

Q1 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

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April 30, 2018



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Executive Summary

This document is the first 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 December 19, 2017 (date of signing the Consent Order) through March 31, 2018. Because the period between December 19, 2017 and the end of the year represented a relatively short period of time, the New York State Department of Environmental Conservation (NYSDEC) allowed the NFWB to cover a slightly longer period of time in this first quarterly progress report. Hereafter each quarterly progress report will cover a calendar quarter. The next quarterly progress report covering the period April 1, 2018 through June 30, 2018 is due July 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. During the reporting period there have been a number of wet weather flow events which witnessed influent flows of 60, 70, and 80 million gallons per day (mgd). In each of these events incoming flows have been fully treated without any partial treatment bypasses occurring at the WWTP. Dewatering throughput during this period has been very high, 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 all major treatment systems and components are fully 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 recently 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 \$21.7 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. Immediate compliance with the following items has been achieved:

- Consent Order Item 2 and 3 of Schedule A.
- Consent Order Item 5c of Schedule A.
- Consent Order Item 16 of Schedule A.
- Consent Order Item 17 of 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 include:

- Consent Order Items 2 and 3 of Schedule A.

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- Consent Order Items 4a, 4b, 4c, 4d of Schedule A.
- Consent Order Items 5b & 5c of Schedule A.
- Consent Order Items 12 & 13 of Schedule A.

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:

- December 20, 2017 (Conference call),
- January 30, 2018,
- February 9, 2018, and
- March 21, 2018.

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1. WWTP Performance

This section discusses the operation of the NFWB WWTP during the reporting period of December 19, 2017 through March 31, 2018. In the following sections Treatment Plant Operations, Solids Removal Performance, and Treatment Plant Equipment Readiness are discussed.

1.1 Treatment Plant Operations

Upon the retirement of Joseph Lagamba on December 29, 2017 the NFWB has appointed Robert Dunn 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 four (4) operations staff during the past quarter although one (1) recent hire has since resigned. The WWTP is currently short one (1) operator position. Hiring to fill this remaining position is underway. In addition to the new operations staff, two (2) operators have been promoted to Shift Operation Supervisor (SOS) bringing the total number of SOS's to four (4), which is fully staffed. With the WWTP nearing full staffing the plant has invested considerable time and effort into training the new hires and staff promotions. Because the plant is nearing full staffing, and newly hired operators have completed their training rounds (which takes approximately 6 weeks before being assigned to a shift), the plant's operations capabilities have improved, and 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.

On January 13, 2018 bench scale jar testing of solids dewatering and primary influent wastewater treatment was conducted. The dewatering jar testing confirmed that current dewatering polymer dosages are proper and close to optimum. Based upon the primary influent testing the ferric chloride and primary polymer dosages were increased in January 2018. The increased chemical feed dosages, combined with better mixing being achieved by using the mixers in the rapid mix basins for ferric chloride dispersion, have resulted in further improvements to the primary effluent quality. The improved effluent quality has, in turn, allowed the facility to increase the filter feed rate to 2,400 gallons per minute (gpm) (surface loading rate of 3.4 gpm/square foot) on a routine basis, and 2,600 gpm during one of the recent high flow events.

1.2 Solids Removal Performance

A solids balance for December 2017 and the first three (3) months of 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. (Refer to notes 2 and 3 at bottom of Table 1 for additional discussion.)

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Table 1
NFWB WWTP Solids Balance

Month & Year	Average Daily Flow	Average Influent TSS	Average Effluent TSS	TSS Removed (Dry)	Ferric Chloride Added to Wastewater (Dry)	Lime Added to Sludge (Dry)	Total Solids (Dry) (TSS + Lime + Ferric)	Solids Content of Landfilled Sludge	Total Solids (Wet)	Solids Landfilled (DRY) ¹	% Landfilled ²
	Mgd	mg/l	mg/l	Tons/day	Tons/day	Tons/day	Tons/day	%	Tons/day	Tons/day	%
Dec-17	22.66	75.6	9.7	6.21	1.23	1.62	9.06	23%	58.74	13.51	149%
Jan-18	28.18	122.4	7.9	13.43	1.48	1.85	16.76	23%	73.09	17.35	104%
Feb-18	33.48	103.5	8.9	13.16	1.80	2.48	17.44	23%	75.83	20.59	118%
Mar-18	28.05	100.5	6.8	10.94	1.94	2.17	15.05	23%	65.43	14.40	96% ³

NOTES: mgd million gallons per day
TSS Total Suspended Solids

1 Includes 21.9 dry tons produced by Denali Water (Contract dewatering firm) in December 2017.

2 % greater than or equal to 100 indicates all incoming solids plus all chemicals added are being removed and sent to landfill. Note that the "Solids Landfilled" weight includes sewer debris generated by NFWB's outside sewer crews. Starting in April 2018 with the new landfill contract, these solids will be tracked as a separate item, and only dewatered sludge will be utilized in this calculation. This change will be more representative of actual plant performance.

3 Result of 96% in March 2018 can be attributed to one "bad" influent sample collected on March 26, 2018 which had a measured influent TSS of 546 mg/l. It is believed that the plant sewer was discharging to the wrong main wet well and therefore recycled solids were captured in the influent sample. For calculation purposes, if the influent TSS on this day is set to 100 mg/l which is a typical value, the solids balance for the month (i.e. % Landfilled) becomes 107%. The wet well switchover occurred on the 26th of March and it is likely that the main wet well gates and/or plant sewer valves were set incorrectly which resulted in return solids biasing the influent sample TSS upward.

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On February 2, 2018 the sludge trucking/disposal firm that has managed the WWTP's sludge (Republic Services) informed the NFWB that as of February 28, 2018 they were no longer going to provide sludge hauling or disposal services for the NFWB. While negotiations between the NFWB and Republic Services continued, the NFWB was compelled to rebid the trucking and disposal contract. Republic Services subsequently verbally agreed to continue to provide sludge hauling and disposal services through the end of March 2018. Notices to bidders were issued February 26, 2018 with bids due on March 7, 2018. Based upon the bids received, the apparent low bidder is Modern Disposal at a cost of \$59.57 per wet ton (inclusive of all costs). This cost represents a 50% increase from the previous disposal contract with Republic Services (\$39.87/wet ton). Therefore estimated sludge disposal costs for 2018 are expected to increase substantially. The new sludge hauling and disposal contract is scheduled to go into effect on April 1, 2018.

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, including:

- Sedimentation basin repairs have been extensive including repairs to traveling bridges (drive motors, drive shafts, drive couplers, drive shaft bearings, drive motor electric brake, lift motor electric brake, drive and lift system limit switches, drive wheels (cogged wheels), power cord reels, cord reel take up cables, etc.), and the submerged chain and flight sludge collection system (drive chains, flights, flight chains, drive sprockets, idler sprockets, scrapers, etc.). 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.
- Thickened sludge pump couplers and seals.
- Belt filter press belt replacement (top & bottom belt), drive motor and gear box replacement, and seal replacement.
- Inclined conveyor belt replacement along with replacement of sludge diverter belt scrapers.
- Pugmill bearings, drive, and clutch replacement.
- Lime silo emptying and inspection.
- Lime silo baghouse cleaning, inspection, repairs to shake mechanism, and replacement of bag house filters.
- Lime feed systems (motor, gear box, screw feeder) repair and replacement.
- Both gravity thickeners have been taken out-of-service, cleaned, inspected, and returned to 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

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that solids accumulation in the treatment plant has not occurred. As of the close of the first quarter of 2018, the following can be said regarding treatment equipment operability:

- Three (3) Main Pumps are operational (#1, #2, #4). The #3 main pump is awaiting a new shear pin and bushings, which have been ordered.
- 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.
- All sedimentation basins are fully functional and available for service including all ancillary equipment (grit screw, sludge screw, submerged chain and flight, traveling bridge, three sludge/grit pumps, and the new chain and flight system (Sedimentation Basin 1)). 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. Sedimentation Basin 5 continues to be used solely for carbon filter backwash. Effluent from Sedimentation Basin 5 continues to be directed to the chlorine contact tank, as does the submersible pump installed in Sedimentation Basin 5 to provide hydraulic equalization. Sludge from Sedimentation Basin 5 is directed to the head of the plant for co-settling with plant influent solids. Recent operating experience has shown that sludge from Sedimentation Basin 5 does not settle well when sent directly to the gravity thickener.
- Twenty six (26) activated carbon filters are functional, with two (2) filters out of service due to inoperable valve actuators. Repairs are underway on these two filters.
- One (1) carbon filter air scour blower is functional although it operates at reduced output capacity.
- Three (3) belt filter presses are fully functional and capable of operating simultaneously, along with three (3) thickened sludge pumps, and three (3) polymer feed pumps.
- 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.

In accordance with Article IV of the Consent Order (On-Site Environmental Monitor (OEM) and Consultant) the NFWB's attorneys, Rupp Baase Pfalzgraf Cunningham LLC, submitted a request to appoint Dr. John Goeddertz as Onsite Environmental Monitor. The request which was dated January 4, 2018, was approved by the NYSDEC in a February 20, 2018 NYSDEC letter. The NYSDEC approval letter contained a Waiver of Conflict statement that was signed by the NYSDEC and NFWB. In addition to serving as OEM, Dr. Goeddertz assists in day to day operations, provides engineering assistance, helps with long term capital improvement planning, and prepares the quarterly progress reports.

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.

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

Date	Prepared By	Consent Order Schedule A Items	Comment
February 1, 2018	Rupp Baase	Item 2 & 3	Commentary/clarification of Items 2 & 3, not necessarily a required submission.
February 15, 2018	Rupp Baase	Items 4a, 4b, 4c, 4d	
March 19, 2018	Rupp Baase	Items 5b & 5c, Items 12 & 13	

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 9
- Consent Order Item 10

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The following items are in the planning stages of development:

- Consent Order Item 6
- Consent Order Item 7
- Consent Order Item 11
- Consent Order Item 14

2.3 Deliverables in Next Quarter

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

- Consent Order Item 10 Carbon System Oxidizer Evaluation Work Plan Submittal (due June 19, 2018)

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.

Table 3
NFWB Communications to NYSDEC

Date	Prepared By	Purpose
January 4, 2018	Rupp Baase	Request to permit Dr. John Goeddertz to serve as Onsite Environmental Monitor (OEM).
January 10, 2018	Rupp Baase	Termination of Order on Consent R9-20141018-80 (Mercury) due to inclusion of outstanding items in current order R9-20170906-129.
		Suspend activities under Contract 69 pending further studies required under the current Consent Order relating to sedimentation basin 5 effluent management.
		One (1) year hiatus from Order on Consent R9-20080528-32 (LaSalle SSO) due to limited NFWB resources available to manage multiple consent orders.
March 23, 2018	Rupp Baase	Request for Continuation of Interim BHC discharge limits.
March 26, 2018	Rupp Baase	Submission of AECOM & GHD cost proposals for Consent Order Items 11 and 14 in response to proposed \$500,000 New York State grant.

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

Table 4
Communications Received from NYSDEC

Date	Delivered To	Purpose
February 20, 2018	Rupp Baase	Letter approving Dr. Goeddertz as OEM along with Waiver of Conflict statements signed by NYSDEC and NFWB
March 15, 2018	Rupp Baase	Letter approving Consent Order Items 4a, 4b, 4c, 4d of Schedule A (as clarified in NYSDEC letter dated March 16, 2018 (see March 16, 2018 item below))
March 15, 2018	Rupp Baase	Agreeing to terminate order on consent R9-20170906-129 (mercury)
		Agreeing to suspend activities on Contract 69
		Responding to order on consent R9-20080528-32 (LaSalle SSO) requesting additional information
March 15, 2018	Rupp Baase	Letter approving request to operate process as described in Rupp Baase submission dated February 1, 2018
March 16, 2018	Rupp Baase	Amendment of letter approving Consent Order Items 4a, 4b, 4c, 4d of Schedule A

2.5 Unresolved Issues/Delays

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

- In order to pursue the engineering evaluation of outfall relocation alternatives that involve sending WWTP effluent to the New York Power Authority (NYPA) water intake conduits, the NFWB requests that the NYSDEC make initial contact with NYPA to introduce this concept and to identify appropriate points of contact within NYPA.
- 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.

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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 repairs 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:

- WWTP Sewer and Drain Cleaning – Plant sewers and drain lines throughout the WWTP are being cleaned by Mollenberg & Betz and/or National Vacuum including the following areas:
 - Plant Influent Wet Wells (Both east and west) were drained and cleaned of all accumulated debris, scum, oil and grease, and settled sludge.
 - Sludge Building high bay area catch basins and drains.
 - Sludge Building filter press drains.
 - Sludge Building basement and first floor drains.
 - Chlorine Contact Building floor drains and effluent sampler drains.
 - Outside Sewer Building floor drains.
 - Influent Channel Main Pump Gallery (partially complete, will be completed in second quarter of 2018).
 - Thickened Sludge Pump Building sump and building drains.
 - Carbon Filter Gallery floor drains (partially complete, will be completed in second quarter of 2018.).
 - Odor Control Building floor drains.
 - Sewer lateral serving Gravity Thickener drains.
- Thickened Sludge Pump Building piping replacement – Sludge piping in the Thickened Sludge Pump Building is being replaced in-kind with ductile iron pipe per Consent Order Schedule A Item 4d. This work has been scoped out and bids received from the facility's mechanical services contractor (Mollenberg & Betz). The contractor was authorized to proceed with the work in March 2018, and it is expected to be complete during June 2018 in accordance with

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- the submittal prepared under Item 4d of the Consent Order. Note that this work also includes the purchase and installation of a fourth thickened sludge pump and variable frequency drive (VFD), both of which have already been purchased and delivered to the WWTP. The mechanical installation of the pump will be completed by Mollenberg & Betz, with the plant's maintenance staff completing the electrical installation of pump number 4 and corresponding VFD. Thickened sludge pump number 4 installation work is on the same schedule as the piping replacement required by the Consent order Item 4d. Also included in this project is the installation of two new control wiring conduits that will run between the second floor belt filter press control panel and the Thickened Sludge Pump Building basement to improve the system reliability and eliminate the use of wireless controllers.
- Thickened Sludge Pump Building Flood Detection Systems – The following measures have been installed by plant maintenance staff in the Thickened Sludge Pump Building to detect and prevent a reoccurrence of the July 2017 flood incident which flooded the pump building and took all thickened sludge pumps out of service.
 - An emergency high level sump pump that discharges onto the lawn outside the building in the event the existing gravity drain line becomes plugged was installed. The intent of the pump discharge to the ground surface is that the pump discharge will be visible to plant staff (in this heavily traveled area) so that if a discharge is observed appropriate measures can be undertaken.
 - A high level float switch (above the sump pump on-switch) has been installed that triggers a horn and a red light outside the door of the building has been installed.
 - The sump and drain line out of the Thickened Sludge Pump Building has been cleaned as part of the plant sewer cleaning project mentioned previously. This should help to minimize the potential for a plugged drain line.
 - Because the above two systems (sump pump and high level float switch) require a person to observe the flow from the sump pump and/or see or hear the light/buzzer; it was decided that connecting the above two systems into the SCADA system is necessary. In this manner if either system were triggered, it would alert the plant operations staff via the plant's SCADA system. Quotes have been obtained for this work from the WWTP's electrical contractor, and the appropriate SCADA connections and programming are expected to be installed in the second quarter of 2018. This work was also included in the Consent Order Item 4d recommendations.
 - Air Scour Blower and Piping Improvements – The non-functioning carbon filter backwash air scour blower was disassembled, sent out for rebuilding, and has been received back at the WWTP. In addition the air flow control devices (Spence valve, pressure relief valve, unloader valve, check valve, and Meriam orifice plate) have also been sent out for servicing and have been returned to the site. The facility's mechanical services contractor (Mollenberg & Betz) will be utilized to reinstall the blower and all related piping and controls. At the same time the contractor will install a "high-loop" with new vacuum relief

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valve in the air piping. This work is designed to prevent water incursion into the blower and is scheduled to start in the second quarter of 2018 and will be complete in the second or third quarter of 2018.

- Effluent Sample Station Improvements – Improvements to the facility’s effluent monitoring station and sample pumps are essentially complete by plant maintenance staff, with only one minor item that will be completed in the second quarter of 2018. Completed work includes:
 - New effluent flow meter 4 to 20 mA wiring was run from the flow meter to the Chlorine Contact Building.
 - 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 only remaining work to be done is to remove several debris items from the vertical sample well in the chlorine contact tank. This work will be completed early in the second quarter of 2018.

- Backflow Preventer Maintenance – Back flow preventers at the WWTP and Gorge Pumping Station have been serviced and strainers were cleaned by either plant maintenance staff or Mollenberg & Betz.
- Gorge Pumping Station Seal Water Improvements – Following the backflow preventer servicing (discussed in prior bullet item), pressure gauges have been installed in each gorge pumping station pump seal water circuit before and after the pressure regulator valves. In addition pressure gauges have been installed on the pump discharge pipe to enable seal water set point determination. These improvements which were conducted by plant maintenance staff have resulted in improved reliability of the Gorge Pumping Station pump seal water systems.

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- Gorge Pumping Station Rotating Element Rebuild – A spare rotating element has been sent out for rebuilding and when received back will be installed by Danforth Mechanical. The rotating assembly should be received and installed in the second quarter of 2018.
- Gorge Pumping Station Electrical Feeder Controls Repair – The control system for the automatic switchover of the dual electrical feeders has been repaired and returned to service. The work was performed by O’Connell Electric under the electrical services contract.
- HVAC Improvements – A number of inoperable HVAC units were serviced by outside contractors this past quarter including: HV-15 (sludge building) and HV-26 (odor control).
- Scum System Improvements – the NFWB is in the process of implementing interim scum removal measures including deploying a submersible pump in the existing Scum Building wet well as a way of drawing scum into the Scum Building wet well for removal by a vacuum truck. Preliminary testing performed the last week in March 2018 has demonstrated that the system can effectively move the scum to the Scum Building, enabling collection at a single location. In the second quarter of 2018 scum skimming and removal will be implemented on a routine basis. Provided that the system is effective, it 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 – Existing lime silo level controls have been evaluated and determined to be inoperable. Alternative radar based level measurement systems that will provide continuous level measurement, rather than discrete level detection at three locations in the silo (low level, mid-level, and high level); are being evaluated. A decision should be made soon on a new system and will be followed by procurement and installation.
- Primary polymer motive water improvements and sedimentation basin 5 polymer feed improvements – Existing instrumentation for the primary polymer motive water feed system was cleaned and checked including the flow orifice plate and the flow measurement tube. A downstream pressure gauge was installed. These improvements have allowed the plant to better control the feed of primary polymer to the sedimentation basins by allowing better control of the flow of motive water. In addition, an actuated valve for polymer feed to sedimentation basin 5 was placed into automatic mode, so that the valve is only open when the backwash pumps are operational. This will eliminate polymer feeding to sedimentation basin 5 when no backwash is taking place and will improve the effluent quality from sedimentation basin 5.

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

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plant technology will remain as it is for the next several years. The total value of the capital projects identified is \$21.7 million dollars. Planning is underway for working these projects into the NFWB's 5-year capital improvement program (CIP).

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 on proceeding 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 will be 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 yet 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.
 - 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.

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- **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.

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Table 5
Planned Capital Upgrades

Item Number	Description	Estimated Capital Cost \$
1	Replace medium voltage switchgear & transformers	\$1,000,000
2	Provide primary scum removal and treatment system	\$1,000,000
3	Replace screenings conveyor and add grit conveyor	\$500,000
4	Refurbish and upgrade sedimentation basins 2, 3, 4, 5 including concrete rehabilitation	\$5,500,000
5	Replacement of polymer make up equipment and controls for primary treatment and sludge dewatering	\$700,000
6	Upgrade disinfection facilities including points of addition, controls, and monitoring,	\$600,000
7	Upgrade Gorge Pumping Station	\$4,000,000
8	Carbon change out in carbon filters	\$1,500,000
9	Carbon filter underdrain replacement (5 filters)	\$400,000
10	Sedimentation basin 4/5 gate replacement	\$150,000
11	Optimize chemical coagulant addition and treatment systems including carbon filter backwash treatment	\$1,500,000
12	Optimize chemical disinfectant addition to minimize sulfide formation	\$1,500,000
13	Misc. HVAC improvements and replacements including:	\$1,125,000
	Sludge Building roof exhaust fans	\$150,000
	Vacuum Pump room HVAC upgrades for belt filter press control panel	\$75,000
	Influent channel, bar screen, and grit room supply and exhaust fans	\$325,000
	Carbon storage supply and exhaust fans	\$75,000
	Main Pump Building and wet well ventilation	\$500,000
14	Belt Filter Press Control Panel Reconstruction and Relocation including SCADA addition to thickened sludge pump building, new pump 4	\$600,000
15	Back Wash Blower Replacements (2) and piping reconfiguration	\$350,000
16	Water line to thickened sludge building for pump seal water	\$55,000
17	Lighting Improvements (Main Channel, Pump gallery, Grit Area)	\$250,000
18	Misc. plant piping upgrades and repairs	\$500,000
19	Sedimentation basin 5 submersible pump upgrades	\$450,000
	TOTAL	\$21,680,000

