

Q2 2018 Quarterly Progress Report Niagara Falls Water Board Order on Consent R9-20170906-129

Prepared for submission to:

New York State Department of Environmental Conservation Region 9 270 Michigan Avenue Buffalo, New York 14203

Prepared by:

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Executive Summary

This document is the second required quarterly progress report for the Niagara Falls Water Board (NFWB) Order on Consent R9-20170906-129 (Consent Order) as required by Schedule A Item 15 of the Consent Order. This progress report covers the period from April 1, 2018 through June 30, 2018. The next quarterly progress report covering the period July 1, 2018 through September 30, 2018 is due October 31, 2018.

During the past quarter the NFWB has properly operated the wastewater treatment plant and has met all State Pollution Discharge Elimination System (SPDES) permit requirements. Solids processing (settling, thickening, dewatering) during this period has functioned as intended so that the WWTP is not accumulating solids. Primary effluent is clean (minimal suspended solids) which has allowed the WWTP's activated carbon filters to process all plant influent without any bypasses occurring at the WWTP. Dewatering throughput during this period has kept up with incoming solids, which has allowed gravity thickener overflow to be substantially free of solids.

Maintenance activities during the reporting period have been extensive, and as of the end of the quarter major treatment systems and components are functional. The WWTP is undertaking a number of capital upgrades and improvements that are within the capability of the WWTP's maintenance staff and/or contractors awarded service contracts. In addition to a multitude of projects that are being undertaken by the WWTP's staff and outside contractors, project planning for \$27 million in major capital upgrades is taking place, including the preparation of three grant applications to the State of New York, the New York State Environmental Facilities Corporation, and possibly other potential funding sources.

The NFWB has met all scheduled requirements of the Consent Order as identified in Schedule A. Specific submissions due during the past quarter have been submitted to the NYSDEC in accordance with the schedule identified in the Consent Order. Specific submissions and/or milestones achieved include:

- The first quarterly report for the first quarter of 2018 (Q1 2018) was submitted April 30, 2018 to the NYSDEC and posted on the NFWB's website along with the Consent Order.
- A response to the NYSDEC's comments on Consent Order Items 5b, 5C, and 12 was prepared and submitted to the NYSDEC on May 21, 2018.
- Consent Order Item 10 of Schedule A was submitted in accordance with the specified deadline of June 19, 2018.
- The planned piping system upgrades described previously in the NFWB's Schedule A Item 4d submittal, are substantially complete in accordance with the June 29, 2018 schedule submitted in that deliverable (Consent Order Item 4d). Piping work in the Thickened Sludge Pump Building was substantially completed June 25, 2018 including new thickened sludge pump #4 (TSP#4), PVC SCH 80 sludge pipe was replaced with ductile iron pipe, new pressure gauges, additional flush ports, concrete pads, etc. The following punch list items remained as of June 30, 2018:

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- Fabricated ductile iron spool pieces are ordered and will be installed once received. In their place, are PVC SCH 80 spool pieces.
- Pipe supports need to be grouted and bolted in place.
- Controls for TSP#4 will be done at later date by Ferguson Electric as part of the WWTP's electrical services contract. In meantime TSP#4 pump can be operated in hand mode at the pump VFD.
- Planned improvements discussed in Consent Order Schedule A Item 4a have been completed as of the end of June 2018, including:
 - Purchase and receipt of a spare dewatering polymer feed pump.
 - Purchase and installation of a 4th thickened sludge pump (TSP#4).

The NFWB is committed to working cooperatively and openly with the NYSDEC to improve the Niagara Falls WWTP and operate it to the best of its capability. To that end, we have had an open dialogue with the NYSDEC through numerous meetings and discussions. Project status update meetings and discussions have been held between the NFWB and the NYSDEC on the following dates:

- April 26, 2018 DEC conference call regarding NYSDEC comments on the first progress report and capital projects. There were no NYSDEC comments on the Q1 2018 progress report.
- A number of email communications regarding maintenance needs of Sedimentation Basin 5.
- A number of email communications regarding discussions with the New York Power Authority regarding use of the NYPA conduits as an alternative discharge location.
- A number of email communications regarding the LaSalle Consent Order and BHC discharge limits.

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1. WWTP Performance

This section discusses the operation of the NFWB WWTP during the reporting period of April 1, 2018 through June 30, 2018. In the following sections Treatment Plant Operations, Solids Removal Performance, and Treatment Plant Equipment Readiness are discussed.

1.1 Treatment Plant Operations

Mr. Robert Dunn serves as the Chief Operator of the wastewater treatment plant. Until such time as Mr. Dunn achieves the necessary operator's license, Mr. Kenneth Maving (New York State 4A licensed Operator 7598) is serving as the licensed plant operator. Mr. Maving spends at least 4 hours per day on average at the facility on a Monday through Friday basis and assists Mr. Dunn with his duties. The NFWB has hired one (1) operations staff during the past quarter. The WWTP is currently short one (1) operator position. Hiring to fill this remaining position is underway. The plant continues to invest considerable time and effort into training the operations staff. SOS's are being provided with individual training by Mr. Tim Lockhart (NYS Class 4A License Number 7816). The plant's operations capabilities continue to improve. During the reporting period there have not been any SPDES permit excursions. Solids processing has kept up with the incoming solids, and equipment maintenance and repair activities have been conducted in a prompt and efficient manner.

During the past quarter the WWTP has transitioned from "winter mode" to "summer mode". Wastewater temperatures entering the carbon filters have increased and sulfide generation within the carbon filters has ramped up. Additionally, dry weather during the latter part of the past quarter has resulted in reduced plant flows. In response the plant has implemented a number of measures to mitigate/manage the presence of sulfide and the potential for odors including:

- Routine inspections of sedimentation basins and gravity thickeners to observe for bubbling, odors, floating sludge, etc.
- Routine skimming of sedimentation basins to remove floating sludge & scum.
- Sodium hypochlorite is being added to the backwash water for all backwashes of the carbon filters. This helps to control sulfide odors in Sedimentation Basin 5, and helps to satisfy the chlorine demand of Sedimentation Basin 5 effluent.

In general these measures have been successful in minimizing plant odors, but the turbidity of the effluent has generally suffered. With increased sulfide concentrations exiting the carbon filters, chlorination of the effluent results in a turbid effluent characterized by a greyish/white turbid appearance. Unfortunately there are no means in place to prevent this from occurring.

During June 2018 an issue was discovered with Sedimentation Basin 5 sludge screw, and it was determined that the sludge screw was not operational. Because the sludge screw is an important component of sludge removal from Sedimentation Basin 5, the NFWB contacted the NYSDEC to

inform the Department of the situation. The NYSDEC gave permission to drain Sedimentation Basin 5 for inspection and repairs. The tank was successfully drained without incident, cleaned and the cause of the issue was determined to have been caused by two (2) of the traveling bridge's sludge blades becoming lodged in the sludge screw. Because the extent of the damage was significant, and there are lead times associated with fabricating new sludge blades, the NYSDEC gave permission to the NFWB to put the basin back on-line in a partially functional state while repairs were planned. As of the end of Q2 2018 Sedimentation Basin 5 was back in service with a partially functional sludge rake. Repairs are scheduled for Q3 2018. Throughout the event the NYSDEC was informed of all activities and approved the work, provided it was performed under the supervision of the Onsite Environmental Monitor. The plant has functioned successfully throughout the draining and cleaning of the basin, without any adverse effects and without any detriment to the facility's effluent discharge.

Other operational improvements implemented during the past quarter include:

- A more reliable method of scum skimming and pumping has been implemented. As a result operators are able to routinely (daily or as needed) skim floating materials from the sedimentation basins.
- The air scour blower has been returned to service for use during filter backwashes. The revised piping system utilizes an elevated "high-loop" to prevent flooding of the blower. As a result of the air scour system being returned to service, backwash effectiveness should be improved.
- All filter backwash now utilizes sodium hypochlorite addition to the backwash water to help clean the underdrain and gravel layers, and to potentially reduce sulfide generation.
- Modifications to the facility's effluent sampling and flow monitoring system were substantially complete in May 2018 and entirely completed in June 2018. The results were reported to DEC via email, and should result in a fully representative effluent sample being collected.
- Technical representatives from Evoqua and Brentwood Industries that specialize in chain and flight clarifier design and retrofit were given a site tour of the NFWB's sedimentation basins and insight on how to improve the operational efficiency and reliability of the existing sedimentation basin chain and flight scrapers were obtained from both vendors.
- Temporary potable seal water piping was installed for the four thickened sludge pumps to enable a clean high quality seal water supply. This should improve the reliability of the thickened sludge pumps.
- Mixers in the Rapid Mix Tanks have been turned on, and all wastewater flow in the influent channel is being directed through the Rapid Mix Tanks. The change is expected to improve the efficiency of ferric chloride coagulant for solids removal. The ferric chloride is added just prior to the Rapid Mix Tanks.

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- Routine use of the sludge judge has been implemented to better monitor for a buildup of solids in the sedimentation tanks and gravity thickeners.
- As influent wastewater flows have diminished, the ferric chloride dosage has been reduced accordingly.
- The lag pump on set point (level) at the Gorge Pumping Station was reduced from 84" to 81" to allow the lag pump to turn on earlier with a goal that brief overflows that have been experienced at the Gorge Pumping Station may be eliminated.

On June 20, 2018 an odor complaint was received by the NYSDEC from an employee at the Maid of the Mist stating that odors persisted throughout the day at the boat dock located in the lower Niagara River. A review of plant operational records for June 20, 2018 revealed that a loss of sodium hypochlorite addition occurred that initially resulted in low residual chlorine values and potentially sulfide odors. Once sodium hypochlorite addition was reestablished elevated residual chlorine occurred that may have resulted in a "bleach" like odor. The problem was attributed to running out of sodium hypochlorite for approximately a 2 hour period. Once sodium hypochlorite supplies were replenished, overcompensation resulted in high residual chlorine values. The takeaways from the event included the following:

- Operations staff should monitor sodium hypochlorite tank levels more closely and make early requests for sodium hypochlorite delivery. Staff should also follow up with the chemical supplier if scheduled deliveries do not arrive.
- If it looks like sodium hypochlorite supplies are running low and a delivery has not yet been received, operations staff should curtail sodium hypochlorite use for carbon filter backwashing in order to retain sodium hypochlorite for effluent disinfection.
- Operations staff should closely monitor effluent residual chlorine concentrations and should make more frequent adjustments to the sodium hypochlorite feed rate.

It should be noted that the effluent disinfection system at the WWTP is difficult to control as it is configured. The limitations are significant and prevent a consistent and reliable residual chlorine level to be maintained in the effluent. The NYSDEC recognizes this fact, and it is the subject of Consent Order Schedule A, Item 9. The Consent order Schedule A, Item 9 report is due in September 2018.

1.2 Solids Removal Performance

A solids balance for April, May, and June 2018 is presented in Table 1. According to the data provided in Table 1 the WWTP has removed and landfilled more solids than were present in the plant influent. The calculations indicate that, during this time period, there has been no net accumulation of solid materials in the treatment plant. Because the solids balance continues to show more solids being removed and disposed of during most months, an evaluation is being undertaken to improve the accuracy of the solids balance. Items being evaluated include:

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Table 1

NFWB WWTP Solids Balance

Month & Year	Average Daily Flow Mgd	Average Influent TSS mg/l	Average Effluent TSS mg/l	TSS Removed (Dry) Tons/day	Ferric Chloride Added to Wastewater (Dry) Tons/day	Lime Added to Sludge (Dry) Tons/day	Total Solids (Dry) (TSS + Lime + Ferric) Tons/day	Solids Content of Landfilled Sludge %	Total Solids (Wet) Tons/day	Solids Landfilled (DRY) Tons/day	% Landfilled 1
Apr-18	32.6	76.2	6.8	9.41	1.98	2.10	13.49	23%	74.09	17.04	126%
May-18	23.5	136.2	12.9	12.05	1.99	1.61	15.65	23%	68.03	18.34	117%
Jun-18	19.7	129.7	11.6	9.67	1.82	1.94	13.43	23%	58.41	16.51	123%

NOTES: mgd million gallons per day

TSS Total Suspended Solids

% greater than or equal to 100 indicates all incoming solids plus all chemicals added are being removed and sent to landfill. Polymer

1 weight added to wastewater (primary & dewatering) is not accounted for in spreadsheet and if available would increase the accuracy of the calculation.

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- The added weight of primary and dewatering polymer,
- Whether the moisture content of dewatered sludge is being properly accounted for, and
- The effluent flow meter accuracy at low flows is being reviewed along with the totalizer function in the plant SCADA system.

As of April 1, 2018 the WWTP uses Modern Disposal for hauling and disposal of dewatered sludge, grit/screenings, and sewer debris. Since making this switch from Republic Services, sludge trucking and disposal operations have improved tremendously. After some disruptions in early April 2018, Modern's service has been sufficient to allow uninterrupted plant dewatering. The number of rolloff containers and/or landfill capacity no longer limit sludge dewatering operations, as used to occur under the old trucking and disposal contract. The new contract requires an increased number of rolloffs be available and Modern is required to perform services for the following number of hours per day:

Haul Sludge Containers to Landfill

Monday – Friday:	16 Hour Day
Saturday:	8 Hour Day
Sunday:	No hours

Reposition Sludge Containers at the WWTP

Monday – Friday:	16 Hour Day
Saturday:	16 Hour Day
Sunday:	16 Hour Day

Modern is also using some new practices to make the operation more efficient including the use of dump trucks or semi-tractor trailers to reduce the number of round trips while hauling more material per trip.

1.3 Treatment Plant Equipment Readiness

During the reporting period there have been numerous treatment plant equipment breakdowns that required maintenance staff to repair or replace the equipment. In general the frequency and severity of equipment breakdown appears to be diminishing, which is believed to be the result of improved plant operations and maintenance capabilities. Equipment repairs this past quarter have included:

Sedimentation basin repairs continue to be an ongoing issue, but this past quarter saw a
reduction in the frequency of repairs. In the past quarter repairs have been made to grit
screws, chains and flights (alignment adjustments), scum rake adjustments, valve
replacements in pump gallery, and sludge plow blades. Each time a basin was taken out of
service all sludge in the basin was pumped to the thickeners before the basin was emptied
by pumping or draining to the head of the plant.

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- Sedimentation Basin 5 saw its first equipment breakdown since being put back on line in October 2017. Although the repairs are in progress as this report is being prepared (July 2018), the basin was able to be successfully drained and cleaned while the plant was operated in a satisfactory manner. Procedures and policies have been developed to enable the basin to be drained and cleaned to enable critical maintenance to be performed. All work in Sedimentation Basin 5 has been approved by the NYSDEC, overseen by the Onsite Environmental Monitor, and progress updates reported to the NYSDEC via email.
- Thickened sludge pump couplers and seals continue to be an issue, although the frequency of repairs is improving as a result of the use of city water (potable water) for seal water and the use of an improved control algorithm which eliminates the constant cycling of the thickened sludge pump variable frequency drives.
- Belt filter press #1 belt replacement (top & bottom belt), seal replacement, and roller repair. At this time all three belt filter presses have had their top and bottom belt replaced. Filter press reliability is improved as a result of the focused attention these machines have received over the past six (6) months.
- Pugmill bearing and clutch replacement.
- Lime feed systems (motor, gear box, variable frequency drive, and screw feeder) repair and replacement.
- The south gravity thickener has been taken out-of-service, cleaned, inspected, and is ready for service.

Although these repairs may have kept equipment out of service for brief periods of time during the past quarter, it has not adversely affected the plant performance. In general a sufficient number of sedimentation basins with fully functional sludge removal equipment have been available to treat all incoming flows. Additionally, sufficient belt filter presses have been available for dewatering such that solids accumulation in the treatment plant has not occurred. As of the close of the second quarter of 2018, the following can be said regarding treatment equipment operability:

- Four (4) Main Pumps are operational.
- Three (3) Intermediate Pumps (#2, #3, and #4) are operational. The #1 intermediate pump is inoperable and the pump is unable to be isolated due to an inoperable valve. A plan to assess this pump will be developed in the near future. NOTE – The WWTP has excess pump capacity in its Intermediate Pumping Station, and therefore immediate repairs to this pump are not critical.
- Sedimentation Basins 1 through 4 are fully functional and available for service with the following exceptions:
 - Grit Screw 1 is out of service and requires extensive repairs. The grit screw has been removed from Sedimentation Basin 1 and plans are being made to send the grit screw out for repairs. Note that Sedimentation Basin 1 can be used in its present condition if necessary without any adverse consequences to effluent quality.

During the past quarter, two (2) sedimentation basins have been used for flows up to 40 mgd, three (3) basins used for flows between 40 mgd and 60 mgd, and four (4) basins for flows over 60 mgd. When backwashing to the head of plant, these flows are somewhat reduced (3 basins put online at 35 mgd, 4 basins at 55 mgd) or as needed to allow the filters to be backwashed without the potential for 100 foot weir overflow.

- Sedimentation Basin 5 requires extensive repairs to the underwater components of the sludge and scum rake system. Plans are well underway to address this issue as expediently as possible. The NYSDEC has been fully informed of all developments related to work on Sedimentation Basin 5. While Sedimentation Basin 5 is out of service, carbon filter backwash flows are being directed to the head of plant.
- Twenty three (23) activated carbon filters are functional, with five (5) filters out of service due to inoperable valve actuators. A high priority has been assigned to returning these filters to service. Backwash pump 1B has been inoperable since May 24, 2018 through the end of the quarter due to the pump's discharge valve actuator malfunction. There are two backwash pumps, therefore backwashing has continued using the alternate pump. A new valve actuator has been ordered and should be installed in Q3 2018.
- A new carbon air scour blower and piping system was put on line in June 2018, and the system works as intended. The new system has a completely rebuilt blower, new pressure and temperature switches, cleaned and calibrated instrumentation with new sensing lines, and a high loop that will prevent water backflow to the blower that has resulted in repeated difficulties with operating the air scour system over the years.
- Three (3) belt filter presses are fully functional and capable of operating simultaneously, along with four (4) thickened sludge pumps, and three (3) polymer feed pumps (with spare polymer pump on the shelf).
- Two (2) pugmills, two (2) lime feed systems, and two (2) lime storage silos are fully functional.

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2. Deliverables and Routine Communications

This section presents a listing and discussion of deliverables prepared by the NFWB for submission to the NYSDEC. In addition other related written communications between the NYSDEC and the NFWB are also discussed.

2.1 Deliverables Status

Figure 1 presents a Microsoft Project schedule showing the status of all seventeen (17) items listed in Schedule A of the Consent Order. The due date and the percent complete for each item is also listed in Figure 1. In the past quarter the items listed in Table 2 were submitted to the NYSDEC to meet the Consent Order Schedule A requirements.

Date	Prepared By	Consent Order Schedule A Items	Comment
April 30, 2018	AECOM	ltem 15	Q1 2018 Progress Report
May 21, 2018	AECOM/GHD	Items 5b &5c, Item 12	Response to NYSDEC questions received in NYSDEC letter dated April 21, 2018
June 19, 2018	AECOM	Item 10	Work plan for carbon filter oxidizer addition study

Table 2NFWB Submissions to NYSDEC per Schedule A of the Consent Order

In addition to the above Consent order milestone submissions, the following items that were committed to in prior submissions were achieved during the past quarter:

- The planned thickened sludge piping system upgrades described previously in the NFWB's Schedule A Item 4d submittal are substantially complete in accordance with the June 29, 2018 completion date submitted in that deliverable (Consent Order Item 4d). Piping work in the Thickened Sludge Pump Building was substantially completed June 25, 2018 including installation of new Thickened Sludge Pump #4 (TSP#4), PVC SCH 80 sludge pipe was replaced with ductile iron pipe, new pressure gauges, additional flush ports, concrete pads, etc. The following punch list items remained as of the end of June 2018:
 - Four (4) custom fabricated ductile iron spool pieces are ordered and will be installed once received. In their place, are PVC SCH 80 spool pieces.
 - Pipe supports need to be grouted and bolted in place.
- Controls for TSP#4 will be done at later date by Ferguson Electric as part of the WWTP's electrical services contract. In meantime TSP#4 pump can be operated in hand mode at the pump VFD.

Figure 1 Consent Order Schedule Milestone Status

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Item No.	Task Name	Lead Firm	Support Firm	Duration	Start	Finish	Deadline	% Comp Di	EC Submittal Date	DEC Approval Date	NC	2018	F M A M J J A S O N D J F M A M
1	O&M Procedures & Documentation Submittals	GHD	AECOM	326 days	Tue 12/19/17	Tue 3/19/19	Tue 3/19/19	52%					GHD GHD
2	Operation as per Approved Plans	AECOM	NFWB	33 days	Tue 12/19/17	Thu 2/1/18	NA	100% 2	018-02-01	2018-03-15			AECOM
3	Sedimentation Basin Dewatering Procedures	AECOM	NFWB	33 days	Tue 12/19/17	Thu 2/1/18	NA	100% 20	018-02-01	2018-03-15			AECOM
4	Excess Solids Work Plan Submittal	AECOM	NFWB	43 days	Tue 12/19/17	Thu 2/15/18	Mon 2/19/18	100% 20	018-02-15	2018-03-15			AECOM
5	Improve Sedimentation Basin TB and C&F Reliability	GHD	AECOM	326 days	Tue 12/19/17	Tue 3/19/19	NA	49%					GHD
6	Ferric chloride Alternative Evaluation Work Plan Submittal	AECOM	GHD	197 days	Tue 12/19/17	Wed 9/19/18	Wed 9/19/18	50%					JAECOM
7	Sedimentation Basin 5 Alternative Evaluation Work Plan Submittal	AECOM	GHD	197 days	Tue 12/19/17	Wed 9/19/18	Wed 9/19/18	50%					AECOM
8	WWOP Update Submittal	GHD	AECOM	197 days	Tue 12/19/17	Wed 9/19/18	Wed 9/19/18	70%					GHD
9	Disinfection Improvement Recommendation Submittal	AECOM	GHD	197 days	Tue 12/19/17	Wed 9/19/18	Wed 9/19/18	50%					AECOM
10	Carbon System Oxidizer Evaluation Work Plan Submittal	AECOM	GHD	131 days	Tue 12/19/17	Tue 6/19/18	Tue 6/19/18	100% 20	018-06-19				AECOM
11	Treatment Process Alternative Report Submittal	AECOM	GHD	326 days	Tue 12/19/17	Tue 3/19/19	Tue 3/19/19	15%					AECOM
12	GPS & FST CSO and SSO Documentation Submittal	GHD	AECOM	65 days	Tue 12/19/17	Mon 3/19/18	Mon 3/19/18	100% 20	018-03-19			_	GHD
13	NYAlert CSO & SSO Reporting Documentation Submittal	GHD	AECOM	65 days	Tue 12/19/17	Mon 3/19/18	Mon 3/19/18	100% 20	018-03-19				GHD
14	Outfall 001 & 003 Relocation Evaluation Submittal	Joint	Joint	196 days	Tue 12/19/17	Tue 9/18/18	Tue 9/18/18	25%					Joint
15	Quarterly Report Progress Submitals	OEM	Joint	356 days	Tue 12/19/17	Tue 4/30/19	NA	42%					
16	Sedimentation Basin 5 Dewatering Restrictions	NFWB	GHD	326 days	Tue 12/19/17	Tue 3/19/19	NA	100%					NFWB
17	Update Operating Plans & Staff Direction	NFWB	Joint	1 day	Tue 12/19/17	Tue 12/19/17	NA	100%				NFWB	
Project: NFV Date: Wed 7	VB Consent Order /18/18 Split	Milest Summ	one dary t Summary		Inactive Task Inactive Milest Inactive Sumn	tone nary	and all the second s	Manual Task Duration-only Manual Summ	hary Rollup	M Si Fi	lanual Summa tart-only nish-only	ary F E	External Tasks Progress External Milestone Manual Progress
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- Planned improvements discussed in Consent Order Schedule A submission 4a have been completed as of the end of June 2018, including:
 - Purchase and receipt of a spare dewatering polymer feed pump.
 - Purchase and installation of a 4th Thickened Sludge Pump (TSP#4)

2.2 Deliverables Discussion

In addition to the above submittals, work is well underway on the following Consent order deliverables:

- Consent Order Item 1
- Consent Order Item 5a & 5d
- Consent Order Item 6
- Consent Order Item 7
- Consent Order Item 8
- Consent Order Item 9
- Consent Order Item 11
- Consent Order Item14

2.3 Deliverables in Next Quarter

During the third quarter of 2018 (July 1, 2018 through September 30, 2018) the NFWB will prepare and submit the following items per Schedule A of the Consent Order:

- Consent Order Item 5d Equipment Improvement Recommendations
- Consent Order Item 6 Ferric Chloride Alternative Work Plan
- Consent Order Item 7 Sedimentation Basin 5 Alternative Evaluation
- Consent Order Item 8 WWOP Update
- Consent Order Item 9 Disinfection Improvement Recommendation
- Consent Order Item 14 Alternative Outfall Evaluation

2.4 Routine Communications in Past Quarter

During the past quarter the correspondence items listed in Table 3 were submitted to the NYSDEC by the NFWB.

Date	Prepared By	Purpose
May 7, 2018	Rupp Baase	Request for modification to LaSalle SSO Consent Order
June 26, 2018	Rupp Baase	Request to dewater Sedimentation Basin 5 and proceed with repairs to be completed by August 7, 2018.

Table 3 NFWB Communications to NYSDEC

The written communications listed below in Table 4 were received from the NYSDEC during the reporting period:

Date	Delivered To	Purpose
April 21, 2018	Rupp Baase	Questions raised on Consent Order Items 5b, 5c, 12, and 13 submittal. Requested response by May 21, 2018.
June 15, 2018	Rupp Baase	Approval to return Sedimentation Basin 5 to service in partial state of functionality.

 Table 4

 Communications Received from NYSDEC

2.5 Unresolved Issues/Delays

To avoid project delays, the NFWB requests the following assistance or information from the NYSDEC:

- Any insight that the NYSDEC has regarding the proposed \$20 million New York State grant would be appreciated to guide the NFWB as they move forward with capital improvement planning and grant application preparation.
- Response to the NFWB's request to modify the compliance schedule for the LaSalle Sanitary Sewer Overflow Consent Order.
- Official confirmation of John Kolaga of Rupp Baase's understanding from his conversation with NYSDEC Region 9 counsel that the NYSDEC considers the current SPDES permit

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extended under the of State Administrative Procedures Act such that the SPDES permit will not expire later this year and that, by early Fall 2018, the NYSDEC will issue a permit modification that allows the WWTP to operate under the interim BHC limits for three (3) years.

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3. Capital Improvement Program

In this section, progress on WWTP capital upgrades is discussed. Capital upgrades are proceeding on several fronts. Projects that are within the capability of in-house maintenance staff are being undertaken as fast as possible. Additionally, outside contractors selected for WWTP work (Mechanical Contractor – Mollenberg Betz, Electrical Contractor – Ferguson Electric) are being utilized for larger projects. Lastly, planning is underway to perform a number of identified capital upgrades that are necessary to stabilize the operation of the existing treatment plant. Each of these items are discussed in this section.

3.1 In-House Capital Upgrades Completed/Underway

This category of projects includes work being undertaken by plant maintenance staff or outside contractors without the need for extensive design and engineering documents. This work is generally considered repair and/or replace in kind and therefore NYSDEC approval is not generally required prior to performing the work. During the past quarter the following projects are proceeding and/or were completed:

- Thickened Sludge Pump Building piping replacement Sludge piping in the Thickened Sludge Pump Building is being replaced with ductile iron pipe per Consent Order Schedule A Item 4d. This work has been completed and only minor punch list items remain as of the end of Q2 2018. Note that this work also included the purchase and installation of a fourth thickened sludge pump and variable frequency drive (VFD), both of which have been installed and are operational. The last item to complete in the Thickened Sludge Pump Building is the installation of the controls system for TSP#4. The plan is to use existing PLC panels IP3 and IP4. This work has been started and should be completed in Q3 2018. In the meantime TSP#4 can be operated in hand without remote control capability.
- Air Scour Blower and Piping Improvements This system was successfully completed and is being used for carbon filter backwash. The work included: complete rebuild of the existing air scour blower, rebuild of all air flow control devices (Spence valve, pressure relief valve, unloader valve, check valve, and Meriam orifice plate), new sensing tubing for instrumentation, calibration of all instrumentation, new pressure and temperature switches, new pressure gauge, new drain valve, and the addition of a "high-loop" with new vacuum relief valve in the air piping.
- Effluent Sample Station Improvements Improvements to the facility's effluent monitoring station are complete. Completed work includes:
 - New effluent flow meter 4 to 20 mA wiring was run from the flow meter to the Chlorine Contact Building. Verification of the effluent flow meter calibration was performed.

- Installation of a 4 to 20 mA signal splitter box along with connecting the flow signal to the existing effluent sampler and to the plant SCADA system.
- Installation of a new Bredel APEX 28 peristaltic effluent sample pump in the Chlorine Contact Building to pump wastewater from the chlorine contact tank to the sample head tank.
- Installation of a Watson Marlow 530SN/R2 peristaltic pump in the Chlorine Contact Building to pump from the sample head tank to the Hach CL7 residual chlorine analyzer.
- Replacement of all effluent sample tubing (from the chlorine contact tank to the sample head tank, from the sample head tank to the CL17 analyzer, and from the sample head tank to the Sigma effluent sampler).
- Cleaning and CCTV inspection of the vertical sample well that is installed in the chlorine contact tank. The sample well pipe was lowered and extended so remains submerged under all conditions.
- Addition of a mixer to the head tank to prevent settling in the tank.
- Gorge Pumping Station Rotating Element Rebuild A rebuilt rotating element was installed in Gorge Pump 1 along with new coupler, seal housing, and seal. The pump was professionally aligned. The work is complete, and the rotating element that was removed from the pump was sent out for rebuilding. Upon return to the facility it will be available for use in rebuilding another Gorge Pumping Station pump.
- Scum System Improvements An interim Sedimentation Basin scum removal system has been installed and is being utilized. The system will be used until such time as a permanent scum system is installed as part of the proposed capital improvements described below in Section 3.2.
- Lime Silo Level Monitoring Systems A new radar based lime level measurement system is in the process of being installed in each of the two lime silos as of the end of the quarter. The system will be started up in Q3 2018.
- Exterior door replacements have been performed at the Thickened Sludge Pump Building (double man door, 8 foot high) and at the Sludge Building (large overhead door with man door).
- Both ferric chloride diaphragm pumps have been rebuilt with new diaphragms, seals, and all elastomer components.
- New shoes for the grit classifier screws have been ordered and received with installation expected in Q3 2018.
- The new emergency power generator has been started up and placed in service. The unit will allow critical plant components to operate in the event of a failure of both electrical service high voltage feeders.

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- The second electrical feeder to the WWTP has been reconnected as a result of completion of the switchgear upgrades. The switchgear will utilize the alternate plant feeder in the event of a power outage on the feeder being used.
- Lighting improvements have been completed in the influent channel and screenings/grit rooms using motion activated LED lights. Lighting upgrades are continuing throughout the plant exterior and the filters.
- Security improvements including camera, perimeter fencing, brush removal, and automatic entry/exit gates have been completed. All employees are assigned RFID cards that open and close the gates.
- Grit screw #1 has been removed from Sedimentation Basin 1 and will be sent out for reconstruction. The grit screw will be reinstalled once received back at the plant.
- Three filter troughs have been repaired (fiberglass) and reinstalled.
- Painting throughout the plant is continuing including the influent channel, main control/operations room, and restrooms. Pipe painting and stenciling is planned to be performed next.

3.2 Capital Improvement Projects

Longer term capital projects that are necessary to stabilize the operation of the treatment plant have been identified and are listed in Table 5. The capital projects are all necessary assuming the plant technology will remain as it is for the next several years. The total value of the capital projects identified is \$27 million dollars. Planning is underway for working these projects into the NFWB's 5year capital improvement program (CIP). It should be noted that the projects listed in Table 5 are consistent with the soon to be completed Engineering Report that will be submitted by the NFWB as part of the NFWB's grant applications (Table 5 is derived from Table 4-1 of Engineering Report titled Engineering Report – Wastewater Treatment Plant and Gorge Pumping Station Rehabilitation, GHD, July 2018). Table 5 has been modified from what was submitted in the Q1 2018 progress report, and represents the NFWB's most current capital spending plan and is consistent with the Engineering Report that will be submitted as part of the Consolidated Funding Application.

The projects listed in Table 5 are necessary to stabilize and optimize the operation of the existing WWTP. Many of the projects address equipment that is near the end of its useful life and would be necessary regardless of the future direction of the WWTP. The projects listed in Table 5 do not include any efforts to relocate the plant outfall or to change the treatment technology at the WWTP. The NFWB believes that decisions about whether to proceed in these directions will not be made until the required studies specified in Schedule A of the Consent Order are complete.

3.3 Grant Application Status

Clark Patterson Lee (CPL) has been tasked with preparing grant applications on behalf of the NFWB to ensure that the NFWB makes maximum usage of available state and federal funding

opportunities. The grant applications being prepared are consistent with the projects listed in Table 5. Although the State of New York has offered \$20 million in assistance to the NFWB, the terms of that assistance are not fully available from the State. The NFWB is optimistic that the promised funding will be made available to the NFWB to perform the projects listed in Table 5. While the means and methods of obtaining grant funding as it relates to the promised \$20 million is unknown the NFWB intends to submit the following grant and funding applications in time for the 2018 submission deadlines.

- Consolidated Funding Application (CFA)
 - Submission deadline in July 2018 with award announcement in December 2018.
 - Over \$800 million available over 30 programs through 12 State Agencies.
- NYS Clean Water Infrastructure Act of 2017 includes \$2.5 billion invested for clean water (sewer), drinking water and water quality protection projects.
 - \circ Submission deadline end of June 2018 with award announcement in October 2018.
 - The \$2.5 billion is split among a number of programs and portions of this funding may already be allocated to projects approved within past several years. Potentially applicable categories include:
 - \$1 billion for the 2017 Water Infrastructure Improvement Act including \$225 million available through the NYS Environmental Facilities Corporation Water Infrastructure Improvement Act (WIIA) for clean and drinking water projects;
 - \$245 million for Water Quality Improvement Projects;
 - \$10 million for a water infrastructure emergency loan fund; and
 - \$355 million for clean water infrastructure projects after SFY 2021-22.
- NYS Clean Water State Revolving Fund (CWSRF) Hardship Financing and Grants includes a maximum of \$5 million in grants and a total of \$20 million combined hardship financing over five-year period.

Project	Alternative	Description	Cost			
Group						
	2B	Primary Scum Removal and Treatment Improvements – Restore Scum Pumping and Install Fine Screen	\$1,020,000			
1	4C	Sedimentation Basin Improvements – Replacement of Traveling Bridges with Chain and Flight Equipment	\$8,680,000			
Ť	10C	Sedimentation Basin Isolation Plate Replacement – Replacement of Both Isolation Plate Guides	\$140,000			
	19C	Sedimentation Basin No. 5 Effluent Management Improvements - Submersible Pumping System Upgrades	\$550,000			
2	2 7C Gorge Pumping Station Rehabilitation – Comprehensive Gorge Pumping Station Rehabilitation					
	3B	Screenings and Grit Transport Equipment Improvements - Replacement in Kind	\$560,000			
3	5C	Polymer Equipment Upgrades – Replacement and Upgrade of Polymer Equipment	\$820,000			
	14C	Dewatering Equipment Control Upgrades – Comprehensive Dewatering System Control Upgrades	\$740,000			
	8B	Granular Activated Carbon Replacement – Replacement with Recycled Reactivated Carbon	\$1,500,000			
4	9B	Carbon Filter Support Gravel Replacement – Replacement of Support Gravel	\$500,000			
	1B	Electrical System Improvements - Complete Critical Repairs	\$2,360,000			
5	17B	Lighting Improvements – Needs Assessment and Lighting Improvements	\$250,000			
	6B	Disinfectant Dosage and Location Optimization – Optimize Sodium Hypochlorite Dosage and Location	\$650,000			
6	11B	Chemical Coagulant Optimization - Alternate Coagulant	\$1,500,000			
	12B	Minimization of Sulfide Formation - Oxidant Addition	\$1,500,000			
7	13B	Heating and Ventilation Improvements – Replacement of Critical Heating and Ventilation Equipment	\$1,160,000			
8	15B	Backwash Blower Equipment Improvements – Replacement of Blower Equipment	\$300,000			
	16C	Thickened Sludge Building Waterline Replacement – Replacement of Plant Waterline and Process Waterline	\$140,000			
5	18B	Interior Process Piping Replacement – Needs Assessment and Piping Improvements	\$500,000			
		Total Project Cost (Rounded)	\$27,000,000			

Table 5Planned Capital Upgrades

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