Monthly Report of the Operations & Maintenance Activities

Claremont Polychemical Operable Unit 5

Groundwater Treatment System

Old Bethpage, New York
November 2019

NYSDEC Standby Engineering Contract
Work Assignment #D0076025-28

Prepared for
NYS Department of Environmental Conservation
625 Broadway
Albany, New York 12233

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

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ACRONYMS AND ABBREVIATIONS

AS	air stripper
ASF	air stripper feed
BSP	Bethpage State Park (Black Golf Course)
CPC	Claremont Polychemical
CSE	confined space entry
DOSR	daily operations summary report
DTB	depth to bottom
DTW	depth to water
EFF	effluent
EON	EON Products, Inc.
ESS	Environmental Sampling Supply
Fed Ex	Federal Express
GPD	gallons per day
GPM	gallons per minute
GW	groundwater
GWTS	groundwater extraction, treatment, and reinjection system
HCl	hydrochloric acid
HDR	Henningson, Durham & Richardson Architecture and Engineering, P.C.
HHL	High-high level
INF	influent
LOTO	Lock-out, tag-out
MW	monitoring well
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance
OBL	Old Bethpage Landfill
OU4	Operable Unit 4
OU5	Operable Unit 5
PDB	Passive Diffusion Bags
PD	plant discharge
PFOA	Perfluorooctanoic Acid and related perfluorinated alkyl substances
PFOS	Perfluorooctanesulfonic Acid
PID	photo ionization detector
PSEG	Public Service Enterprise Group, electrical power supplier
PW	process water
RAP	Remedial Action Plan
RW	Recovery well, process well
SOP	standard operating procedure
SSHP	site safety and health plan
SU	standard pH units
TA	TestAmerica Laboratory
TOB	Town of Oyster Bay
TOBAY	Town of Oyster Bay
UPS	United Parcel Service
VAC	Vapor phase activated carbon
VOCs	volatile organic compounds

1 OPERATION AND MAINTENANCE ACTIVITIES

Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) continued the daily operation and maintenance (O&M) of the Claremont Polychemical Superfund Site Groundwater Treatment System (GWTS) Operable Unit 5 (OU5) during the month of November. This report covers the operation and maintenance activities for the system during the period defined as beginning at 0730 hours, November 1, 2019 through 0730 hours, December 1, 2019. 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 30 days in this reporting period during which the treatment system experienced 4478 minutes of downtime due to the loss of an incoming power supply phase. The plant was restarted once power was restored but the pump for RW-3 would not engage and was offline for 25110 minutes while repairs were made.

Readings of the key plant process parameters are normally recorded each work day. (When the plant is not occupied, the system is monitored remotely). These readings and the 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 document folder.

The treatment process control and alarm systems are fully functional. The recovery well pumps and the process pumps are operated in the automatic mode and are remotely controlled and monitored.

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 (Form-01)
Daily Process Data Sheet – point process readings (Form-30)
Daily Safety and Site Inspection – plant condition checklist (Form-02)
Daily Plant Activity Notes – plant manager's daily summary (Form-03)
Employee Sign-In Sheet – employee on-site hours (Form-15)
Logbook – plant operator's daily log book (CPC 5-7)
Daily Database – daily process readings (11 November 19 Database.xlsx)

1.2 SUMMARY OF MAINTENANCE ACTIVITIES

The maintenance of the treatment system, facility, and associated equipment is performed in accordance with the site GWTS O&M Manual.

The maintenance, operation, and inspection of the plant incorporates the equipment manufacturers' recommendations, operations experience, and good engineering and maintenance practices. A detailed accounting of the November activities is further provided in the plant operator's daily log book.

Maintenance and project activities completed during November included:

- Routine and general maintenance tasks were conducted at the plant, on the grounds and in the well fields.
- The AS Tower was opened to check drainage and valve position – OK.
- The overgrown brush at the backflow preventer vault was cleared. The device was inspected – it failed. A repair proposal is pending.
- The strainer on the AST feed was cleaned
- The plant was restarted after the power outage, RW-3 failed to start. Tests were run, an overload heater was replaced - NG. The motor starter contact block was replaced. The overload block was replaced. This worked and the pump was returned to service.
- The pressure switch was checked at RW-3. It did not trip during the power failure.
- A spare sump pump was re-wired.
- The lamp at the north door exit light was replaced.
- Water was added to the Lab e-light and the unit re-charged.
- The exterior light timer control was reset. The clock mechanism is not working.
- The plant heat was tested.
- The heater was activated at OU4.
- The vault heaters were engaged at the Recovery Wells.
- The multi-gas meter was calibrated for potential CS entry at RW-3.
- A run to Home Depot was made to pick up supplies.
- Door pulls were installed on the RW-3 and RW-5 shed doors.
- The Recovery Well System monthly inspections were completed.
- Insulation bats were added to the AST sight glass enclosure.
- The monthly equipment function tests were completed.
- The Vault at Basin 33's valve was checked. Flow continues to be experienced when the PD is off and the valve is closed.
- The monthly truck inspection was completed.
- Trees were cut down at the incoming natural gas supply pad at OU4.
- The ASF pumps were manually rotated.

1.3 MAINTENANCE LOGS

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

- CL-43 Field Support Log
- CL-47 Misc. Projects Field Notebook (PET)
- CPC 5-4 Project Support Log Book (site)
- CPC 5-7 Site Supervisor's Daily Log Book (PET)

The completed log books associated with the project (with the exception of books CPC-1 and 6) have been scanned, all are in storage at OU-5, and are available for review.

2 TECHNICAL SUPPORT ACTIVITIES

2.1 HDR Personnel

- HDR maintained the plant throughout the period.
- Various personnel at the Mahwah, NJ, New York, NY, and Newark, NJ offices remotely provided oversight, guidance and technical expertise for the project.
- Ian Denholm remotely assisted in the diagnosis of the RW-3 pump issues.
- 11/18, Ed Chappell was in to assist with the RW-3 pump issues.
- 11/21, Brian Montroy, was in to check local drill sites.
- 11/21, Derek Matuszewski was in to check the drill sites. He returned 11/26 to meet with the surveyors and to distribute information fliers.

2.2 NYSDEC Personnel, sub-contractors and other visitors

- 11/4 PSEG-LI was onsite at BSP and OU5 in order to reset the incoming circuit breaker.
- 11/4, Backflow Specialists were in to inspect the OU4 unit.
- 11/13, National Grid was in to read the gas meter at OU4.
- 11/13, Ken-Mar was in to inspect the fire extinguishers at OU4 and OU5.
- 11/14, TA-NY picked up the PW samples and returned for more 11/20.
- 11/22, Valerie Egan (NCDPW) was in to confirm schedule, returned 11/25 to open BP wells.
- 11/25, Mets was in to empty dumpster.

2.3 Deliveries

- 11/7, UPS delivered the InkTech order.
- 11/11, TA-NY delivered the sample bottle order.
- 11/21, UPS delivered the EON order.

3 HEALTH AND SAFETY

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

- Daily site safety inspections were completed as part of the routine O&M activities.
- The OU4 comprehensive site and safety inspection was completed, 11/21 with nothing new to note.
- The OU5 comprehensive site and safety inspections were completed, 11/23 with nothing new to note.

There were no other safety issues of note in November.

4 PLANNED ACTIVITIES AND SCHEDULES

The evaluation of the plant operating system and equipment is ongoing. A list in the form of

corrective actions or maintenance tasks has been generated as is 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 the text of this report as Table 6 – Claremont Corrective Action Summary.

Upcoming tasks include:

- The next quarterly groundwater elevation survey is scheduled for 12/5.
- The quarterly groundwater sample task is scheduled for the week of 12/9.
- The monthly plant discharge samples are scheduled for 12/19.
- The GW samples from the additional BP wells are scheduled for 12/17.
- The demolition of the OU4 plant is awaiting NYSDEC approval.
- Two bids were obtained for the repair of the OU5 smoke detectors. A third contractor was contacted and has been unresponsive. The lowest bidder will be contracted to replace the smoke detectors and address the alarm.

5 MONITORING WELL WATER ELEVATIONS

The monitoring well system's groundwater level elevation data table was updated after September's GW sampling event. This database is available for review. The next synoptic water level round will be scheduled for December, prior to the quarterly groundwater sampling task.

6 TREATMENT SYSTEM FLOWS

The volume of treated water discharged by the treatment plant to the selected recharge basin is generally determined daily from readings of the plant effluent flow meter output. During the November period, the HMI readings were recorded. The plant continued to operate in the auto mode. The plant experienced a power interruption at the end of October and the system was down for an additional 4478 minutes in November.

The total volume of treated water discharged from 0730 hours on November 1, to 0730 hours on December 1, was ~22,019,360 gallons. The data in Table 1 shows selected monthly flows discharged from the plant.

A graphic representation of the system's daily plant discharge output is provided in Figure 1 and the daily plant totalizer readings for November are provided in Table 4, both following the text of this report.

Table 1 – Flow Average and Volume Discharged

Month	Flow Average (gpm)	Average Volume Discharged per day (gal)
October '16	618	889,903
December '16	442	636,516
March '17	565	814,097
June '17	569	820,033
September '17	624	899,233
December '17	96	138,839

Month	Flow Average (gpm)	Average Volume Discharged per day (gal)
March ‘18	641 (while operating)	241,778 (for days online)
June ‘18	947 (9856 min. online)	444,291 (for 21 days online)
September ‘18	793 (38,439 min. online)	1,129,630 (27 days online)
December ‘18	269	387,581
January ‘19	567	816,613
February ‘19	456	657,321
March ‘19	550	791,677
April ‘19	689	991,754
May ‘19	649	926,035
June ‘19	678	976,567
July ‘19	687	988,323
August ‘19	688	992,968
September ‘19	680	975,233
October ‘19	687	980,742
November ‘19	568	816,000

Under current conditions, the PLC and the control system are stable and fully functional. Flows from the individual recovery wells are remotely read, transmitted, and totalized.

During November, the treated water was discharged directly to Recharge Basin 1 on the landfill property. The flow to Recharge Basin 33 on Winding Road was redirected after the park’s irrigation season ended in October.

The flow summary for the processes can be found in Table 5 at the end of this report.

7 CHEMICAL CONSUMPTION

The hydrochloric acid feed system is currently off line and the system is empty of acid. There are four drums of virgin acid on site. No acid was consumed in November.

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 consumed in November.

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 consumed in November.

8 WASTE DISPOSAL

There were no wastes disposed of in November.

9 MONTHLY DISCHARGE MONITORING REPORT

The GWTS is operated under an equivalency permit from the NYSDEC. A review of the analytical results for the November plant discharge samples indicated all analyzed parameters were compliant with permit limits. These results can be seen in Table 7 following the text of this report.

The plant's water discharge permit is in the process of being renewed.

10 PENDING ISSUES AND CONSIDERATIONS

There was a loss of phase on the incoming power supply. This happened overnight, (10/31-11/1). Full power was not restored until 11/4. The function of the pump for RW-3 was restored 11/18.

Remote access to the control system HMI is not functioning due to a non-stable IP address being generated.

Inspections of the CPC property and discharge basins will continue.

The repairs to the OU5 fire alarm open loop are to be scheduled.

The plant lights are kept on overnight because the plant lighting and emergency lighting are wired to the same circuit breaker (sole switch).

The OU4 plant is offline and demolition is to be scheduled.

Removal and disposal of vapor phase activated carbon at OU4 is to be scheduled.

The status of key aspects of OU4 are as follows:

- The plant heat is on.
- The fire alarm panels are offline.
- The facility is secure and physical monitoring continues.
- The facility is not maintained.

11 PLANT DOCUMENTS

Procedures and standard forms are written, reviewed, and revised as needed. As-built drawings are generated and updated as necessary. This activity for November included:

- Form-33, Monthly Task Checklist was updated to rev. B
- Form-17, Maintenance Log was revised to rev. D

12 MONITORING RESULTS

The Claremont Polychemical 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 PD samples are taken for organic analysis in compliance with the NYSDEC discharge permit. Quarterly groundwater (GW) samples are taken for organic analysis, and quarterly process water (PW) samples are taken for organic, inorganic, and generic analysis. The November sampling activities included:

- The October PD data was processed and submitted.
- The CN sample bottles were prepared with caustic.
- The PW samples were collected at RW-4 and RW-5 on 11/12. The plant PW samples were collected 11/13 and 14. All were shipped 11/14.
- The PW samples were collected at RW-3 on 11/19 and shipped 11/20.
- PDBs were installed in the additional BP wells 11/26, and the water levels were recorded.
- The BP-GW and plant discharge samples were scheduled for a 12/19 pick-up.

12.2 Field Data

Plant Discharge pH and Temperature

Treatment plant effluent is monitored for pH and temperature on a weekly basis in order to obtain a monthly average in compliance with the NYSDEC discharge permit requirements. These readings are taken from the plant effluent at a controlled point with a calibrated portable meter. The plant discharge readings for November can be found below in Table 2.

Table 2 – Effluent pH and Temperature Readings

Date	pH (su)	Temp °F
11/5	7.4	59
11/12	68	56
11/19	6.6	56
11/26	6.7	56
November Average	**6.88 su**	**57°F**

The NYSDEC discharge permit requires the plant discharge to have an average monthly pH between 6.5 and 8.5 standard units (su). The results for this month meet this requirement. A graph showing the plant discharge's monthly average pH trend over several months is provided in Table 8 following the text of this report.

AS Tower Air Monitoring

Using a calibrated PID meter, weekly air monitoring readings are taken from the effluent air stream of the AS Tower through Port B when the treatment system is online. The November readings from the AS tower are provided in Table 3.

Table 3 – AS Tower Air Monitoring Readings

Date	Port B
11/5	0
11/13	0
11/19	0
11/26	0

There were no emissions from the Air Stripping System observed this month. No emissions have been detected since HDR began operation of the plant in October of 2016.

Other routine data collected in November included:

- The electric and water meter readings were recorded weekly.
- The plant sound levels were recorded bi-weekly.
- The electric and gas meter readings for OU4 were recorded monthly.
- The water levels in Sumps 3 and 4 were monitored.
- The recharge basins were inspected and the water levels noted.
- 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 automatic mode.

13.1 Extraction Processes

- The monthly inspection of the RW systems was conducted. Several components for the pump controls at RW-3 were replaced. The system is now fully functional.
- The pump system is operated automatically and is remotely controlled and monitored. The pumps at RW-1, -2, -3, -4, and -5 are fully functional.
- Pump flow readouts are transmitted to the plant and the totalizers for 3, 4, and 5 are fully functional.
- The A/V valve at station 16+57 remains isolated from the transmission line.
- The A/V valve at station 17+10 remains isolated from the transmission line.
- RW-1 and RW-2 are off line and periodically run for PM purposes. The flow meters are not transmitting.
- The vault heaters have been shut off and panel heaters are active.

13.2 Air Stripping Process

- The three AS feed pumps are fully functional and are operated in the auto mode off the wet well level switches. The pumps have been coded to rotate into service. The lead pump does not keep up with influent flow and therefore it does not shut off. This requires occasional manual rotation of the pump.
- The screen in tower influent line was cleaned.
- The AS tower main drain valve 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. Analysis of the sampling data indicates that little iron is getting into the system.
- The discharge valve for ASF P1 appears to be frozen in the open position.

13.3 Plant Discharge Process

- The three plant discharge pumps are fully functional. The pumps have been coded to automatically rotate into service.
- The control and monitoring systems are fully functional.
- The plant discharge continues to be directed to Recharge Basin 1. Currently no discharge is going to Basin 33.
- The discharge valve for PFF P2 appears to be failing in the open position.
- Pump 2 continues to occasionally trip.

13.4 Other

- The Auto-dialer is fully functional.
- The plant's first light bank is wired to the e-light recharging system, therefore the circuit must be kept on. The light activity is intermittent.

14 GROUNDS

14.1 Plant Perimeter

- General outdoor clean-up tasks are on-going.
- The back lot was cleared for cascade Drilling equipment staging.
- Five of the outdoor building lights are out but should not impact safety or security.
- The TOB continues to maintain the grounds along the plant perimeter.

14.2 Well Field

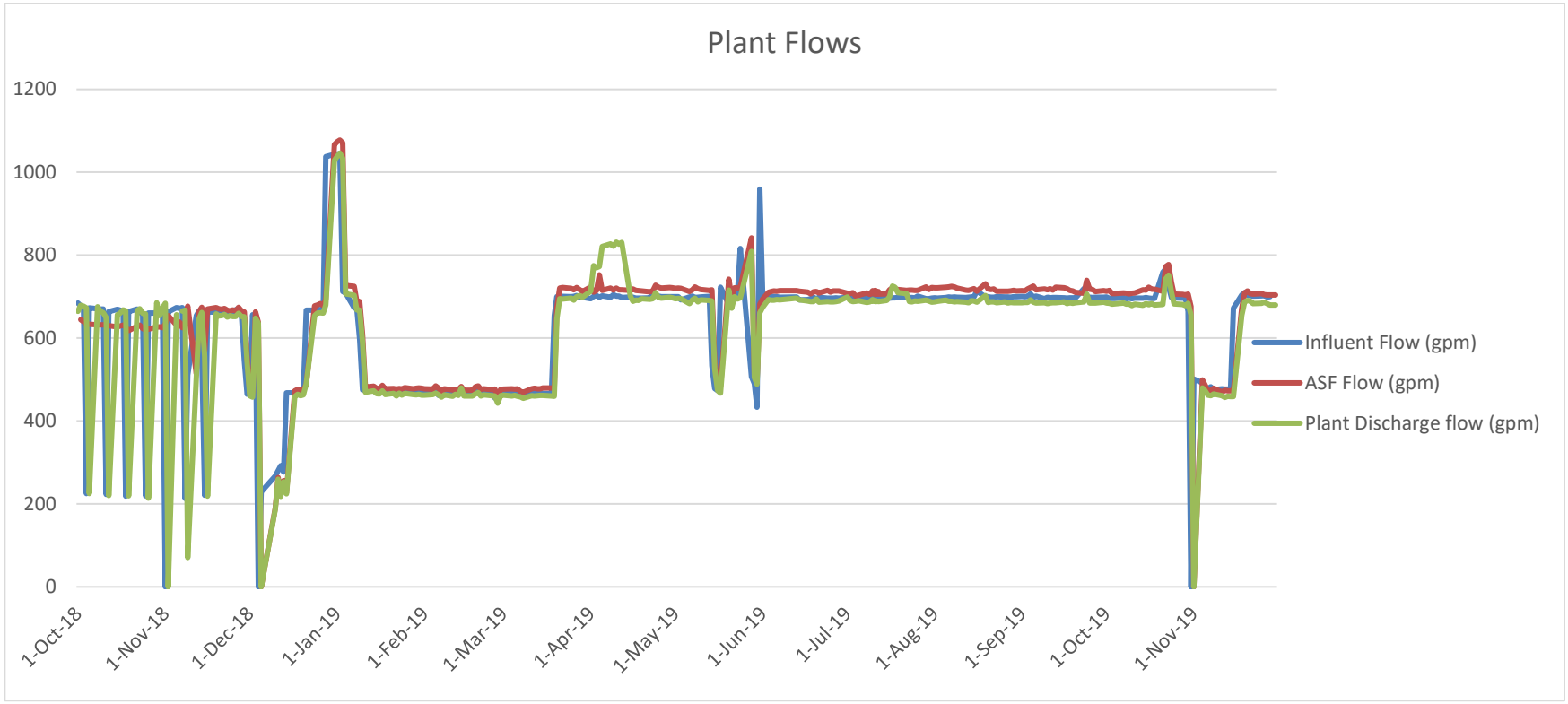
- PDBs were installed in the additional BP wells for GW sampling.
- Well, well field, and basin inspections continued. The wells and basins are secure.
- The well access paths are relatively clear, downed trees and overgrowth are removed as necessary.

14.3 Other

- The grounds continue to be inspected but not maintained at OU4.
- The Claremont site is currently accessible and there is a tenant on the property.

FIGURES

Figure 1 – Plant Discharge Daily Flow



TABLES

Table 4 – Plant Daily Totalizer Readings

November 2019 Flows				
	Plant Influent		Plant Discharge	
Date	Volume	Avg. Flow	Volume	Avg. Flow
1-Nov-19	0	0	0	0
4-Nov-19	670000	465	641000	445
5-Nov-19	709000	492	682000	474
6-Nov-19	675000	469	654000	454
7-Nov-19	698000	485	674000	468
8-Nov-19	2145000	497	2069000	479
11-Nov-19	621000	431	602000	418
12-Nov-19	698000	485	668000	464
13-Nov-19	675000	469	650000	451
14-Nov-19	690000	479	664000	461
15-Nov-19	2056000	476	1981000	459
18-Nov-19	974000	676	949000	659
19-Nov-19	1008000	700	984000	683
20-Nov-19	1029000	715	1002000	696
21-Nov-19	1008000	700	988000	686
22-Nov-19	3033000	702	2948000	682
25-Nov-19	1014000	704	989000	687
26-Nov-19	1016000	706	994000	690
27-Nov-19	971000	674	944000	656
28-Nov-19	2161000	1501	2102000	1460
30-Nov-19	859000	597	834360	579
Nov. Total Plant **Influent** (Gal)				22,710,000
Nov. Total Plant **Effluent** (Gal)				22,019,360

Readings from HMI digital outputs

Table 5 – Pump System Flow Readings

November	On-Time Minutes (actual)	Avg. Flow (gpm)	Avg. Flow (gpd) (over 31 days)	Total Flow (gal)
RW-1	8	210	-	1680
RW-2	7	230	-	1610
RW-3	18090	264	367,411	4,776,339
RW-4	38722	244	349,548	9,437,799
RW-5	38722	207	297,040	8,020,081
Plant Influent	38722	586	841,111	22,710,020
Plant Effluent	38722	568	816,000	22,019,360

The treatment process was online 27 days in November. Flows are taken from the HMI meter readings. There was 4478 minutes of downtime.

Table 6 – Claremont Corrective Actions Summary

Conditions of note and corrective actions planned 11/29/19

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
Plant heaters UH-1 and UH-2 are not working	UH-2 - needs a timer relay and wiring repairs at the unit. UH-1 – needs a transformer. It should be noted that the heating system AH-2 is adequate to heat the process area. **No further action is planned at this time**	Electrical and/ or plant personnel	Not needed at this time. Repairs can be made with treatment system on line.	Task may require working off ladders or elevated surface.
The Air vent valve in the vault north of the 6th fairway (BSP-B) has a leak	The nipple connecting the A/V valve to the RW manifold is leaking. The isolation valve has been closed and the device is out of service. The piping needs replacement **No further action has been taken**	Plant staff and contractors	None, isolation valve is functioning	Confined Space Entry
the Air vent valve in the vault east of the 6th green has a leak	The A/V valve has been isolated by the shut off valve. The device itself is leaking. The unit needs replacement or rebuilding. **No further action is planned at this time**	Plant staff and contractors	System shut down until the remedy was made	Confined space entry

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
NaOH Vault sump pump not actuating	System needs to be inspected A portable submersible well pump was set up in the vault sump for manual operation **No further action is planned at this time**	Plant staff Electrical support	None at this time	Oversight needed
The RW Discharge Manifold integrity is suspect	The condition of the various devices in the RW manifold vaults are suspect. **A full set of function tests should be scheduled**.	Plant staff and outside contractors	Possible shutdown	May require a CSE
Plant discharge Pump 2 frequently trips	Pump continues to trip. It requires manual resetting. The control panel does not indicate the status EE indicated that the motor starter contact block appears to be getting stuck. **When possible the unit will be cleaned**.	Operator and EE	Loss of redundancy. Requires P3 to be activated	None at this time
AST main drain valve does not close	Tests on the valve indicate that it does not close. This is not a problem until the tower media needs to be acid washed **This valve should be replaced**	operator	Plant will need to be shut down to change out the valve	None at this time

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The piping configuration for the RW pump pressure switches, pressure gages and sample ports are corroding and unwieldy and subject to catastrophic failure	The systems at RW-5 and RW-3 have failed. While piping components have been replaced, the design has not been changed. The top-heavy configuration needs a re-design and re-build or eliminated. **Are the pressure switches required for the safety of the pumps? Can they be eliminated or do they need a re-design?**	Plant operator and spotter	Each well system will be shut down during the upgrade	Confined space entries will be required. These will generally not be permit required.
RW-2 flow sensor output is no longer displaying	The flow element mechanical output is spinning and therefore is functional. The HS sending unit needs to be checked as well as the 12 volt power supply and wiring. **This work needs to be scheduled**	Electrical techs	None anticipated. The system is isolated and off line	Confined space entries may be necessary
New Nassau County Fire Code indicates that the sprinkler system at OU4 be centrally monitored	The fire alarm panels are off line and their viability needs to be determined. Initial investigation indicated that the panel can be powered up but it emits nuisance alarms. Further work on panels will require EE time and may not solve problem **Currently the plan is to take down the building. This will eliminate the system and the issue.**	Plant operator, EE and possible outside vender	None at this time	None at this time

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The pump isolation valve at RW-5 does not fully function	the valve does not fully close and it should be removed and cleaned or replaced **No further action is planned at this time**	Plant operator and spotter	Replacement of valve will require shutting down the manifold	Confined space work
NYS Fire Marshall safety inspection at OU4	The inspection revealed several action items that needed to be addressed. • Emergency lighting needs to be restored • Access paths need to be cleared • Sprinkler heads need to be replaced • Fire alarm with central station monitoring needs to be replaced **Exit lighting is functional.** **The e-lights have been removed.** **Egress paths have been cleared** **The sprinkler heads in the control room were re-installed.** **Fire alarm panel function does not fully function** **Central monitoring is not in place** **The roof leak remains** **The building is to come down. No further action is planned**	Plant operator and certified contractors	None	To be determined

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
NYS Fire Marshall safety inspection at OU5	The inspection revealed several action items that needed to be addressed. • Emergency lighting needs to be restored • Access paths need to be cleared • Fire alarm with central station monitoring needs to be replaced • Items stored in mechanical room need to be removed. • Wooden shelving in mechanical room needs to be removed **All the violations have been resolved with the exception of open smoke alarm loop.** **Approval of the work plan is awaiting NYSDEC**	Plant operator, TOB personnel	Disposition of TOB materials	Moving materials from mezzanine level
The power to the plant lights and the emergency light charging system are on the same electrical switch	Normally when the plant lights are shut off at night, it inadvertently shuts down the emergency lights and battery charging system. This action may have damaged the charging system. **The e-lights from OU4 have been installed in OU5 and are fully functional** **The plant lights are left on overnight.**	Plant operator. EE, outside contactors	In code violation	Possible emergency evacuation impact

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The activation of the HVAC room and plant exhaust fans are connected to the methane monitoring system and not independently operated	It has not been determined how to manually start the exhaust fans without putting the facility into a methane alarm **EE will look into this**	Plant operator, EE	None	Possible problem with excessive heat of fume conditions
There has been a drop in the RW well pump output.	The output from pumps for RW-3 and RW-5 has been dropping for the last several months. The pump at RW-3 is new (Apr. '19) It has not been determined if it is an electrical, mechanical or manifold issue. **This condition will continue to be monitored** **The flows appear be stable at the lower level**	Plant operator, EE	Process volumes are down	none
The first bank of plants are not functioning (CB-1)	The plant lighting stopped functioning after the 3rd e-light was installed. The e-light charging system and the plant lights are on the same circuit. **When available, EE will look into this**	Plant operator, EE	None, the second bank of plant lights is functional	None at this time
A leak has developed at the Victaulic fitting on the PFF vent line	**The Victaulic nipple to PVC connector is corroded and starting to leak. Flow is minimal.** **Fitting should be replaced** **The condition will be monitored**	**Plant operator**	**Shut down will be required**	**Ladder work**

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The loss of power 11/1/19 appears to have affected the outdoor lighting timer	**Unit receives power but appears to not function** **The unit should be replaced**	**Plant operator**	**none**	**Electrical work**

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 technical maintenance**.
- Air stripper air flow meter is not functional. **It will need to be powered up to determine if it is functional**
- The RW-1 flow sensor is not functional. **The unit is not in service and no further action is planned at this time**.
- The AH-1 HVAC system is not functioning. **No further action is planned at this time**
- The RW-2 flow sensor is not functional. **No further action is planned at this time.**
- **It has been determined that intrinsically safe components are no longer required in the plant**

Table 7 – Recent Plant Discharge Analytical Results

The plant discharge was last sampled November 14. The results are shown below.

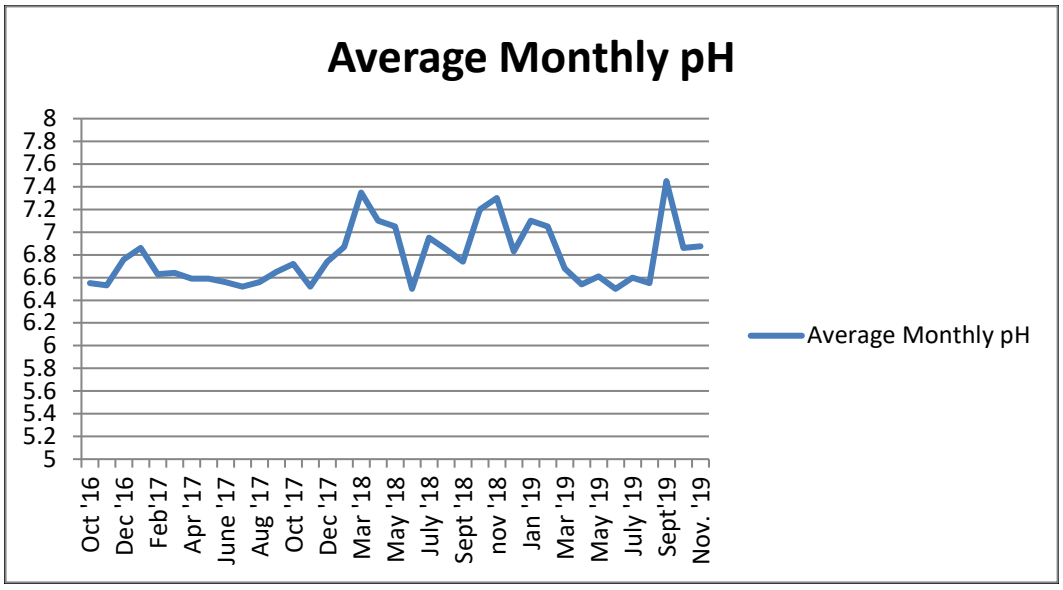
Parameters	Discharge Limitations (SPDES)	Units	Results November 2019
pH (August Average)	6.5 – 8.5	SU	6.86
1,1,1-Trichloroethane	5	ug/l	U
1,1-Dichloroethane	5	ug/l	U
1,1-Dichloroethylene	5	ug/l	U
1,2- Dichloroethane	0.6	ug/l	U
Benzene	0.7	ug/l	U
Chlorobenzene	5	ug/l	U
Chloroform	7	ug/l	U
CIS 1,2-Dichloroethylene	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	0.60
Bis(2-ethylhexyl)phthalate	5	ug/l	U
Di-n-butyl phthalate	50	ug/l	U
Nitro Benzene	0.4	ug/l	U
Antimony, Total recoverable	3	ug/l	U
Arsenic, Total recoverable	50	ug/l	U
Barium, Total recoverable	2000	ug/l	101
Chromium, Hexavalent	100	ug/l	U
Lead, Total recoverable	50	ug/l	38.3
Iron, Total recoverable	600	ug/l	U
Manganese, Total recoverable	600	ug/l	117
Mercury	Not indicated	ug/l	U
Zinc	Not indicated	mg/l	U
Nitrogen, Total (as N)	10	mg/l	4.9
Selenium, Total recoverable	40	ug/l	U
Solids, Total Dissolved	1000	mg/l	285
Chloride Ion	NL	mg/l	107
Cyanide	Not indicated	ug/l	U
Fluoride Ion	NL	mg/l	U
Sulfate Ion	NL	mg/l	17.3

NS – Not sampled **J** – Estimated value **U** – Analyzed but not detected **NL** – Monitor only

Discharge limitations updates as per the water discharge permit.
Not monitored but of interest: **1, 4-Dioxane – not detected.**

Table 8 – Plant Discharge Monthly Average pH

Month	pH(su)
Nov ‘17	6.52
Dec ‘17	6.74
Feb ‘18	6.87
Mar’18	7.35
Apr ‘18	7.1
May ‘18	7.05
June ‘18	6.5
July ‘18	6.95
August ‘18	6.85
Sept ‘18	6.74
Oct ‘18	7.2
Nov ‘18	7.3
Dec ‘18	6.82
Jan ‘19	7.1
Feb ‘19	7.05
Mar ‘19	6.68
April ‘19	6.54
May ‘19	6.61
June ‘19	6.5
July ‘19	6.6
Aug ‘19	6.56
Sept ‘19	7.45
October ‘19	6.86
November ‘19	6.88



Attachments

Power Outage 11-1-19 Description

Overnight, October 31 into November 1 (Friday), the plant experienced a rain and wind storm. The Auto-Dialer called out an unbalanced level alarm at 01:45. This would indicate that the recovery well pump output did not match the plant influent. This condition would shut off the recovery well pumps, requiring them to be manually reactivated.

At this time, the plant operator acknowledged the alarm but was unable to connect with the HMI remotely. With the auto-dialer operating, the plant was getting 110 vac power. Over the next half hour, there were no further alarms.

Upon arrival at the plant, the blower was off as were the process pumps. The wet wells were empty. The process pumps and the blower were in the Auto mode.

The pump at RW-5 was started and once flow reached the plant, the blower started automatically. The pump at RW-4 was started and once flow was observed, the pump for RW-3 was activated. The pump was un-responsive. (In the past this was usually due to the pressure switch failure when the pump was shut down out of sequence. The PS status indicator showed the PS engaged).

As the ASF wet well started to fill and the level switches started to activate the ASF pumps, the pumps and the AS Blower started to cycle off and on.
On the queue from EE, the legs of the ASF and PFF motor starters were tested for voltage. All checked out and balanced. Next the power on the main circuit breaker was checked. This indicated that phase 2 was faulty. Single pumps could operate or the blower by itself but not together.

A service ticket was placed with PSEG-LI to check the lines and make repairs. A call back number (operator cell phone) was supplied.

On Monday morning (11/4) the plant operator called PSEG for an update. The mechanic was at BSP Well House 3 (the communication system was being updated and the account meter was matched to the wrong address). The operator retrieved the PSEG mechanic who knew exactly what the problem was. He reset the circuit breaker on the pole and full power was restored.

The plant was restarted and the recovery well pumps for -4 and -5 were activated. The system was online by 10:08. The Pump at RW-3 did not start

The pumps at recovery wells are on a different power source than the plant and did not lose power. At RW-3, the pressure switch was checked and did not require resetting. The surge protectors were engaged. The incoming electrical phases were measured incoming to the motor starter, across the shut off switch and at the top of the motor starter contact block. All was normal. The motor starter would not pull in and hold the coil. Manual operation of the starter indicated that the pump was getting power and the pump was good.

Measurements across the overloads indicated that one was bad. This was replaced, but the pump would not start. Further testing indicated that the contact block might be bad. This was also replaced, but the pump would not start. The pressure switch was bypassed and the control relays were replaced. These measure did not fix the problem. The transformer was tested and it was good. Continuity tests of the overload terminals indicated that this may be the problem. The overload block was replaced. This fixed the problem. The pump was functional in manual mode and auto mode.

The following can be attributed to this 10/31 storm incident:

- Shut the plant down for 4478 minutes
- Knocked the pump for RW-3 out for 25110 minutes
- Burnt out a plant exit light lamp
- Knocked out the plant exterior lights timer
- Changed the HMI IP address