needs a motor replacement following failure on August 17, 2022.

2.5-inch drain valve and piping at the plant discharge requires re-plumbing due to multiple small leaks across the PVC glued joints.

All three electric plant back-up heaters do not operate. Investigate and repair ASAP. The plant HVAC heat is currently operational, however during the recent cold weather, the system struggled to produce heat in the plant area.

Close all discharge lines at non-operational recovery wells (RW1, RW2, RW4 and RW5) in order to investigate pump check valve leakage from the main pipeline.

The OU4 plant is offline and its disposition including that of the injection well system, and vapor carbon beds is pending.

The status of key aspects of OU4 are as follows:

- The plant heat is currently off, and the system is out of service.
- The fire alarm panels are off-line.
- The fire sprinkler system is currently off-line. The water has been drained from the system. An alarm system for the sprinkler has been installed with central monitoring.
- The facility is secure, and its physical monitoring continues.
- The facility and grounds are not maintained except for the facility entrance and plant egress points.
- NYSDEC plans on decommissioning and demolishing OU4. A team from Ramboll is in the process of developing bid documents for this work.

11. PLANT DOCUMENTS

Procedures and standard forms are written, reviewed, and revised as needed. As-built drawings are generated and updated as necessary.

12. MONITORING RESULTS

The CPC GWTS is monitored through the analysis of off-site laboratory analytical data and on-site field data.

12.1 Off-site Analytical Data Results

Monthly Plant Discharge (PD) samples are taken for organic analysis in compliance with the NYSDEC discharge permit. Quarterly groundwater samples are taken for organic analysis, and quarterly process water (PW) samples are taken for organic, inorganic, and generic analysis. At the direction of the NYSDEC in an August 17, 2022 email, analysis of Per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane were added to monthly sampling for both influent and effluent for the foreseeable future. The December sampling activities included:

- The December PD data was processed and submitted.
- Quarterly system sampling for additional parameters and sampling of influent groundwater at RW3 and RW5 locations
- Quarterly groundwater elevation monitoring and groundwater sampling via low flow method and Passive Diffusion Bags (PDBs).

12.2 Field Data

12.2.1 Plant Discharge pH and Temperature

The treatment plant effluent is monitored for pH and temperature on a weekly basis to obtain a monthly average in compliance with the NYSDEC discharge permit requirements. These measurements are taken from the plant effluent at a controlled point with a calibrated portable meter. The plant discharge readings for December 2022 can be found in **Table 7** following the text of this report.

The December 2022 average pH measurement was 7.52 standard units (su). The NYSDEC discharge permit requires the plant discharge to have an average monthly pH between 6.5 and

8.5 su. The results for this month meet this requirement. Data showing the plant discharge's monthly average pH trend over several months is provided in **Table 8** following the text of this report.

12.2.2 Air Stripper (AS) Tower Air Monitoring

Using a calibrated photoionization detector (PID), the vapor discharge from the air stripper tower was monitored weekly for volatile organic compounds (VOCs). The measurements were taken from the tower's effluent air stream through Port B when the treatment system is online. The December 2022 readings from the AS tower are provided in **Table 9**.

Other routine data collected in December included:

- The electric and water meter readings at OU5 were recorded weekly.
- The plant vaults and selected areas were monitored for VOCs weekly.
- The plant sound levels were recorded bi-weekly.
- The monthly electric and gas meter readings for OU4 were recorded.
- The recharge basins were inspected weekly.
- The differential pressure readings across the AS Tower were recorded bi-weekly.

13. PROCESS ANALYSIS AND SYSTEM STATUS

The treatment system is currently operated 24/7 in the automatic mode. It is remotely monitored as necessary.

13.1 Extraction (RW) Processes

- The monthly system inspection was completed.
- The vault space heating units are active.
- The recovery well pump system is remotely controlled and monitored, it operates in the Auto mode. The pump at RW3 is online and fully functional. RW4 was fully functional until August 17, 2022 when it experienced a possible motor failure. RW5 experienced problems beginning on March 12, 2022, that left it inoperable through the end of October. New pump replacement was conducted on October 10, 2022, however, due to signal issues, the pump could not be operated in automatic mode. A new replacement pressure switch has been ordered and will be installed upon delivery.
- Pump flow readouts are transmitted to the plant and the totalizers for pumps RW3, and RW4 are fully functional. The flow meter for RW5 occasionally stops transmitting.
- Air/Vacuum (A/V) valve at station 33+96 encountered a leak in May that required the vault to be pumped out and have its air/vacuum valve removed. Currently a stopper has been fitted to the pit that allows water to flow through the system.
- The Air/Vacuum (A/V) valve at station 16+57 and 17+10 remain isolated from the transmission line.
- RW1 and RW2 are offline and periodically run for preventative maintenance purposes. Their flow meters are not transmitting through the PLC. When repairs were made at RW1 in November 2021, stones were removed from the flow meterhousing. There was a thick coating of iron salt deposits on the housing and impeller.

13.2 AS Process

- The three OU5 ASF pumps in the AS Process are fully functional.
- Motors and seals were lubricated on a bi-weekly schedule. Seals were tightened and the drains were cleared as necessary.
- The AS tower main drain valve's manual actuator is not functional (fail open).
- The tower media appears clean as the pressure differential between the top and bottom ports remains relatively constant. The lower section of media has been visually inspected.
- The discharge valves for ASF P1 and P2 appear to be frozen in the open position.

13.3 PD Process

- The plant discharge flow is currently directed to Recharge Basin 33.
- The valve influent to Recharge Basin 1 remains closed.
- Pump 1 has been taken out of service due to excessive noise and vibration. A full evaluation is required. Pumps 2 and 3 are fully functional.
- The motors and seals were lubricated as necessary.
- The discharge valve for PFF P3 has failed open.

13.4 Other

- The plant's first bank of lights is wired to the emergency-light recharging system. The circuit is kept on 24/7. The lamps appear burnt out. The second bank of lights provides sufficient lighting for general tasks. Additional work lights were installed around the plant area to further illuminate work areas.
- The potential for leaks in the water supply line running through the plant will continue to be monitored.
- The fire alarm and central monitoring systems are fully functional.

14. GROUNDS

14.1 Plant Perimeter

- General outdoor clean-up tasks are on-going.
- The fencing is clear and secure.

14.2 Well Field

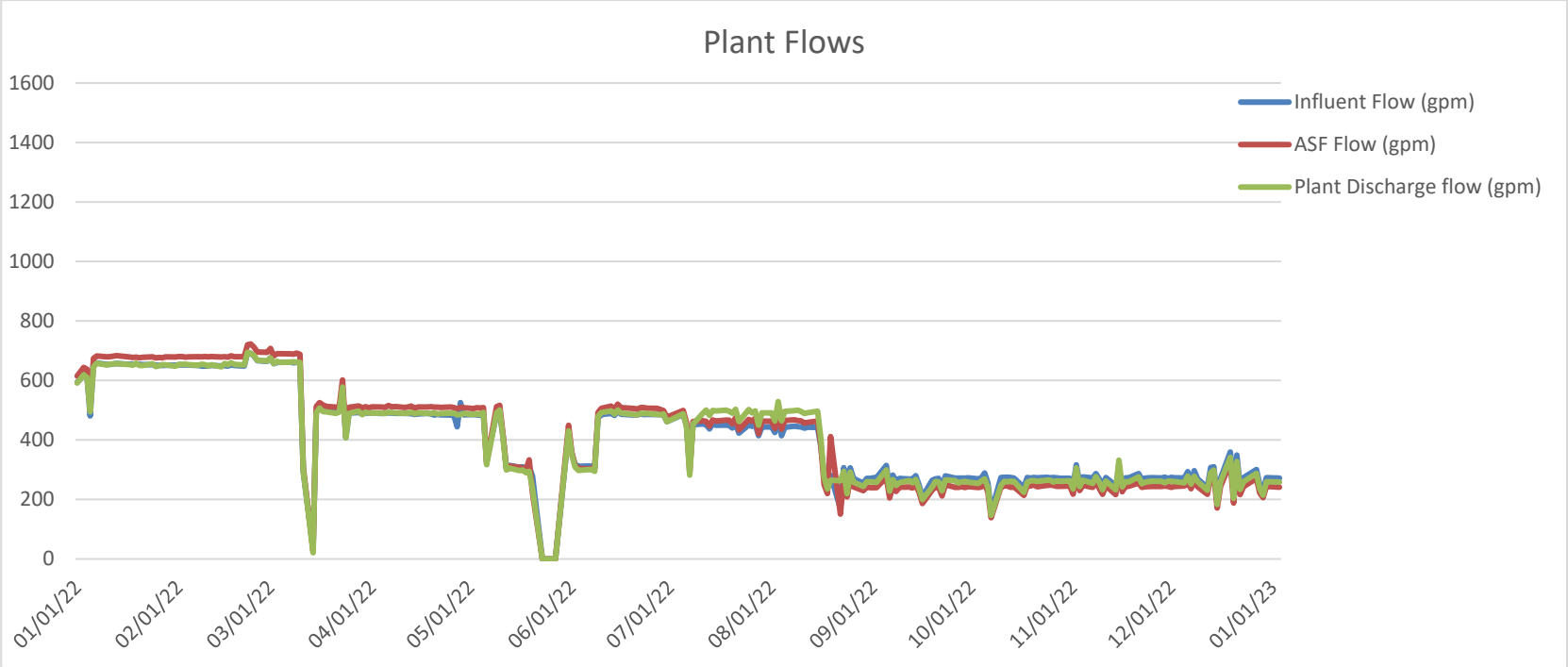
- Well field, and recharge basin inspections continue.

14.3 Other

- The CPC GWTF OU4 is secure.
- The property at and around the OU4 site continues to be inspected. While the grounds are not maintained, the treatment plant's entrance and egress points are kept clear and functional.

FIGURE

Figure 1
Plant Discharge Daily Flow



TABLES

Table 1
Claremont Corrective Actions Summary

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The RW Discharge Manifold integrity is suspect	<p>The condition of the various devices on the RW discharge manifold are suspect.</p> <p>The Air Vent valve in the vault on the N-side of the 6th fairway is leaking from the influent nipple. The shut-off valve was closed and the device isolated.</p> <p>The air-vent valve in the vault to the east of the 6th green is leaking. The shut-off valve was closed and the device isolated.</p> <p>The manifold employs isolation, venting, and drain valves as well as other devices. Along the path of the manifold are vaults which house some of these devices. These vaults need to be accessed, pumped out, and the devices tested.</p> <p>Two isolation valves were closed between RW1 and RW3. These valves seemed to hold.</p>	Plant staff and outside contractors	Possible shutdown	May require a Confined Space Entry (CSE)
AS Tower main drain valve is not controlled	<p>The valve does not respond to manipulation of its actuator.</p> <p><i>This valve should be replaced.</i></p> <p><i>No further action is planned at this time.</i></p>	Operator	Plant will need to be shut down to change out the valve	None

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
<p>OU4 fire alarm system is not functioning</p> <p>Central monitoring of the fire alarm system or fire suppression system does not exist</p> <p>OU4 electrical system has been unstable</p>	<p>The Nassau County Fire Code indicates that the sprinkler system must have central monitoring for flow and valve tampering.</p> <p>The fire alarm system needs to be replaced and centrally monitored.</p> <p>Several contractors have been at the site to propose options for the system.</p> <p>BK Fire installed central monitoring on the sprinkler system. Both are offline as the sprinkler system will remain drained until the HVAC system is repaired.</p> <p>Certain OU4 lights currently create a large amount of noise in the fan box within the control room. The southern lights flicker and then die including the emergency system.</p> <p>OU4 is currently being planned for demolition.</p>	<p>Plant operator, Electrical Engineer (EE) and outside vender</p>	<p>None at this time</p>	<p>Fire code violations. High altitude tasks, safety code violations</p>
<p>Several leaks were observed in the plant overhead water supply line</p>	<p>Adjacent to the north door a clam-shell type clamp was applied.</p> <p>The second leak observed above the AS Blower is not readily accessible. It is not problematic.</p> <p><i>Repair work may require evaluation and outside resources. Currently the situation is controlled.</i></p>	<p>Outside plumbing contractor</p>	<p>None</p>	<p>Sanitary water may be shut off during repairs</p>

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The float controls for the PFF pump system have intermittently shorted out causing the system to not properly control the pumping operation	<p>The wiring of the pump control system is connected below grade. The junction box in the wet well is thought to be filled with water creating a problem with the float switches to control relay wiring.</p> <p>The box cannot be opened without damage to it and the conduit. This appears to have been a longstanding problem, as when switches have been replaced in the past, they were spliced outside the box.</p> <p>The float switches have been replaced and spliced above the sump but there remains a problem with the L2 circuit.</p> <p>The output from the W-2 relay was moved to the output for the W-1 relay. This has stopped the short cycling.</p> <p><i>The control wiring should be changed and moved above grade. Currently the second splices to the floats are above ground outside the vault.</i></p>	Plant operator and GES resources	Plant shut down is required	Possible Confined Space Entry work
PFF P1 has failed	<p>The pump when activated immediately makes a lot of noise, and the pump drop pipe shakes. Smoke/fumes emanated at the Motor-shaft connection. The motor appears to be good.</p> <p>The pump was removed from service, 2/24/20.</p> <p><i>It is recommended that the motor be disconnected, lifted, and the mechanical connection checked.</i></p>	Outside contractors	None anticipated	To be determined

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
As the ASF pumps cycle off/on, the check valves have started to slam closed. When reactivating, the motor starter contact is rather violent. Both actions tend to rattle the piping and fixtures	<p>There is no available literature regarding the check valves, so the exact description of their functioning parts is to be determined.</p> <p>A softer start/stop control may fix this issue.</p> <p><i>This will need further investigation. Soft-start equipment and variable frequency controls were discussed.</i></p>	Plant operator and EE support	If replacement or repairs are necessary, a plant shutdown will be required as the units can- not be isolated	To be determined
The flowmeters for system flow, ASF flow and plant discharge are out of sync with the flow meters on the recovery wells	<p>While the ASF flow meter is the most out of line, it is plumbed correctly. The influent system flow meter and the plant discharge flow meters are piped incorrectly. The same style of relay is used to count pulses, but the meters have not been calibrated.</p> <p>The system needs further investigation to determine if any changes are warranted.</p>	EE support	To be determined	none
EF-4 is not operatable	<p>The fan is controlled through the mezzanine thermostat, but it does not appear to be operating.</p> <p>The fan requires electrical testing.</p> <p>The system was checked, it appears that the fan is not functioning. The fan should be replaced.</p>	EE support	Only in an emergency	Only in an emergency
Wiring nests in main control console	The wiring in the main control console needs to be cleaned up and labeled, to facilitate problem troubleshooting and process improvements.	EE support	A shut down may be necessary	Electrical work

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
Pressure Filter Feed pump controls	<p>With P1 out of service, the sequencing of pumps allows for the PFF vault to reach HHL conditions in certain circumstances.</p> <p>Reprogram the sequencing to eliminate the position of P1.</p>	EE support	To be determined	To be determined
RW5 has failed	RW5 pump was replaced on 10/10/2022, however due to PLC signal loss, it cannot be operated in automatic mode. GES conducted troubleshooting and parts replacement without success. System controls were examined by a PLC certified technician mid-December and determined pressure switch failure. New device has been ordered.	Plant Operator and Ramboll.	Less water is treated	To be determined
RW4 has failed	RW4 started to experience possible motor thermal overload shut downs on multiple occasions during August monitoring period. The pump motor fully shut down on 8/17/2022 and all troubleshooting/restarting attempts were unsuccessful. The motor will need to be removed and replaced to restore functions.	Plant Operator and US Water	Less water is treated	To be determined
Air vacuum valve removal	On 5/22/22 RW4 was shut down due to a leak detected in the field near an air/vacuum valve pit. On 5/24/22-5/25/22 water was pumped out of the vault and on 5/31/22 a confined space entry was made to attempt to tighten the valve in an effort to stop the leak. This tightening was unsuccessful and the valve was removed entirely and replaced with a blank flange until further notice.	GES Mechanical Support	Less water is treated	Confined space entry required to do work in vault
Small leaks at PFF discharge pipe drain line	Small leaks observed at the 2.5-inch diameter PVC drain piping and ball valve. Replacement and transition to brass valve is recommended.	Plant Operator	Failure of glue points, may cause catastrophic failure in the future.	Slip hazards

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
Plant Electric Heater UH-3 failure and HVAC system performance	During sub-20 deg.F weather, the emergency electric heater failed. The HVAC system struggled to produce heat and the plant temperatures dipped to around mid-30's during that time.	Outside contractor	Water lines freezing	Equipment damage

Other Plant Conditions of Note (no action required at this time)

- The methane detection system is offline. **To function, it will need a technical inspection and maintenance.** However, methane does not currently appear to be a hazard
- It has been determined that intrinsically safe components are no longer required in the plant
- There has been no need for acid washing of the AS Tower media, the hydrochloric acid feed and storage system have not been operated. The tanks have not been filled and the level monitoring system has not been operated.

As previously noted, there are pieces of equipment that are out of service and require repairs. Currently there are no plans for addressing these conditions as the operation of this equipment is not necessary or needed for the operation of the treatment system.

Equipment	Fault	Status
Plant electric heater UH-1	Needs transformer	Heater is not needed
Plant electric heater UH-2	Needs relay timer and wiring repairs	Heater is not needed
Recovery well pump pressure switch assembly	Units are unwieldy and subject to vibration, corrosion, and leaks	Each unit requires assessment and disposition
NaOH sump pump	Pump is not operating	No water or chemicals stored in vault. Portable submersible pump in sump should suffice
Plant lights are wired to the emergency light charging system	Un-segregated light cannot be shut off. Several of the lamps may have burnt out	The bank of lights appear to have failed/burnt out. The second bank of lights are sufficient
Plant exhaust fans are part of methane system	Fans cannot be manually operated	Once the methane monitoring system is online, the fans can be operated
Plant discharge drain	Leak in Victaulic fitting	Drain line on plant discharge intermittently leaks. Parts are in-house. Not pressing
ASF pump isolation valve	Valve P1 has failed open	Not needed at this time
PFF pump isolation valve	Valve P3 has failed open	Not needed at this time
RW1 flow meter	The meter is not operating	Pump is offline. Rocks were pulled from the housing and iron sediment was encrusting the

Equipment	Fault	Status
		flow meter impeller and housing
RW2 flow meter	The meter is not transmitting	Pump is offline
Air stripper flow meter	Non-functional and removed	
AH-1 condenser	Air conditioner is non-functional	Two window AC units in place
Plant outdoor lights	9 of 12 lights not functioning	Not a security issue

Table 2
Plant Discharge Average Flow & Volume

Period	Average Flow (gpm)	Average Daily volume (gal)	Total Period Flow (gal)	Min off	Min on
Q4 2016	517	745,000	68,540,000	7,309	125,171
Q1 2017	520	748,244	67,342,000	655	128,945
Q2 2017	576	829,130	76,280,000	6,165	126,315
Q3 2017	634	913,576	84,049,000	1,110	131,370
Q4 2017	256	368,762	33,926,110	69,165	63,315
Q1 2018	53	75,989	6,839,000	118,180	11,420
Q2 2018	179	258,284	23,762,103	102,929	29,551
Q3 2018	504	725,280	66,725,717	57,416	75,064
Q4 2018	726	1,045,065	96,145,984	23,734	108,746
Q1 2019	527	758,467	68,262,000	735	128,865
Q2 2019	662	953,877	87,756,724	405	132,075
Q3 2019	685	985,802	90,693,740	108	132,372
Q4 2019	655	943,871	82,116,780	5,039	129,326
Q1 2020	480	682,527	62,110,000	1,824	129,326
Q2 2020	698	996,998	88,732,846	3,838	127,185
Q3 2020	669	955,928	87,945,333	1,099	131,401
Q4 2020	695	1,001,365	92,125,539	52	132,497
Q1 2021	708	1,019,733	91,776,000	0	129,603
Q2 2021	709	1,021,317	92,939,850	0	131,040
Q3 2021	615	884,934	81,413,897	0	132,475
Q4 2021	677	928,370	85,410,047	6,317	126,185
Q1 2022	633	1,291,661	80,082,987	5,280	124,320
Q2 2022	434	624,605	53,716,000	12,200	123,840
Q3 2022	365	514,501	46,283,000	3,004	124,994
Q4 2022	257	369,307	34,007,000	491	132,154

Acronyms: gal - gallons gpm – gallons per minute

Table 3
Plant Daily Totalizer Readings

December 2022 Flows						
Plant Influent			Plant Discharge		RW Discharge	
Date	Volume	Avg. Flow	Volume	Avg. Flow	Volume	Avg. Flow
12/01/22	-	244	-	262	-	271
12/02/22	347,000	241	376,000	261	395,000	274
12/05/22	1,038,000	244	1,107,000	260	1,163,000	273
12/06/22	353,000	245	369,000	256	392,000	272
12/07/22	368,000	245	401,000	267	423,000	282
12/08/22	354,000	246	378,000	263	382,000	265
12/09/22	382,000	245	400,000	256	427,000	274
12/12/22	1,005,000	243	1,078,000	260	1,117,000	270
12/13/22	339,000	246	361,000	262	374,000	271
12/14/22	381,000	244	400,000	256	424,000	272
12/15/22	440,000	249	466,000	263	483,000	273
12/16/22	303,000	246	325,000	264	339,000	276
12/19/22	1,051,000	243	1,120,000	259	1,169,000	271
12/20/22	398,000	246	420,000	259	442,000	273
12/21/22	305,000	242	330,000	262	340,000	270
12/22/22	396,000	244	413,000	255	440,000	272
12/23/22	351,000	244	379,000	263	389,000	270
12/27/22	1,330,000	244	1,417,000	260	1,492,000	273
12/28/22	389,000	245	414,000	260	433,000	272
12/29/22	353,000	245	376,000	261	396,000	275
12/30/22	297,000	241	309,000	251	332,000	270
01/03/23	1,455,000	244	1,551,000	260	1,632,000	273
December Total Plant Influent (Gal)			11,635,000			
December Total Plant Effluent (Gal)			12,390,000			
December Total RW Discharge (Gal)			12,984,000			

Acronyms: gal - gallons

gpm – gallons per minute

Table 4
Pump System Flow Readings

December	On-Time Minutes (actual)	Avg. Flow (gpm)	Avg. Flow (gpd)	Total Flow (gal)
RW1*	0	0	0	0
RW2*	0	0	0	0
RW3	47,670	254	367,636	12,132,000
RW4	0	0	0	0
RW5	5 (manual)	0	0	2,000
RW Totals	47,670	272	393,455	12,984,000
Plant Influent	47,670	244	352,576	11,635,000
Plant Effluent	47,670	260	375,455	12,390,000

Acronyms: gal - gallons gpm – gallons per minute gpd – gallons per day

The treatment process was online 33 days during this period with 0 minutes of downtime. Flows are taken from the HMI meter readings.

* Offline aside from monthly process equipment test to check their functionality. There are no average gallons per day.

Table 5
Claremont OU5 O&M Sampling/Measurement Program and Frequency

Measurement / Analyte	Sampling Location			
	System Influent	Plant Discharge	Recovery Wells	Monitoring Wells
Flow	Daily	Daily	Daily	NA
pH	Quarterly	Weekly	Quarterly	Quarterly
VOCs (+Tert-Butyl-Methyl ether (MTBA) & Tert-butyl alcohol (TBA))	Quarterly	Monthly	Quarterly	Quarterly
Semi-Volatile Organic Compound (SVOC) Base Neutral & Acid Extractables (BNA)	Quarterly	Monthly	NS	NS
Per- and polyfluoroalkyl substances (PFAS)	Monthly	Monthly	NS	Quarterly ⁽¹⁾
1,4-Dioxane	Monthly	Monthly	NS	Quarterly ⁽¹⁾
Total Kjeldahl Nitrogen→ (TKN)	NS	Quarterly	NS	NS
Total Suspended Solids (TSS)	Quarterly	NS	Quarterly	NS
Total Organic Carbon (TOC)	Quarterly	NS	NS	NS
Total Dissolved Solids (TDS)	NS	Quarterly	NS	NS
Cyanide	NS	Quarterly	NS	NS
Hexavalent Chromium	NS	Quarterly	NS	NS
Mercury	NS	Quarterly	NS	NS
Metals	Quarterly	Quarterly	Quarterly	NS
Anions	NS	Quarterly	NS	NS

Notes: NA – Not applicable; NS – Not sampled. ⁽¹⁾ – CPC wells only

Table 6
Plant Discharge Analytical Results
December 5, 2022

Parameters	Discharge Limitations (SPDES)	Units	Results
<i>pH (range)</i>	6.5 – 8.5	<i>su</i>	7.52
1,1,1-Trichloroethane	5	ug/l	U
1,1-Dichloroethane	5	ug/l	U
1,1-Dichloroethylene	5	ug/l	U
1,2- Dichloroethane	0.6	ug/l	U
Benzene	0.7	ug/l	U
Chlorobenzene	5	ug/l	U
Chloroform	7	ug/l	U
CIS 1,2-Dichloroethylene	5	ug/l	U
Ethylbenzene	5	ug/l	U
Methylene Chloride	5	ug/l	U
Tert-butyl alcohol (TBA)	Not indicated	ug/l	U
Tert-Butyl-Methyl ether (MTBA)	5	ug/l	U
Tetrachloroethylene (PCE)	5	ug/l	U
Toluene	5	ug/l	U
Trans 1,2-Dichloroethylene	5	ug/l	U
Trichloroethylene (TCE)	5	ug/l	U
Bis(2-ethylhexyl) phthalate	5	ug/l	U
Di-n-butyl phthalate	50	ug/l	U
Nitro Benzene	0.4	ug/l	U
Perfluorooctanoic acid (PFOA)	NL	ng/l	50
Perfluorooctanesulfonic acid (PFOS)	NL	ng/l	21
1,4-Dioxane	NL	ug/l	33
Antimony, Total recoverable	3	ug/l	U
Arsenic, Total recoverable	50	ug/l	U
Barium, Total recoverable	2000	ug/l	U
Chromium, Hexavalent	100	ug/l	U
Lead, Total recoverable	50	ug/l	U
Iron, Total recoverable	600	ug/l	U
Manganese, Total recoverable	600	ug/l	200
Mercury	Not indicated	ug/l	U
Zinc	Not indicated	mg/l	0.012
Nitrogen, Total (as N)	10	mg/l	8.8
Selenium, Total recoverable	40	ug/l	U
Solids, Total Dissolved	1000	mg/l	210

Parameters	Discharge Limitations (SPDES)	Units	Results
Chloride Ion	NL	mg/l	130
Cyanide	Not indicated	ug/l	U
Fluoride Ion	NL	mg/l	U
Sulfate Ion	NL	mg/l	24
<p>J – Estimated value U – Analyzed but not detected NL – Monitor only NS– Not sampled SPDES – State Pollutant Discharge Elimination System ug/l – micrograms per liter ng/l – nanograms per liter mg/l – milligrams per liter Discharge limitations updates as per the water discharge permit. Note: Parameters shaded in gray are analyzed quarterly with results generally being provided March, June, October, and December.</p>			

Table 7
Effluent pH and Temperature Readings

Date	pH (su)	Temp (° C)
12/05/2022	7.67	16.2
12/12/2022	7.52	9.2
12/21/2022	7.39	10.9
12/30/2022	7.48	15.3
October Average	7.52 su	12.9 °C

Table 8
Plant Discharge Monthly Average pH

Month	pH(su)
Aug '19	6.56
Sept '19	7.45
Oct '19	6.86
Nov '19	6.88
Dec '19	6.84
Jan '20	6.63
Feb '20	6.75
Mar'20	6.74
Apr '20	6.65
May '20	6.8
June '20	6.8
July '20	6.9
Aug '20	6.8
Sept. '20	6.8
Oct. '20	6.95
Nov. '20	6.8
Dec '20	6.64
Jan '21	6.8
Feb '21	6.75
Mar '21	6.76
Apr '21	7.28
May '21	7.53
June '21	7.44
July '21	7.41
Aug '21	7.42
Sept '21	7.13
Oct '21	7.10
Nov '21	7.09
Dec'21	7.01
Jan '22	6.90
Feb '22	6.90
Mar '22	6.80
Apr '22	6.78
May '22	6.79
June '22	6.79
July '22	7.01
August '22	6.99
September'22	7.19
October'22	7.62
November'22	7.68
December'22	7.52

Plant Discharge Monthly Average pH Readings

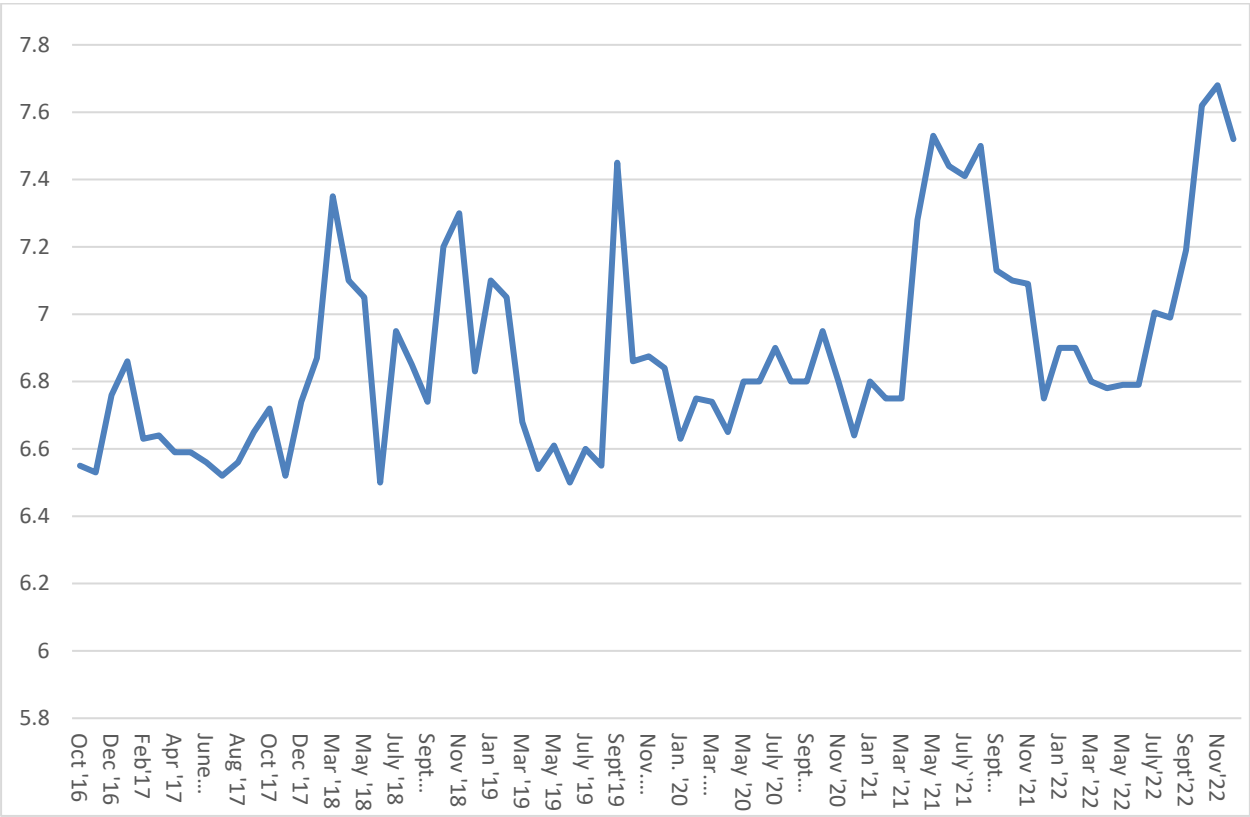


Table 9
AS Tower Air Monitoring Readings

Recorded Date	Port B (ppm)
12/02/2022	0.1
12/06/2022	0.0
12/12/2022	0.0
12/22/2022	0.0
12/28/2022	0.1
01/03/2023	0.0