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Q1 2022 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:

AECOM
257 West Genesee Street, Suite 400
Buffalo, New York 14202

April 30, 2022

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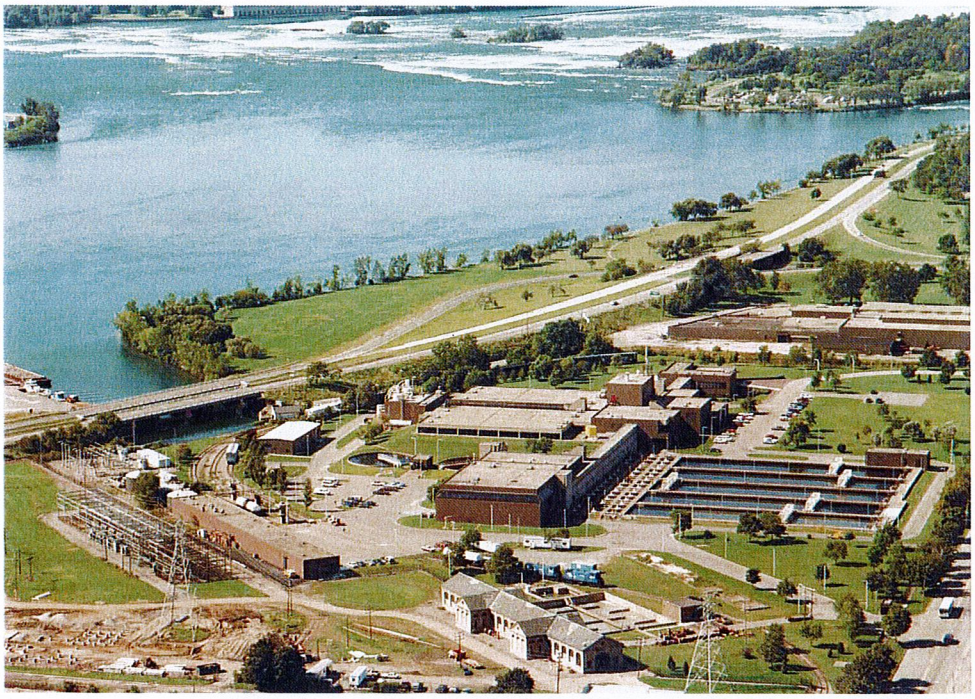

NIAGARA FALLS WATER BOARD

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Executive Summary

This document is the seventeenth (17th) 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, 2022 through March 31, 2022.

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 with one minor exception for alpha-BHC (alpha-Hexachlorocyclohexane) in March 2022. 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 influent flow. Dewatering throughput during this period has kept up with incoming solids, compared to influent solids loadings. The WWTP was operated free of significant 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. 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 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. Engineering contracts are in place for eight (8) of the nine (9) capital projects (Projects 1, 2, 3, 4, 5, 6, 7 and 9) and one (1) of the capital projects has been completed by plant maintenance staff with assistance from an outside contractor under the mechanical services contract (Project 8). Construction of capital Projects No. 4 (GAC Changeout), No. 6 (Effluent Disinfection), and No. 9 (Process Piping) are complete. Construction is underway on Projects 1, 2, 3, 9, and portions of Project 5; and will be underway soon on Project 7.

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 sixteenth (16th) quarterly report for the fourth quarter of 2021 (Q4 2021) was submitted January 31, 2022 to the New York State Department of Environmental Conservation (NYSDEC) and posted on the NFWB's website (Consent Order Item 15).

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, 2022 through March 31, 2022. 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 has been appointed to the position of Chief Operator of the wastewater treatment plant as of January 4, 2022. Until such time as Mr. Kirkland achieves the necessary operator's license, Mr. Fred Kasper (New York State Grade 4 licensed Operator 12489) is serving as the licensed plant operator. Mr. Kasper spends 4 hours per day on average at the facility on a Monday through Friday basis and assists Mr. Kirkland with his duties. During the reporting period there was one reported SPDES permit excursion related to a low-level detection of alpha-BHC in March of 2022. This is the second time this issue has arisen during a 46-month period with no other SPDES permit excursions. 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 within the "typical" range of approximately 5,000 to 10,000 gallons per day. The practice of chlorinating the primary effluent was discontinued due to an issue with the sodium hypochlorite pipeline to the primary effluent channel, however the replacement pipeline should be ready to be placed in service in Q2 2022. Once warm weather returns, the practice of pre-chlorinating the filter influent (primary effluent) will likely resume. Chlorination of the filter backwash water continues to be practiced. Another operational modification which continues to be practiced is to stage a number of the off-line carbon filters in an empty condition. The number of filters being left empty has been maintained at 12 filters. This practice is believed to increase the filter run time and therefore reduce the number of filter backwashes per day. As a result of these practices, the number of filter backwashes per day remains at approximately 30 to 40 backwashes per day; and all backwash water continues to be directed to the head of the plant where it is retreated through the sedimentation basins and carbon filters. The plant has operated continuously in this mode without any incidence of 100-foot weir flow since the practice was initiated on February 3, 2020. Sedimentation Basin No. 5 is currently under construction to install new chain and flight sludge collectors as part of capital project number 1.

1.2 Solids Removal Performance

A solids balance for January, February, and March 2022 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 met or exceeded the amount of solids removed from the wastewater plus chemical solids added (ferric chloride and lime). Results near or greater than 100% generally indicate the plant is operating as intended.

Influent suspended solids have continued to be much lower than recent historical averages. This trend began in November 2021 and continues through the present date. The reduction in influent suspended solids appears to correlate with major reductions in suspended solids discharged from a significant industrial user. For example, during the period January through October of 2021 influent TSS averaged 415 dry tons per month (DTPM) versus the period November 2021 through March 2022 when influent suspended solids averaged 175 DTPM. In terms of landfilled solids, the dry tonnage per month during these two periods averaged 495 DTPM (January through October 2021) and 373 DTPM (November 2021 through March 2022).

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 2022, the following can be said regarding treatment equipment operability:

- Four (4) Main Pumps are operational. The replacement printed circuit boards that were replaced in Main Pump 3 and 4 variable frequency drives (VFD) during Q4 2021 appear to have resolved reliability issues with Main Pumps 3 and 4, and as a result the rental VFD that was brought on site in Q3 2021 was returned during Q1 2022.
- Four (4) Intermediate Pumps are operational and control/VFD issues are being monitored. A project to evaluate the intermediate pumps, motors, drives, and controls has been awarded and that project is underway.
- Four of the five sedimentation basins are functional, with Sedimentation Basin No. 5 out of service for construction. 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.
- Twenty-eight (28) activated carbon filters are functional.
- The filter backwash system is functional including two backwash pumps and two air scour blowers.
- Three (3) belt filter presses and related equipment (sludge and polymer feed pumps) are operational.
- Two (2) pugmills, two (2) lime feed systems, and two (2) lime storage silos are fully functional.

Table 1

Q1 2022 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
	mgd	mg/l	mg/l	Tons/day	Tons/day	Tons/day	Tons/day	%	Tons/day	Tons/day	%
Jan-22	21.3	60.2	9.0	4.5	1.27	2.36	8.2	26.2%	31.2	12.5	152%
Feb-22	31.7	54.3	6.3	6.3	1.62	2.41	10.4	25.4%	40.9	12.1	116%
Mar-22	27.6	44.2	5.1	4.5	1.47	1.38	7.3	26.0%	28.2	9.67	132%

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, 2022	AECOM	Item 15	The sixteenth quarterly progress report for the fourth quarter of 2021 (Q4 2021) was submitted.

2.1.1 Existing WWTP Optimization Efforts

Upon completion of construction of Sedimentation Basin No. 5, the plant will likely direct filter backwash water to Sedimentation Basin 5 and will pump the contents of Sedimentation Basin 5 back to the head of plant for treatment. The plant will attempt to do this without any overflows from Sedimentation Basin 5, i.e., Sedimentation Basin 5 will serve as treatment and hydraulic equalization of filter backwash water. If overflows do occur, the overflow will be directed to the carbon filters. This method of managing filter backwash water will not direct effluent flow from Sedimentation Basin 5 to the chlorine contact tank.

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

There were no significant communications with the NYSDEC during the past quarter.

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 – Mollenberg Betz, 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.

Figure 1

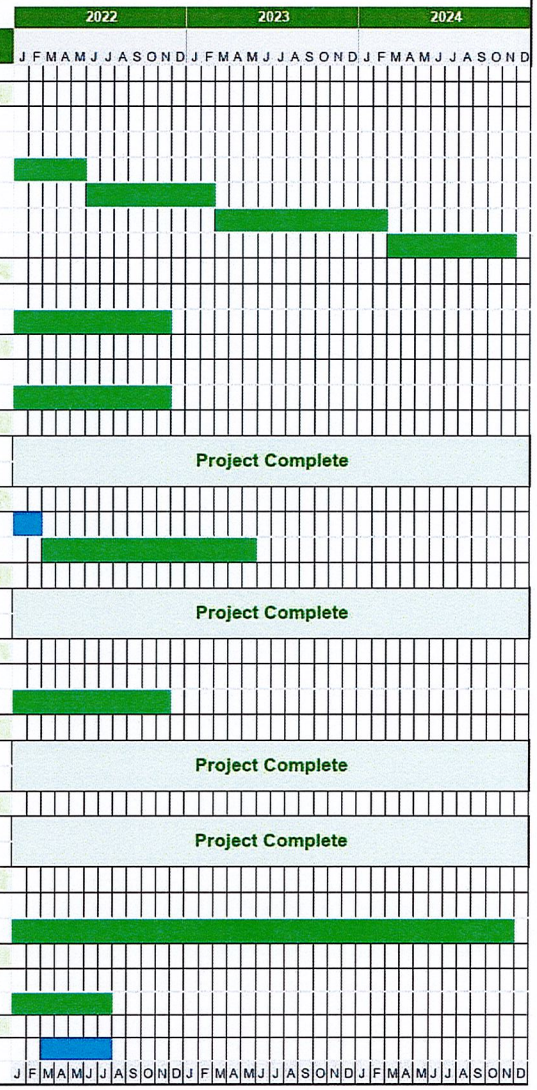
Capital Projects Estimated Construction Schedule

ESTIMATED CONSTRUCTION SCHEDULE

NFWB CAPITAL IMPROVEMENT PROJECTS

Updated: 4-12-22)

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	5/1/2022
Construction (Phase 2)	6/1/2022	2/3/2023
Construction (Phase 3)	3/1/2023	2/3/2024
Construction (Phase 4)	3/1/2024	11/30/2024
Project #2 GPS Rehab (GHD) - CA/CI Services Approved (12-16-19)		
Design and Bidding	6/3/2019	6/27/2020
Construction	7/1/2020	11/1/2022
Project #3 Polymer and Grit (Arcadis) - CA/CI Approved (10-26-20)		
Design and Bidding	5/30/2019	10/1/2020
Construction	11/1/2020	11/1/2022
Project #4 Carbon (AECOM) - CA/CI Approved (11-25-19)		
Design and Bidding	5/22/2019	2/22/2020
Construction	3/1/2020	9/1/2020
Project #5 Electrical System Improvements (EI Team) - CA/CI Services Approved (9-28-20)		
Design and Bidding	4/25/2019	2/1/2022
Construction	3/1/2022	5/1/2023
Project #6 Effluent Disinfection (AECOM) - CA Services (Approved Previously)		
Design and Bidding	6/25/2019	2/1/2020
Construction	3/1/2020	4/1/2021
Project #7 HVAC Improvements (EI Team) - CA/CI Services Approved (9-28-20)		
Design and Bidding	4/25/2019	1/1/2021
Construction	2/1/2021	11/1/2022
Project #8 Replacement of Blower Equipment (In House) - CA Services by AECOM and CPL		
Design and Bidding	2/1/2019	6/1/2019
Construction	7/1/2019	2/1/2020
Project #9 Replacement of Process Piping (JMD) - CA/CI Services Approved (9-28-20)		
Design and Bidding	10/26/2019	3/26/2021
Construction	4/1/2021	3/1/2022
Project #10 SCADA Improvements (Kaman) - CA Services Not Required		
Design and Bidding	6/1/2019	12/1/2019
Construction	1/1/2020	11/1/2024
Project #11 WWTP Additional Piping (JMD) CA/CI Services Approved (9-28-20)		
Design and Bidding	10/1/2019	3/26/2021
Construction	4/1/2021	7/1/2022
Project #12 Int. Pump Improvements (GHD)		
Design	3/23/2022	7/23/2022



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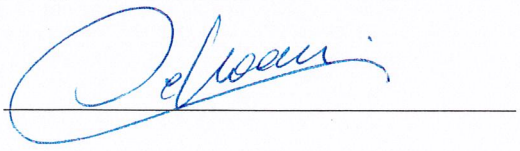
I certify under penalty of law that the letter from John T. Kolaga, Esq., Rupp Baase Pfalzgraf Cunningham LLC, and the enclosed Q1 2022 Quarterly Progress Report, Niagara Falls Water Board Order on Consent R9-20170906-129 prepared by AECOM dated April 30, 2022, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Niagara Falls Water Board



Name: Dr. Abderrahman Zehraoui

Title: Executive Director

Date: 4.20.2022