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Q1 2025 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
700 Delaware Avenue
Buffalo, New York 14209

Prepared by:
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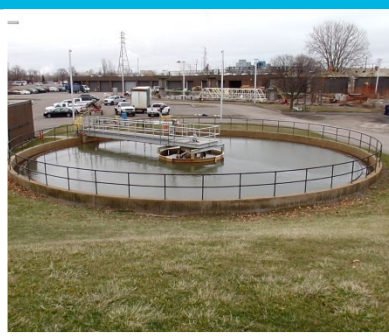
April 30, 2025



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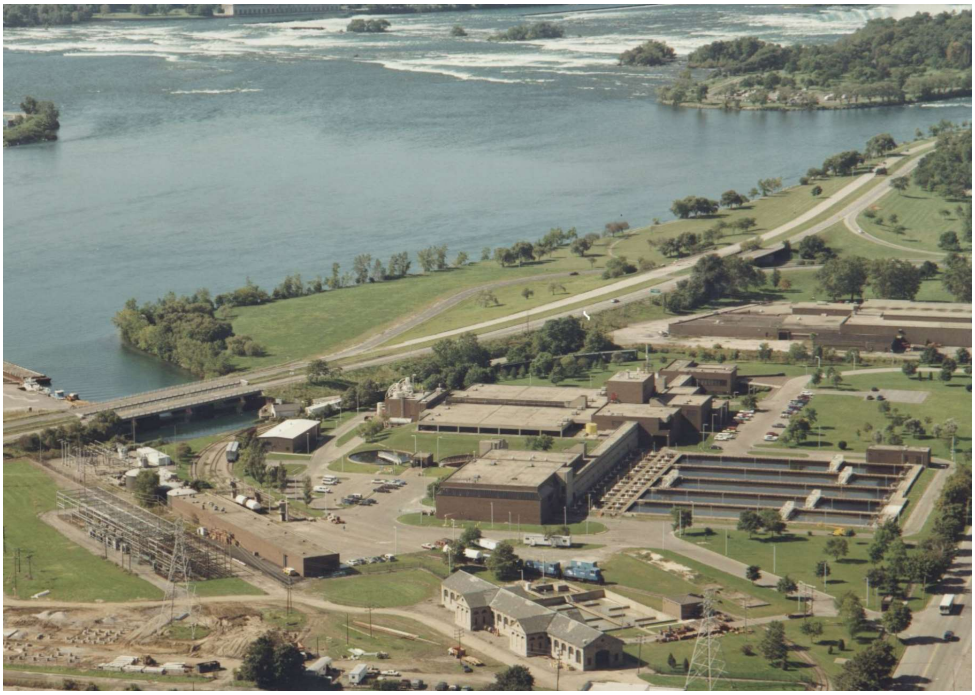

NIAGARA FALLS WATER BOARD

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Executive Summary

This document is the twenty ninth (29th) quarterly progress report for the Niagara Falls Water Board (NFWB) Order on Consent R9-20170906-129 (Consent Order) as originally required by Schedule A Item 15 of the Consent Order. This progress report covers the period from January 1, 2025 through March 31, 2025.

During the past quarter, the NFWB has properly operated the wastewater treatment plant (WWTP) and has met all State Pollution Discharge Elimination System (SPDES) permit requirements. Solids processing (settling, thickening, dewatering) during this period has functioned as intended. Primary effluent is clean which has allowed the WWTP's activated carbon filters to efficiently process the plant's flow. Dewatering throughput during this period has kept up with incoming solids, compared to influent solids loadings. The WWTP was operated substantially free of odors during the past quarter.

Maintenance activities during the reporting period have been ongoing, and as of the end of the quarter major treatment systems and components are functional with a number of exceptions that affect redundancy. The WWTP is undertaking capital upgrades and improvements that are within the capability of the WWTP's maintenance staff and/or contractors awarded service contracts. In addition to the projects being undertaken by the WWTP's staff and outside contractors, project planning, design, and construction of $27 million in major capital upgrades are taking place. Projects 2, 4, 6, 7, 8, 9, and 11 have been completed and work continues on Projects 1, 3, 5 and 10. Project 6 was reopened in Q4 2023 by the addition of sodium hypochlorite storage tank upgrades to the existing Project 6 scope. This work includes replacement of Tank 216 along with some sodium hypochlorite pump, piping, and secondary containment upgrades.

The NFWB has met all scheduled requirements of the Consent Order as identified in Schedule A of the Consent Order. Specific submissions during the past quarter include:

- The twenty eighth (28th) quarterly report for the fourth quarter of 2024 (Q4 2024) was submitted January 31, 2025 to the New York State Department of Environmental Conservation (NYSDEC) and posted on the NFWB's website (Consent Order Item 15).

In May 2024 the NFWB and NYSDEC entered into Order on Consent R9-20230411-13, which also pertains to the WWTP. This major development must be noted here though it does not require quarterly reports or an Onsite Environmental Monitor (OEM) in connection with its requirements. The schedule in the new Order on Consent may be regarded as providing a roadmap for future improvements to the WWTP facility. The new Order on Consent is posted to the NFWB website, like these quarterly reports, and should be consulted for further details. In December 2024 a revised draft State Pollution Discharge Elimination System (SPDES) permit was received from the NYSDEC Albany, New York office. The permit contains a number of substantially revised effluent permit limits. The NFWB submitted its comments on the revised draft SPDES permit to the NYSDEC on March 25, 2025.

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.

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1. WWTP Performance

This section discusses the operation of the NFWB WWTP during the reporting period of January 1, 2025 through March 31, 2025. In the following sections, Treatment Plant Operations, Solids Removal Performance, and Treatment Plant Equipment Readiness are discussed.

1.1 Treatment Plant Operations

Mr. Dennis Kirkland serves as Chief Operator of the wastewater treatment plant as of January 4, 2022. As of January 1. 2025, Mr. Paul Drof (New York State Grade 4A Licensed Operator #7593) assumed the role as the licensed Grade 4 plant operator. Mr. Drof's principal work location is at the WWTP where he is responsible for plant operations and maintenance and is present an average of three days and approximately 20 hours per week. This change was previously reviewed and approved by Mr. Robert Locey (NYSDEC Region 9) via emails between the NYSDEC and NFWB Executive Director and General Counsel Sean Costello, dated December 6, 2024, January 3, 2025, and January 6, 2025.

During Q1 2025 solids processing has kept up with the incoming solids, and equipment maintenance and repair activities have been conducted as promptly as possible.

Sodium hypochlorite consumption has remained somewhat elevated and consistent throughout Q1 2025 at 9,400 gallons per day on average, after experiencing a relatively low usage in December 2024 (4,900 gallons per day). The practice of chlorinating the primary effluent was stopped on January 26, 2023 due to issues with the filters and reduced sulfide generation. Chlorination of the filter backwash water continues to be practiced during long washes and is included in the above totals.

The following operational considerations were noted during Q1 2025:

- Cascades has continued to discharge relatively low amounts of both total suspended solids (TSS) and soluble organic carbon (SOC) during Q1 2025 although there were 13 days in Q1 2025 where TSS discharges exceeded 2,000 lbs. per day. Average SOC and TSS discharges during Q1 2025 were 760 and 1,700 lbs. per day, respectively. The average TSS is somewhat elevated compared to recent prior calendar quarters.
- Carbon filter backwash numbers have remained low (approx. 30 to 35 per day). During Q1 2025 filter backwash water was directed to the East end of the influent channel (Sedimentation Basin 5 end) where it is retreated through the sedimentation basins and activated carbon. This was done to facilitate cleaning and work on the Rapid Mix Tank mixers. The East Rapid Mix Tank mixer is expected to be replaced in Q2 2025. While this work is ongoing carbon filter backwash will continue to be directed to the East end of the influent channel.
- On March 31, 2025 the contractor for Project 1 started work on Sedimentation Basin 1 under capital Project 1. Throughout Q1 2025 the facility has the use of all five sedimentation basins, for the first time in several years.

1.2 Solids Removal Performance

A solids balance for January, February, and March 2025 is presented in Table 1. The data is based upon effluent flow meter measurements and influent/effluent total suspended solids sample results generated by the facility. The data shows that the quantity of solids sent to the landfill has consistently exceeded the amount of solids removed from the wastewater plus chemical solids added (ferric chloride and lime).

Influent suspended solids have continued to be lower than historical averages. The trend of lower influent solids began in November 2021 and appears to correlate with major reductions in suspended solids discharged from Cascades. During the past quarter influent suspended solids loadings averaged 131 dry tons per month (DTPM) which is below the 2023 annual average of 195 DTPM. The 2024 annual average influent suspended solids loadings were 165 DTPM.

1.3 Treatment Plant Equipment Readiness

During the reporting period there were several treatment plant equipment breakdowns that required maintenance staff to repair or replace equipment. Minor repairs have been made this past quarter for pumps, belt filter presses, and sedimentation basin equipment to address issues that have arisen. Although these repairs may have kept equipment out of service for periods of time during the past quarter, it has not significantly 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. As of the close of Q1 2025, the following can be said regarding treatment equipment operability:

- Four (4) Main Pumps are operational although Pumps 1 and 4 continue to experience intermittent controls issues likely related to variable frequency drive (VFD) issues that result in pump shutdown.
- Four (4) sedimentation basins are functional. During the majority of the past quarter all five sedimentation basins were available and on March 31, 2025 Sedimentation Basin 1 was turned over to the contractor for project 1 capital improvements. 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.
- The lower effluent submersible pump in Sedimentation Basin 5 is out of service with an electrical motor failure. The pump is scheduled to be replaced in Q2 2025.
- The West Rapid Mix Tank mixer has been repaired. The East Rapid Mix Tank mixer remains out of service and is awaiting replacement. Influent flow is currently bypassing the rapid mix tanks and it is not intended to return the rapid mix tanks to service until such time as the East Rapid Mix Tank mixer is repaired.

- Because the rapid mix tanks are out of service, the south grit classifier has been idle throughout Q1 2025. The north grit classifier services grit flows from the sedimentation basins.
- Three (3) Intermediate Pumps are operational and control/drive issues are being monitored. Intermediate Pump 2 was taken out of service and the motor and Eddy Current drive (DC Magnetic drive) have been serviced and returned to the facility. Reinstallation of Intermediate Pump 2 is expected to occur in Q2 2025. The facility intends to continue rebuilding intermediate pump rotating elements, motors and drives throughout 2025.
- As of the close of Q1 2025, two carbon filters have been taken offline due to structural issues with one backwash trough in each of filters 2 and 10. Repair or replacement options are being evaluated. As of the end of Q1 2025, twenty-six (26) activated carbon filters are functional, although if absolutely necessary Filter 10 could be utilized because the trough is largely intact and remains in place.
- Two filter backwash pumps are operational following the replacement of filter backwash pump 2B's variable frequency drive (VFD) in Q1 2025. There remain issues with the backwash pump flow measurement devices for both backwash pump 2A and 2B that are being addressed by in-house maintenance staff.
- Sodium hypochlorite backwash pump B experienced a variable frequency drive (VFD) failure during Q1 2025. This pump is used to pump sodium hypochlorite into the backwash water during carbon filter long washes on the B-train of carbon filters (Filters 15 – 28). One of the smaller sodium hypochlorite feed pumps that was set up to deliver sodium hypochlorite to the primary effluent is being used for this purpose until the capital project slated to replace these two sodium hypochlorite backwash feed pumps is completed.
- Thickened sludge pump #1 is out of service with VFD communication (control) issues. The problem will be addressed as part of the belt filter press control upgrades associated with capital project #3. The other three thickened sludge pumps are functional following the return to service of thickened sludge pump #3 in Q1 2025 after performing pump coupler alignment.
- Belt filter press polymer makeup unit #1 (west) that was installed as part of capital project 3 has been returned to service after it was determined that the unit had an Ethernet communication issue that was addressed in Q1 2025.
- During Q1 2025 all three belt filter presses were thoroughly cleaned and dewatering belts were replaced. The broken roller support bracket on belt filter press 3 was replaced which enabled the belt filter press to be returned to service. As of the end of Q1 2025 all three belt filter presses are functional.
- Two (2) pugmills, two (2) lime feed systems, and two (2) lime storage silos are fully functional. During Q1 2025 all pugmill paddles were replaced on both pugmills.

- Work is being done in the WWTP main switchyard to facilitate automatic switching between independent power feeds 187 and 188. Currently automatic switching does not exist.

Table 1

Q1 2025 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)	% Landfilled [1]
	mgd	mg/l	mg/l	Tons/day	Tons/day	Tons/day	Tons/day	%	Tons/day	Tons/day	%
Jan-25	21.5	56.0	8.0	4.3	1.26	1.89	7.4	29.0%	25.7	8.9	120%
Feb-25	24.6	65.3	7.4	5.9	1.45	2.35	9.7	28.2%	34.5	11.7	120%
Mar-25	28.0	58.5	4.8	6.3	1.62	2.07	10.0	27.9%	35.7	11.1	111%

NOTES:

mgd million gallons per day

TSS Total Suspended Solids

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

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

All deliverables required under the consent order have been submitted to the NYSDEC in accordance with the schedule in the Consent Order. Deliverables submitted during the past quarter are listed in Table 2.

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

Date	Prepared By	Consent Order Schedule A Items	Comment
January 31, 2025	AECOM	Item 15	The twenty eighth quarterly progress report for the fourth quarter of 2024 (Q4 2024) was submitted.

2.1.1 Existing WWTP Optimization Efforts

At this time, no further modifications/optimizations to the WWTP treatment process are being considered or planned.

2.2 Deliverables in Next Quarter

All deliverables required under the Consent Order have been submitted. No other deliverables are pending or due under the consent order other than this quarterly report.

2.3 Routine Communications in Past Quarter

During Q1 2025 the NFWB and NYSDEC held a number of discussions regarding the December 23, 2024 draft SPDES permit issued by the NYSDEC. Formal comments were submitted by the NFWB on March 25, 2025 in accordance with an agreed upon extension of time to comment.

2.4 Unresolved Issues/Delays

There are no unresolved issues or delays.

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 quickly as possible. Additionally, outside contractors selected for WWTP work (Mechanical Contractor – Danforth, Electrical Contractor – Ferguson Electric) are being utilized for larger projects. Lastly, design and construction are underway to perform a number of capital upgrades that are necessary to stabilize the operation of the existing treatment plant. Each of these items is 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. At this time all work slated to be performed in-house has been performed.

3.2 Capital Improvement Projects

A schedule for the ongoing capital projects is shown in Figure 1. Note that the NFWB has sought and obtained approval from the NYSDEC to upgrade certain chemical bulk storage facilities under the existing Project 6 engineering services agreement, therefore Project 6 (effluent disinfection upgrades) was reopened in Q4 2024 to facilitate engineering and eventual construction of sodium hypochlorite improvements to Tank 216 and its secondary containment system.

Figure 1

Capital Projects Estimated Construction Schedule

ESTIMATED CONSTRUCTION SCHEDULE

NFWB CAPITAL IMPROVEMENT PROJECTS

Updated: 04/18/2025

TASK DESCRIPTION	PLAN START	PLAN END
Project #1: Sed. Basin Upgrades (CPL) - CA/CI Approved (10-26-20)		
Design and Bidding	5/22/2019	10/1/2020
Mobilization	11/1/2020	2/1/2021
Construction (Phase 1)	3/1/2021	6/30/2022
Construction (Phase 2)	7/1/2022	2/3/2023
Construction (Phase 3)	3/1/2023	2/3/2024
Construction (Phase 4)	3/1/2024	5/30/2025
Project #3 Polymer and Grit (Arcadis) - CA/CI Approved (10-26-20)		
Design and Bidding	5/30/2019	10/1/2020
Updated Design	12/1/2023	3/31/2024
Construction	11/1/2020	12/31/2024
Project #5 Electrical System Improvements (EI Team)		
Design and Bidding	4/25/2019	2/1/2022
Construction	3/1/2022	12/31/2024
Project #10 SCADA Improvements (Kaman) - CA Services Not Required		
Design and Bidding	6/1/2019	12/1/2019
Construction	1/1/2020	11/30/2024
Project #12 Int. Pump Improvements (GHD)		
Design	3/23/2022	8/23/2022 (RFP Pending)