Monthly Report of the Operations & Maintenance Activities

Claremont Polychemical Operable Unit 5

Groundwater Treatment System

Old Bethpage, New York

December, 2020

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
EAR	Environmental Assessment and Remediation
EFF	effluent
EON	EON Products, Inc.
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.
HHLA	High-High Level Alarm
HMI	Human Machine Interface
INF	influent
LOTO	Lock-out, tag-out
MW	monitoring well
NOV	Notice of Violation
NCDPW	Nassau County Department of Public Works
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance
OBL	Old Bethpage Landfill
OFP&C	NYS Office of Fire Prevention & Control
OU4	Operable Unit 4
OU5	Operable Unit 5
PET	Peter Takach
PDB	Passive Diffusion Bags
PD	plant discharge
PFOA	Perfluorooctanoic Acid and related perfluorinated alkyl substances
PFOS	Perfluorooctanesulfonic Acid
PFF	Pressure Filter Feed
PID	photo ionization detector
PM	preventive maintenance
PSEG	Public Service Enterprise Group, electrical power supplier
PW	process water
RAP	Remedial Action Plan
RW	Recovery well, process well
SOP	standard operating procedure
SMP	Site Management Plan
SSHP	Site Safety and Health Plan
SU	standard pH units
TA	TestAmerica Laboratory
TOB	Town of Oyster Bay
UPS	United Parcel Service
VOCs	volatile organic compounds
VPB	vertical profile borings

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 December. This report covers the operation and maintenance activities for the system during the period defined as beginning at ~0830 hours, December 1, 2020 through ~0830 hours, January 1, 2021 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 31 days in this reporting period during which the treatment system operated without downtime.

Readings of the key plant process parameters are normally recorded each work day. (If the plant is not occupied, the system is monitored remotely). 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.

The treatment process control and alarm systems are functional. Pressure Filter Feed (PFF) Pump 1, is off line with mechanical issues. 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 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)
HDR Sign-In Sheet – HDR employee on-site hours (Form-15)
Daily Process Data Sheet – point process readings (Form-30)
Log Book CPC 5-7– plant operator's daily log book
Daily Database – daily process readings (12 December 20 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 log book.

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.
- An old pump and tubing were pulled from the MW-6F well.
- The process pumps and motors were lubricated.
- The OU4 comprehensive site and safety inspections were completed.
- The OU4 polymer feed tanks were emptied of water.
- The CPC grounds were inspected on several occasions.
- The monthly equipment electrical testing was completed.
- The post OL relay lug was replaced in the RW-4 motor starter.
- The Q4 methane monitoring task was completed.
- The outdoor lighting timer was replaced.
- The RW system inspection was completed.
- The left side taillight on the truck was replaced.
- The accumulated electrical and chemical waste was dropped off at the TOB site.
- The snowplow was installed on the plant truck.
- The process equipment tests were completed.
- The plant egress points were cleared of snow. The parking area was plowed.
- The OU5 comprehensive site and safety inspections were completed.
- Outdoor areas were cleaned up as necessary.

1.3 MAINTENANCE LOGS

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

- CL-18 OU-4 Log (truck)
- CL-43 General Field Support Log (truck)
- 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 have been scanned, all are in storage at OU5, and are available for review.

2 TECHNICAL SUPPORT ACTIVITIES

2.1 HDR Personnel

- HDR maintained the system throughout the period.
- Technical expertise and guidance were provided from the Mahwah, Newark, and NYC offices.
- 12/3, Brian Montroy was in to record the groundwater elevations. He returned 12/7 for GW sampling and 12/10 for the RIFS sampling.
- 12/8, Matt Papula was in for the RIFS sampling task. He returned 12/9, and 12/10 to complete the sampling.

- 12/8, Derek Matuzewski was in for the RIFS sampling task. He returned 12/9 for sampling.
- 12/8, Hayley Rosado was in to assist with the GW sample collection. She returned 12/9 to complete the task.
- 12/14, Ed Chappell was in for the monthly electrical testing.

2.2 NYSDEC Personnel, sub-contractors and other visitors

- 12/1, Wayne Washington of Statewide Fire Alarms was in to look at both systems.
- 12/1, Edwin Herrera of Island Fire was in to look at the OU5 system.
- 12/2, National Grid was in to read the OU4 gas meter.
- 12/9, TA-NY picked up the RIFS samples.
- 12/9, PSEG was in to read the OU4 electric meter.
- 12/10, TA-NY was in to pick up the GW samples and the RIFS samples.
- 12/11, TA-NY was in to pick up the RIFS samples.
- 12/15, Ken-Mar dropped off the portable CO_2 fire extinguisher.
- 12/18, TA-NY was in to pick up the process water samples.
- 12/21, TOB in to drop off new gate lock and key.
- 12/21, Plainview Fire was in for its annual facility check.

2.3 Deliveries

- 12/3, Fed Ex delivered the EON order.
- 12/4, UPS delivered the GeoTech order and returned 12/7 with more items.
- 12/4, TA-NY delivered sampling supplies and returned 12/8 with more supplies.
- 12/16, UPS delivered the GeoTech tubing replacement.

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.
- During this Covid-19 period of concern, access to the plant has been controlled and restricted.
- The working and common surfaces around the plant are frequently cleaned with 20% bleach solution.
- Access to the plant is restricted.
- A review of fire alarm system maintenance and inspection protocol was undertaken.

4 PLANNED ACTIVITIES AND SCHEDULES

The evaluation of the plant operating system and equipment is ongoing by HDR. 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 collection of the monthly PD samples is scheduled for the week of 1/11 with shipment on 1/14.

5 MONITORING WELL WATER ELEVATIONS

The monitoring well system's groundwater elevation data table was updated after this month's quarterly GW elevation recording task. This database is available for review. The next synoptic water level round will be scheduled for March 2021, after which the table will be updated.

6 TREATMENT SYSTEM FLOWS

During the December period, the plant continued to operate in the auto mode. The volume of treated water discharged by the treatment system to the selected recharge basin was calculated from the plant effluent flow meter readings. These readings are taken at the HMI and recorded in the daily database. The treatment system experienced no downtime during this period.

The total volume of treated water discharged from ~0830 hours, December 1 to ~0830 hours January 1, was approximately 31,344,000 gallons. The plant discharge is now directed to Recharge Basin No. 1. 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 December are provided in **Table 4**, both following the text of this report.

Table 1 – Flow Average and Volume Discharged

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	5039	129,326
Q1 2020	480	682,527	62,110,000	1824	129,326
Q2 2020	698	996,998	88,732,846	3838	127,185
Q3 2020	669	955,928	87,945,333	1099	131,401
Oct' 2020	668	962,566	29,839,539	52	44,648
Nov' 2020	716	1,031,400	30,942,000	0	43,223
Dec' 2020	702	1,011,097	31,344,000	0	44,626

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

During the December reporting period, the treated water discharged was redirected to Recharge Basin No. 1 on the landfill property.

The flow summary for the individual components of the system 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 December.

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 December.

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 December.

8 WASTE DISPOSAL

The routine collection of waste materials continued. The accumulated chemical and electronic waste was dropped off at the landfill site.

9 MONTHLY DISCHARGE MONITORING REPORT

The GWTS is operated under an equivalency permit from the NYSDEC. The analytical results for the December plant discharge samples indicate that all analyzed parameters were compliant

with permit limits (**Table 7**).

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

10 PENDING ISSUES AND CONSIDERATIONS

A damaged tree adjacent to the path to the MW-6 well cluster could pose a threat and will continue to be monitored. The area is not currently accessed by HDR until remedied.

The well path to the BP-3 cluster following rain events still poses issues for vehicle transport. Additional work may be needed by Bethpage State Park in the spring.

The recovery well pump pressure switch assemblies need to be reconfigured to prevent a possible design related catastrophic failure.

Plant Discharge Pump 1 failed and was taken out of service. An evaluation needs to be made to replace the pump and bring it back online.

The central monitoring system for the OU5 fire alarm is to be installed. HDR is awaiting the approval to proceed.

The controls for the OU4 fire sprinkler system, fire alarm, and central monitoring systems are to be replaced. HDR is awaiting for the approval to proceed.

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

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

The OU5 plant exhaust system is controlled by the methane monitoring system and needs to be separated.

The status of key aspects of OU4 are as follows:

- The plant heat is currently on
- The fire alarm panels are off-line
- The facility is secure and physical monitoring continues
- The facility and grounds are 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 in December included:

- Form-37, Fire Alarm System inspection was generated
- Drawing-34, Fire Alarm System (L-10) was generated
- Drawing-00, common symbols and shapes was generated

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 December sampling activities included:

- GW elevations were recorded 12/3.
- GW samples were collected 12/7, 8, and 9. The samples were processed and then shipped 12/10.
- RIFS groundwater samples were collected 12/8, 9, and 10. The samples were processed and shipped 12/9, 10, and 11.
- The data from the November PW sampling task was processed and submitted.
- The pH levels of the GW samples were recorded.
- The process water field and plant samples were collected and processed 12/15. The samples were shipped 12/18.
- The plant discharge samples were collected and processed 12/16. The samples were shipped 12/18.
- The RIFS analytical data for days 1-3 was processed and submitted.
- The GW analytical data were processed and submitted.
- The PW-x analytical data were processed and submitted.
- The PD analytical data were processed and submitted.

12.2 Field Data

Plant Discharge pH and Temperature

The 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 December can be found below in **Table 2**.

Table 2 – Effluent pH and Temperature Readings

Date	pH (su)	Temp ˚F
12/1	6.5	57
12/8	6.8	55
12/14	6.6	56
12/21	6.5	56
12/28	6.8	56
December Average	**6.64 su**	**56^{O}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. Data 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 December readings from the AS tower are provided in **Table 3**.

Table 3 – AS Tower Air Monitoring Readings

Date	Port B
12/1	0
12/10	0
12/14	0
12/21	0
12/28	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 December included:

- The electric and water meter readings at OU5 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 the automatic mode.

13.1 Extraction (RW) Processes

- The motor controls and systems were inspected. The monthly electrical testing indicated that there were no issues.
- A lug connection was replaced at the RW-4 motor starter.
- The vault heat units remain active.
- The recovery well pump system is remotely controlled and monitored, it operates in the Auto mode. All the pumps are fully functional with pumps RW-3, RW-4, and RW-5 on line.
- 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. Their flow meters are not transmitting.

13.2 Air Stripping (AS) Process

- The three pumps are fully functional. The pumps are operated in the auto mode off the wet well level switches.
- Motors and seals were lubricated.
- The monthly electrical testing indicated that there were no issues.
- 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. Analysis of the sampling data indicates that iron is being removed from the system.
- The discharge valve for ASF P1 appears to be frozen in the open position.

13.3 Plant Discharge (PD) Process

- Pump 1 has been taken out of service due to excessive noise and vibration. A full evaluation is required.
- The motors and seals were lubricated.
- The monthly electrical testing indicated that there were no issues with pumps 2 and 3.
- The plant discharge is currently directed to Recharge Basin No.1.
- The discharge valve for PFF P2 appears to be failing in the open position. The valve for Pump 3 has failed open.

13.4 Other

- The plant's first light bank is wired to the e-light recharging system, therefore the circuit is kept on.
- There are leaks in the water supply line running through the plant. A temporary patch was installed on one leak. The water service was restored at a lower

pressure. The shut off valve may be defective.
- The fire alarm smoke detector system is fully functional. The system was tested following replacement.

14 GROUNDS

14.1 Plant Perimeter

- General outdoor clean-up and landscaping tasks are on-going.
- The outdoor light timer was replaced.
- The Town of Oyster Bay (TOB) continues to maintain the grounds along the plant perimeter. They plowed the driveway after the last snow fall.
- The plow was installed on the plant truck and the perimeter of the plant was plowed.

14.2 Well Field

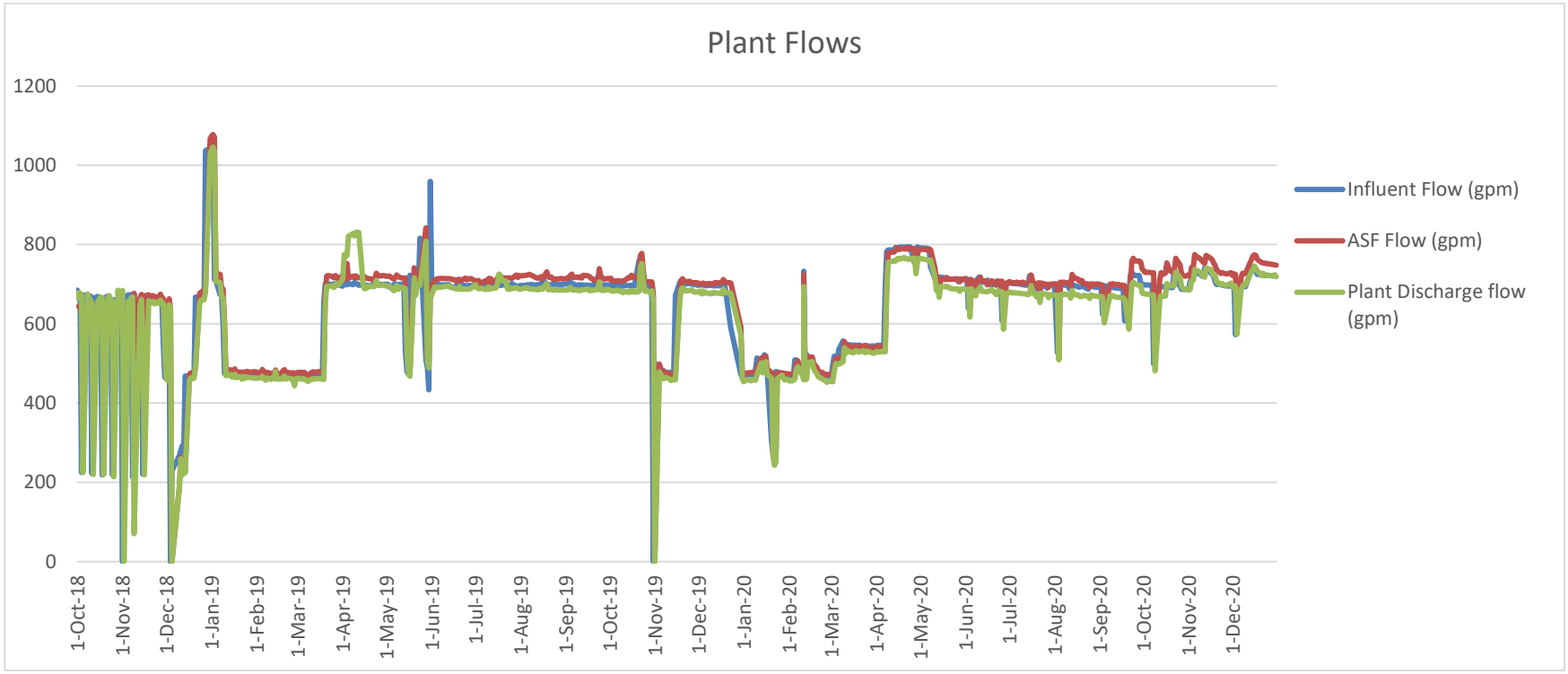
- The cleanup of vegetative growth around the monitoring wells continues, and additional tree brush was removed.
- Well, well field, and recharge basin inspections continue.
- The well access paths are now relatively clear, the downed trees and overgrowth are removed as possible when necessary.

14.3 Other

- The grounds at OU4 continue to be inspected but not maintained.
- The pump, tubing, and wire were pulled from the well MW-6F.
- The Claremont site is relatively secure. There is currently no tenant on the property.

FIGURES

Figure 1 – Plant Discharge Daily Flow



TABLES

Table 4 – Plant Daily Totalizer Readings

December 2020 Flows	Plant Influent		Plant Discharge		RW Discharge	
Date	Volume	Avg. Flow	Volume	Avg. Flow	Volume	Avg. Flow
1-Dec-20	997000	692	992000	689	1022000	710
2-Dec-20	969000	673	969000	673	992000	689
3-Dec-20	1034000	718	1034000	718	1061000	737
4-Dec-20	2456000	853	2459000	854	2559000	889
7-Dec-20	983000	683	986000	685	1007000	699
8-Dec-20	998000	693	996000	692	1028000	714
9-Dec-20	1033000	717	1037000	720	1061000	737
10-Dec-20	1008000	700	1012000	703	1035000	719
11-Feb-20	2992000	693	2996000	694	3072000	711
14-Dec-20	1056000	733	1055000	733	1080000	750
15-Dec-20	1072000	744	1069000	742	1096000	761
16-Dec-20	1070000	743	1073000	745	1092202	758
17-Dec-20	1074000	746	1074000	746	1096000	761
18-Dec-20	3158000	731	3161000	732	3220000	745
21-Dec-20	1045000	726	1041000	723	1066000	740
22-Dec-20	1059000	735	1065000	740	1081000	751
23-Dec-20	1017000	706	1017000	706	1036000	719
24-Dec-20	1131000	785	1133000	787	1154000	801
25-Dec-20	3036000	703	3036000	703	3093000	716
28-Dec-20	1047000	727	1046000	726	1066000	740
29-Dec-20	1038000	721	1037000	720	1058000	735
30-Dec-20	1014000	704	1017000	706	1033000	717
31-Dec-20	1042000	724	1039000	722	1062000	738
December Total Plant **Influent** (Gal)			31,329,000			
December Total Plant **Effluent** (Gal)			31,344,000			
December Total **RW Discharge** (Gal)			32,070,202			

Table 5 – Pump System Flow Readings

November	On-Time Minutes (actual)	Avg. Flow (gpm)	Avg. Flow (gpd) (over 30 days)	Total Flow (gal)
RW-1	8	218	-	1744
RW-2	6	243	-	1458
RW-3	44606	236	328,871	10,505,000
RW-4	44596	281	404,839	12,550,000
RW-5	41929	215	290,710	9,012,000
Plant Influent	44626	702	1,010,613	31,329,000
Plant Effluent	44626	702	1,011,097	31,344,000

The treatment process was online 31 days in December with no downtime. Flows are taken from the HMI meter readings.

Table 6 – Claremont Corrective Actions Summary

Conditions of note and corrective actions planned 1/4/21

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 RW Discharge Manifold integrity is suspect	The condition of the various devices in the RW manifold vaults are suspect. 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** 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.** ***A full inspection of the manifold piping and devices should be made.***	Plant staff and outside contractors	Possible shutdown	May require a CSE
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

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
AS Tower 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
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. ***The 'As-built' drawings indicate valves throughout the discharge manifold. Each pump has an isolation valve on the discharge side. If any of these valves were to be left closed, then the PS would be a good safety device. The PS assembly should be changed.***	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 RW-1 flow sensor does not function.	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 should be scheduled as needed.***	Electrical techs	None anticipated. The system is isolated and off line	Confined space entries may be necessary

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
Lack of central monitoring of the OU4 fire sprinkler system. The fire alarm panel is not functioning	The Nassau County Fire Code indicates that the system must have central monitoring and flow and valve tampering The fire alarm system needs to be replaced **Several contractors have been at the site to propose options for the system.** ***The fire alarm system is to be replaced*** ***A central station monitoring system is to be installed.***	Plant operator, EE and outside vender	None at this time	None at this time
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
Fire safety Code violations at OU5	The inspection revealed several items that needed to be resolved. Currently, ***The smoke detectors have been replaced, the alarm wiring has been checked and the system tested.*** ***A central monitoring system is to be installed.*** ***All the other violations have been addressed*.**	Plant operator, TOB personnel	Disposition of TOB materials	Moving materials from mezzanine level

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The power to the plant lights and the emergency light charging system are on the same electrical switch	If the plant lights are shut off at night, it inadvertently activates the emergency light system by shutting off power to the lights. This continued action may have damaged the charging system, requiring the replacement of the emergency lights. ***The plant lights are left on overnight. No further action is planned at this time.***	Plant operator. EE, outside contactors	In code violation	Possible emergency evacuation impact
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 ***When available, EE will look into this.***	Plant operator, EE	None	Possible problem with excessive heat of fume conditions
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. The replacement part has been received With the current valving configuration, the leak has stopped. ***No action is required at this time.***	Plant operator	Shut down will be required	Ladder work

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
Several leaks were observed in the plant overhead water supply line.	Adjacent to the north door, a leak was observed. The covering and insulation were removed and a clam-shell type clamp was applied. The second leak observed above the AS Blower needs to be addressed. It is not readily accessible. In addition, there appears to be a problem with the water supply shut off valve. ***This work will require evaluation and outside resources. Currently the situation is controlled.***	Outside plumbing contractor?	None at this time	Sanitary water may be shut off during repairs
The PFF pumps started short cycling. The control relays started chattering and the system was not properly controlling the pumping operation	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. The box cannot be opened without damage to it and the conduit. This appears to have been a longstanding problem. When switches have been replaced in the past, they were spliced outside the box. The float switches have been replaced but there remains a problem with the L2 circuit. The output from the W-2 relay was moved to the output for the W-1 relay. This has stopped the short cycling. ***The control wiring should be changed and moved above grade.***	Plant operator and HDR resources	Plant shut down is required	Confined space entry work

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
PFF P1 has started making a lot of noise	The pump when activated immediately makes a lot of noise, and the pump drop tube shakes. Smoke/ fumes emanated at the Motor-shaft connection. The motor appears to be good. The pump was removed from service, 2/24 ***It is recommended that the motor be disconnected, lifted, and the mechanical connection be checked.***	Outside contractors	Not at this time	To be determined
ASF P1 and PFF P3 discharge valves have failed Open	The valves are stuck in the open position. This does not affect the day to day operation but may have an impact on future PM tasks. **No further action at this time**	Plant operators	A shut down will be required to replace the valves	To be determined
As the ASF pumps cycle off/on, the check valves have started to slam closed. When reactivating, the starter contact closing is rather violent. Both actions have a tendency to rattle the piping and fixtures	There is no available literature regarding the check valves so the exact description of their functioning parts is to be determined. A softer start/stop control may fix this issue. I may also help the above issue. ***This will need further investigation***	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 overload for the RW-4 motor starter is frequently tripping.	The overload is easily reset at the pump. The OL elements have been replaced. The relay itself may need to be replaced. **This pump has not tripped in several months**	Plant operator and EE support	To be determined	To be determined

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
The System Flow flow-meter is indicating lower flow than the plant discharge.	The flow meter for the System Flow process is consistently at a level below the plant discharge and quite a bit below the RW system total flow. This is not affecting the system operation, but is skewing the flow numbers **The meter calibration needs to be adjusted**	Electrical engineering	None	none
A process control surge protector is powered off	One of the surge protectors is not powered up. The unit has no ID of the associated equipment.	Electrical engineering	Potential	To be determined

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**. However, methane does not currently appear to be a hazard and HDR monitors the indoor air once a month.
- Air stripper air flow meter is not functional. **Technical information is required for proper wiring and operation.**
- The RW-1 flow sensor is not functional. **The unit is not in service and no further action is planned at this time**. RW-1 is generally offline.
- The cooling side of the AH-1 HVAC system is not functioning. **No further action is planned at this time.** AC is supplied with window units.
- The RW-2 flow sensor is not functional. **No further action is planned at this time.** RW-2 is generally offline.
- 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 12/16/20. The analytical results are for these samples are shown below.

Parameters	Discharge Limitations (SPDES)	Units	Results
pH (range)	*6.5 – 8.5*	*SU*	*6.64*
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
Antimony, Total recoverable	3	ug/l	NM
Arsenic, Total recoverable	50	ug/l	NM
Barium, Total recoverable	2000	ug/l	NM
Chromium, Hexavalent	100	ug/l	NM
Lead, Total recoverable	50	ug/l	NM
Iron, Total recoverable	600	ug/l	NM
Manganese, Total recoverable	600	ug/l	NM
Mercury	Not indicated	ug/l	NM
Zinc	Not indicated	mg/l	NM
Nitrogen, Total (as N)	10	mg/l	NM
Selenium, Total recoverable	40	ug/l	NM
Solids, Total Dissolved	1000	mg/l	NM
Chloride Ion	NL	mg/l	NM
Cyanide	Not indicated	ug/l	NM
Fluoride Ion	NL	mg/l	NM
Sulfate Ion	NL	mg/l	NM
1, 4-Dioxane	NL	ug/l	U
J – Estimated value **U** – Analyzed but not detected **NL** – Monitor only **NM**– Not sampled Discharge limitations updates as per the water discharge permit.			

Table 8 – Plant Discharge Monthly Average pH

Month	pH(su)
Dec ‘18	6.82
Jan ‘19	7.1
Feb ‘19	7.05
Mar ‘19	6.68
Apr ‘19	6.54
May ‘19	6.61
June ‘19	6.5
July ‘19	6.6
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
August ‘20	6.8
Sept. ‘20	6.8
Oct. ‘20	6.95
Nov. ‘20	6.8
Dec ‘20	6.64