Monthly Report of the Operations & Maintenance Activities

Claremont Polychemical Operable Unit 5

Groundwater Treatment System

Old Bethpage, New York

June 2020

NYSDEC Standby Engineering Contract
Work Assignment #D0076025-28

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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.
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.
HHLA	High-High Level Alarm
HMI	Human Machine Interface
INF	influent
LOTO	Lock-out, tag-out
MW	monitoring well
NCDPW	Nassau County Department of Public Works
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
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
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
UPS	United Parcel Service
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 June. This report covers the operation and maintenance activities for the system during the period defined as beginning at 0840 hours, June 1, 2020 through 0840 hours, July 1, 2020. 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 was shut down for 3333 minutes due to various equipment failures

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, and Air Stripper feed (ASF) P1 are 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 (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)
Log Book – plant operator's daily log book (CPC 5-7)
Daily Database – daily process readings (06 June 20 Database.xlsx)
NYSDEC Log-in Sheet – Entry/Exit Log with COVID-19 Acknowledgement

1.2 SUMMARY OF MAINTENANCE ACTIVITIES

The maintenance of the treatment system, facility, and associated equipment is performed in accordance with the site 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 June activities is further provided in the plant operator's daily log book.

Maintenance and project activities completed during June include:

- Routine and general maintenance tasks conducted at the plant, on the grounds, and in the well fields.
- A sample port was installed on the discharge of PFF P3
- The operating lamps in the East door exit light were replaced
- Clean up of vegetative growth around the plant continued.
- The PFF W-2 relay output was moved to the W-1 relay output.
- The pressure switch at RW-5 was reset.
- The fuel line on the string trimmer was replaced.
- The overload heaters on the RW-4 pump starter were replaced.
- The truck was refueled.
- Landscaping tasks were completed at selected monitoring wells to allow for safer access.
- The OU4 comprehensive site and safety inspections were completed.
- The SUNY well field was inspected.
- A path was cleared to Recharge Basin 1.
- The process equipment function tests were completed.
- The pressure switch at RW-5 was reset again.
- Blower barrier was disassembled and the local shut off switch opened and wire connection repaired.
- The overload relay at RW-4 was reset.
- The process motors were lubricated and ASF P1 was tested.
- The monthly truck inspection was completed.
- An egress path was cleared around the plant of OU4.
- The overload relay at RW-4 was reset again.
- The RW System was inspected.
- The OU5 comprehensive site and safety inspections were completed.
- A latch and lock were installed on the shed door at RW-4 as the cylinder lock failed open.
- The emergency light was replaced in the east door exit light.

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 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 was provided from the Mahwah, Newark, and NYC offices.
- 6/16, Jennifer Rhee was in to check the Pine Environmental sampling equipment.
- 6/17, Matt Papula and Derek Matuzewski, were in to sample the MW-CPC monitoring wells. They returned 6/18 and 6/19 to complete the task.
- 6/18, Ed Chappell in to troubleshoot the AS blower failure.

2.2 NYSDEC Personnel, sub-contractors and other visitors

- 6/9, RTP Environmental was onsite for TOB air monitoring of the grounds.
- 6/18, TA-NY was in to pick up the GW samples and the day 1 PFOA samples. They returned 6/19 for the day 2 PFOA samples. Again 6/22 for the day 3 PFOA samples.
- 6/25, TA-NY picked up the PD samples.

2.3 Deliveries

- Mail was delivered twice.
- 6/1, UPS dropped off the EON order.
- 6/3, UPS delivered the MMC order.
- 6/11, TA-NY dropped off sampling supplies.
- 6/17, Pine Environmental dropped off sampling equipment. They returned 6/18 to pick up and drop off equipment. They returned 6/23 to pick up the remaining equipment.
- 6/17, TA-NY dropped off sample bottles.

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 working and common surfaces around the plant are frequently cleaned with 20% bleach solution.
- The quarterly facility methane monitoring task was conducted 6/9.

During this Covid-19 period of concern, access to the plant has been controlled and restricted.

There were no other safety issues of note in June.

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 July plant discharge sampling task is scheduled for 7/16.
- Further testing is required for PFF P1 and ASF P1.

5 MONITORING WELL WATER ELEVATIONS

The monitoring well system's groundwater level elevation data table was updated this month after recording the elevation readings. This database is available for review. The next synoptic water level round will be scheduled for September, 2020, after which the table will be updated.

6 TREATMENT SYSTEM FLOWS

During June, the plant continued to operate in the auto mode. The volume of treated water discharged by the treatment plant to the selected recharge basin is determined from readings of the plant effluent flow meter output, these HMI readings were recorded. The treatment system experienced process control problems and equipment failures and was shut down for a total of 3333 minutes to correct the problems.

The total volume of treated water discharged from 0840 hours on June 1, to 0840 hours on July 1, was approximately 26,836,803 gallons. Now that the plant discharge is directed to Basin-33, the downhill nature of the discharge creates a syphon effect which distorts the flow meter readings. The flow was calculated as a percentage of the influent flow, (based on recent historic readings). 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 June 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	125171
Q1 2017	520	748,244	67,342,000	655	128945
Q2 2017	576	829,130	76,280,000	6,165	126315
Q3 2017	634	913,576	84,049,000	1,110	131370
Q4 2017	256	368,762	33,926,110	69,165	63315
Q1 2018	53	75,989	6,839,000	118,180	11420
Q2 2018	179	258,284	23,762,103	102,929	29551

Q3 2018	504	725,280	66,725,717	57,416	75064
Q4 2018	726	1,045,065	96,145,984	23,734	108746
Q1 2019	527	758,467	68,262,000	735	128865
Q2 2019	662	953,877	87,756,724	405	132075
Q3 2019	685	985,802	90,693,740	108	132372
Q4 2019	655	943,871	82,116,780	5039	129326
Q1 2020	480	682,527	62,110,000	1824	129,326
April 2020	703	1,006,567	30,198,000	285	42,941
May 2020	714	1,022,518	31,690,043	220	44,414
June 2020	674	894,560	26,836,803	3333	39,830

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 June reporting period, the treated water was discharged solely to Recharge Basin 33 on Winding Road.

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 June.

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 June.

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 June.

8 WASTE DISPOSAL

The routine collection of waste materials continued. No waste was disposed of in June.

9 MONTHLY DISCHARGE MONITORING REPORT

The GWTS is operated under an equivalency permit from the NYSDEC. The analytical results for the June plant discharge samples indicate that 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 by the NYSDEC.

10 PENDING ISSUES AND CONSIDERATIONS

The motor starter overload relay for RW-4 is tripping off when the pump is shut off. The overload elements were replaced. Testing the overload may be required.

The pressure switch for RW-5 has been tripping with greater frequency. The pressure switches may be needed due to features in the discharge manifold. Another adjustment may be required on this unit.

Pump 1 of the Plant Discharge system is failing and was taken out of service. An evaluation needs to be made.

Pump 1 of the Air Stripper Feed system makes a higher level of noise when operating. It was taken off line until it can be evaluated. It is available for service.

The disposition of the fire sprinkler system, fire alarm, and central monitoring systems at OU4 are awaiting the decision of the NYSDEC.

The backflow preventer device on the 6" water line into OU4 failed its December inspection. The repair proposal was received in March. The disposition of this repair has yet to be determined.

The repairs to the OU5 fire alarm open loop are to be approved by NYSDEC and 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 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 now off
- 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. These activities in June included:

- Dwg.-07, motor starter wiring was updated to rev. C

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 June sampling activities included:

- The May PW data was processed and submitted.
- The quarterly monitoring well network groundwater elevations (67 wells) were recorded 6/10.
- The quarterly GW samples were collected and processed 6/15, (18 wells). 6/16, (21 wells), and 6/17, (9 wells). In total, 52 samples were shipped 6/18.
- GW samples including PFOAs were collected at selected wells 6/17, 18, and 19 and shipped the next day for analysis (6 MW-CPC wells).
- The pH levels for the GW samples were recorded.
- The monthly PD samples were collected 6/24 and shipped 6/25.
- The analytical data for sample set PFOA-1 was 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 June can be found below in **Table 2**.

Table 2 – Effluent pH and Temperature Readings

Date	pH (su)	Temp °F
6/1	7.2	59
6/9	7.0	60
6/17	6.5	61
6/23	6.6	65
6/29	6.6	62
June Average	**6.8 su**	**61°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 June readings from the AS tower are provided in **Table 3**.

Table 3 – AS Tower Air Monitoring Readings

Date	Port B
6/2	0
6/9	0
6/19	0
6/23	0
6/29	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 June were:

- 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.
- The monitoring well system's groundwater elevations were recorded.

13 PROCESS ANALYSIS and SYSTEM STATUS

The treatment system is currently operated 24/7 in the automatic mode.

13.1 Extraction (RW) Processes

- The pump at RW-4 frequently tripped. The overload on the motor started was reset. The overload elements were replaced. The electrical power readings were normal.
- The pressure switch at RW-5 required resetting several times. This may need

another load adjustment.

- A latch and lock were installed on the shed door at RW-4. The cylinder lock froze in the open position.
- The motor controls and systems were inspected.
- The pump system is remotely controlled and monitored, it operates in the Auto mode. All the pumps are now 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.
- The vault heaters are currently off, panel heaters are active.

13.2 Air Stripping (AS) Process

- The blower failed due to a supply side faulty wire. This was repaired (see Attachment 2).
- AS feed pump 1 was taken off-line as a precaution. The pump is available for service but it needs to be evaluated.
- Pumps 2 and 3 are fully functional. The pumps are operated in the auto mode off the wet well level switches. The system has been coded to force the periodic shut off of the lead pump.
- The shaft seals were snugged up. Motors and seals were lubricated.
- 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 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

- There was a pump control failure which created a Hi-Hi- Level Alarm condition and plant shut down. The output from the level 2 Warrick relay was connected to the level 1 Warrick relay output, temporarily fixing the problem (see Attachment 1).
- A sample port was installed at pump 3
- A path was cleared to basin 1
- Pump 1 has been taken out of service due to excessive noise and vibration. A full evaluation is required.
- The shaft seals were tightened and greased. The motors were greased.
- The plant discharge is now directed to Recharge Basin No. 33.
- 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 lamps in the east door exit light were replaced
- The plant's first light bank is wired to the e-light recharging system, therefore the circuit must be 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's plant loop has an open sensor and is awaiting repairs.

14 GROUNDS

14.1 Plant Perimeter

- General outdoor clean-up tasks are on-going.
- The outdoor light timer is not operating. Nine of the outdoor building lights are currently out. These conditions should not impact safety or security.
- The Town of Oyster Bay (TOB) continues to maintain the grounds along the plant perimeter.

14.2 Well Field

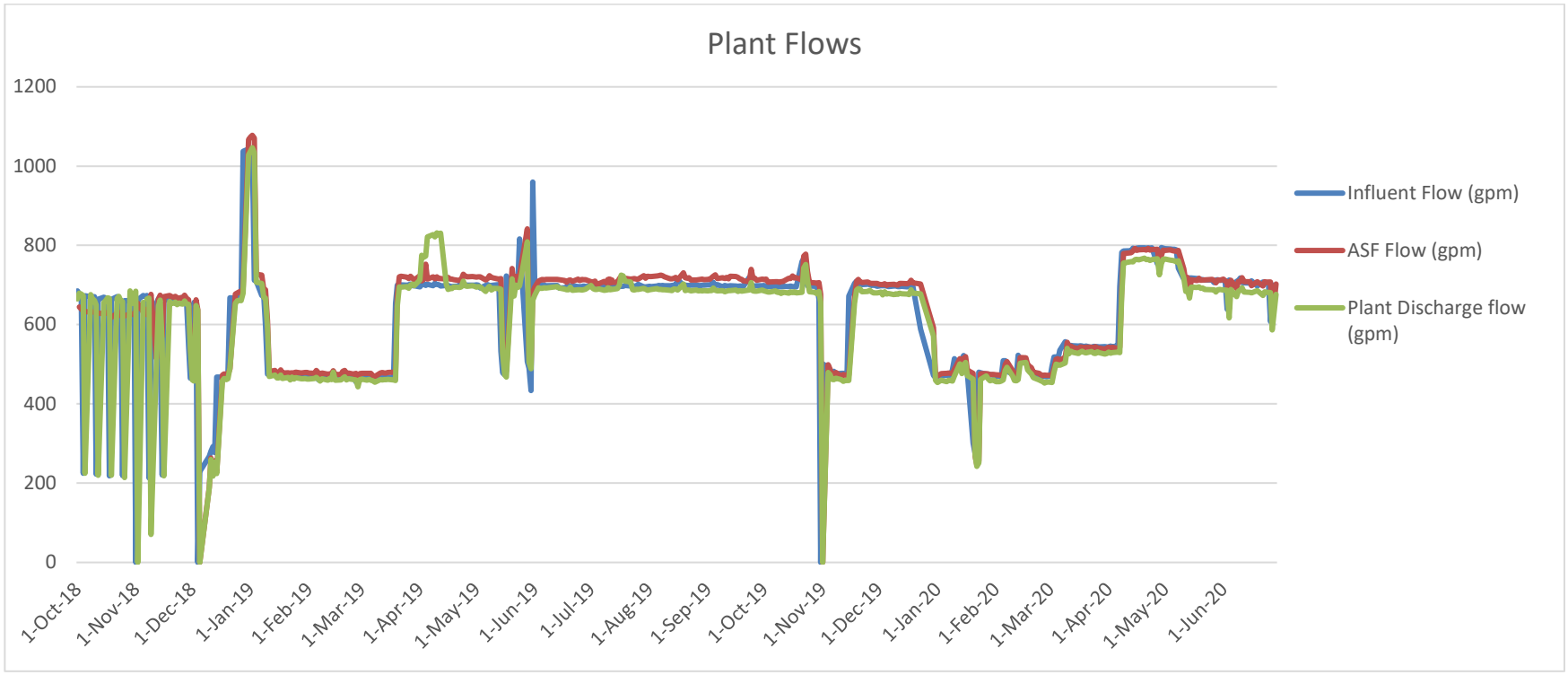
- The cleanup of vegetative growth around the monitoring wells continues
- Well, well field, and basin inspections continue.
- The well access paths are relatively clear, downed trees and overgrowth are removed as necessary.

14.3 Other

- The grounds continue to be inspected but not maintained at OU4.
- An egress path was cut around the OU4 plant perimeter
- 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

June 2020 Flows				
	Plant Influent		Plant Discharge	
Date	Volume	Avg. Flow	Volume	Avg. Flow
1-Jun-20	1027000	713	991774	689
2-Jun-20	1028000	714	992740	689
3-Jun-20	1027000	713	991774	689
4-Jun-20	928000	644	896170	622
5-Jun-20	3021000	699	2917380	675
8-Jun-20	992000	689	957974	665
9-Jun-20	1001000	695	966666	671
10-Jun-20	1032000	717	996602	692
11-Jun-20	1039000	722	1003362	697
12-Jun-20	3026000	700	2922208	676
15-Jun-20	996000	692	961837	668
16-Jun-20	782000	543	755177	524
19-Jun-20	3063000	709	2957939	685
22-Jun-20	1000000	694	965700	671
23-Jun-20	1023000	710	987911	686
24-Jun-20	1030000	715	994671	691
25-Jun-20	992000	689	957974	665
26-Jun-20	984000	683	950249	660
27-Jun-20	1782000	619	1720877	598
29-Jun-20	1018000	707	983083	683
30-Jun-20	999000	694	964734	670
June Total Plant **Influent** (Gal)				27,790,000
June Total Plant **Effluent** (Gal)				26,836,803

Readings from HMI digital outputs

Table 5 – Pump System Flow Readings

June	On-Time Minutes (actual)	Avg. Flow (gpm)	Avg. Flow (gpd) (over 31 days)	Total Flow (gal)
RW-1	6	222	-	1332
RW-2	5	245	-	1225
RW-3	39830	245	324,900	9,747,000
RW-4	38124	261	331,233	9,937,000
RW-5	39647	199	262,733	7,882,000
Plant Influent	39830	698	926,333	27,790,000
Plant Effluent	39830	674	894,560	26,836,803

The treatment process was online 28 days in June, there was 3333 minutes of downtime. Flows are taken from the HMI meter readings. The plant discharge values are calculated from recent historic data as a percentage of the influent flow. The plant discharging downhill to Basin 33 results in a syphoning effect which distorts the flow transmitter output.

Table 6 – Claremont Corrective Actions Summary

Conditions of note and corrective actions planned 7/1/2020

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 Nassau County Fire Code indicates that the system have a central monitoring and flow monitoring system installed. The fire alarm panels are non-functional and are off line. ***The fire alarm system needs to be replaced*** ***A central station monitoring system needs 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, ***A defective smoke detector is to be replaced and the existing system tested. It needs to be determined if central monitoring is required. All the other violations have been addressed.***	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	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

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 ***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 ***This work will be scheduled***	Plant operator	Shut down will be required	Ladder work
The loss of power 11/1/19 appears to have affected the outdoor lighting timer	Unit receives power but appears to not function. It is a 270 volt unit ***The unit should be replaced.***	Plant operator	none	Electrical work
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***	Outside plumbing contractor?	None at this time	Sanitary water may be shut off during repairs

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
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 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 switch 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
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

Condition to be Corrected	Status and Actions	Resources	Plant Ops Impact	Health & Safety Impacts
ASF P1 has started to emit a high pitched whine	The pump was taken out of service as a precautionary measure as its operating hum grew louder ***The system will need to be checked***	Plant operator and outside resources	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
Upon the ASF pumps cycling off, the check valves have started to slam closed. This has 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 ***This will need further investigation***	Plant operator	If replacement or repairs are necessary, a plant shutdown will be required as the units can-not be isolated	To be determined
Upon the ASF pumps cycling on, the engagement of the starter contact is getting rather violent. This has a tendency to rattle the piping and plant fixtures	A softer start/stop control may fix this issue. I may also help the above issue. ***The fix may require EE to get involved***	Plant operator and EE support	To be determined	To be determined
The overload for the RW-4 motor starter is tripping with greater frequency.	**The overload is easily reset at the pump. The OL elements have been replaced. The relay itself may need to be replaced.** **This needs further electrical testing.**	**Plant operator and EE support**	**To be determined**	**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**.
- 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**.
- 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.

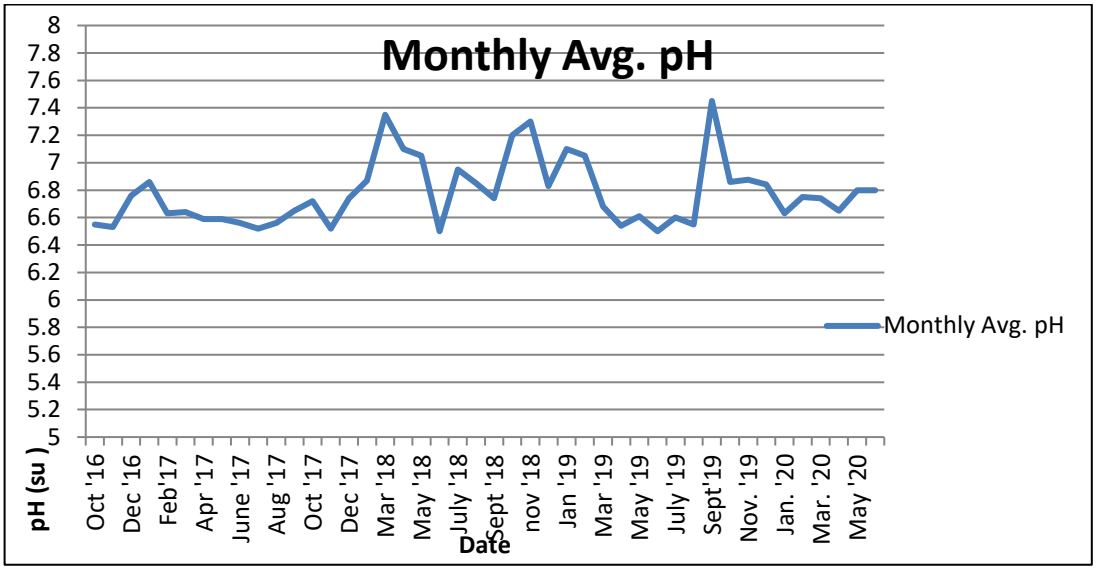
Table 7 – Recent Plant Discharge Analytical Results

The plant discharge was last sampled 6-18-20. The analytical results are for these samples are shown below.

Parameters	Discharge Limitations (SPDES)	Units	Results
pH (range)	*6.5 – 8.5*	*SU*	*6.8*
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	0.33
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	NS
Arsenic, Total recoverable	50	ug/l	NS
Barium, Total recoverable	2000	ug/l	NS
Chromium, Hexavalent	100	ug/l	NS
Lead, Total recoverable	50	ug/l	NS
Iron, Total recoverable	600	ug/l	NS
Manganese, Total recoverable	600	ug/l	NS
Mercury	Not indicated	ug/l	NS
Zinc	Not indicated	mg/l	NS
Nitrogen, Total (as N)	10	mg/l	NS
Selenium, Total recoverable	40	ug/l	NS
Solids, Total Dissolved	1000	mg/l	NS
Chloride Ion	NL	mg/l	NS
Cyanide	Not indicated	ug/l	NS
Fluoride Ion	NL	mg/l	NS
Sulfate Ion	NL	mg/l	NS
1, 4-Dioxane	NL	ug/l	NS
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)
June ‘18	6.5
July ‘18	6.95
Aug ‘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
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



ATTACHMENTS

Attachment 1

June 8, 2020

On the morning of June 8, (approximately 06:40), the autodialer sent out an alarm for a Hi-Hi Level Alarm condition in the PFF wet well. This was acknowledged at 06:50, the alarm for a Hi-Hi level Alarm condition in the ASF wet well went out. The system automatically shut down at 06:52

At the site, no pumps were tripped, the ASF wet well level indicators were all illuminated. The PFF wet well level indicators were all lit (except L2) and blinking.

The PFF pumps (-2 and -3) were started in the Hand mode and the wet well pumped down to low-low level (LL). L1 and L3 lights remained blinking. The ASF pumps did no restart. The pumps were activated in the Hand mode, the blower switched on, and they were put in the Auto mode. As the level in the ASF wet well dropped, the pumps for RW-3 and RW-4 came on. The pressure switch for RW-5 had tripped.

After the PFF pumps lowered the wet well to LL level, the pumps were put in Auto mode. L1 and L3 continued to blink and the PFF P3 began short cycling several times before it ran steadily. The wet well pumped down and L1 and L3 continued to blink. While in Auto mode, the wet well went to Hi-Hi level without the pumps coming on. Lamps L1, L3-5 were blinking. L5 is the level the Standby (3rd) pump should come on. The pumps were put into Hand mode and the wet well pumped down. L1 and L3 continued to blink.

The system did not send out any emails or text alerts.

The wet well was allowed to go below L1 and the L1 light went off, L3 continued to blink.

As per Ian, the output from Warrick 2 (W-2) was moved to W-1. At the current level, L1, L2 and L3 were solid. The lag pump came on with the level switch. At Low-Low level, L3 continued to blink. The output from W-3 was removed and L-3 went off. Returning the output, the blinking resumed. The PFF system continues to run in auto mode through several cycles.

The electrical engineering group believes that the junction box in the PFF wet well holds water and is interfering with the level switches. The box cannot be opened to drain it. They (EE) propose running new conduit and wires from the relay panel to the wet well and connecting the float switches above grade.

Attachment 2

June 16, 2020

On the morning of June 16, (approximately 07:40), the AS Blower shut down. The motor control was reset and tested, however the blower will run in Hand mode for 30 seconds and shut off. The breaker does not trip when system is online.

The system was put into Hand mode and the overloads were measured. The readings the Phase A and Phase C were extremely high. Additional readings and troubleshooting will need to be completed by the electrical engineers.

June 18, 2020

Electrical engineers onsite to troubleshoot operational issue with the AS blower. Burnt wires inside of the disconnect switch enclosure were discovered.

The input side of the motor disconnect on the Phase B wire melted off the terminal. The wire was no longer connected, and charring and burn marks on the wire, tape, and insulation were observed. This occurred inside of an explosion proof disconnect, therefore there was no indication of excessive heat on the outside due to the thickness of the housing.

This scenario typically occurs overtime as a progression of deterioration. What caused the initial deterioration is unknown, however it could have been as simple as a nicked wire during initial insulation stripping, a wire lug not being as tight, or dirt getting into the disconnect. As the wire heats up due to the current flowing there was a hot spot that caused either the insulation or dirt to burn or the copper to arc slightly.

This incident is fairly common and usually does not cause a big issue. In this case, the starting current of the blower is pretty high and over the years, this caused slight arcs. Every time the cable arced, no matter how small of an arc, the copper melts ever so slightly. As the cross section of the cable decreases, the heat at that one point increases and the size of the arcs increase. This increases the rate of deterioration. The final deterioration happened when the cable was basically completely disconnected and the current flowed through a larger arc which charred the top of the terminal, melted/burned some of the insulation and tape, and disconnected the wire completely.

The motor would run because it was getting its power through the other two wires, but their current was also increased and that is why the overloads where tripping after about 30 seconds of running the blower. The only way to prevent something like this is through comprehensive visual inspection. The challenge in this case is that the disconnect is explosion proof and difficult to remove the cover to inspect the insides. If this were not an explosion proof disconnect, then it would be easy to inspect. The onsite team used the slack in the current configuration to reconnect everything and the blower is now functioning properly.