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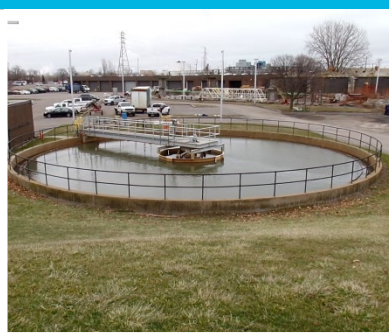
Q2 2023 Quarterly Progress Report
Niagara Falls Water Board
Order on Consent R9-20170906-129

Prepared for submission to:
New York State Department of Environmental Conservation Region 9
270 Michigan Avenue
Buffalo, New York 14203

Prepared by:
AECOM
1 John James Audubon Parkway, Suite 210
Amherst, New York 14228

July 31, 2023



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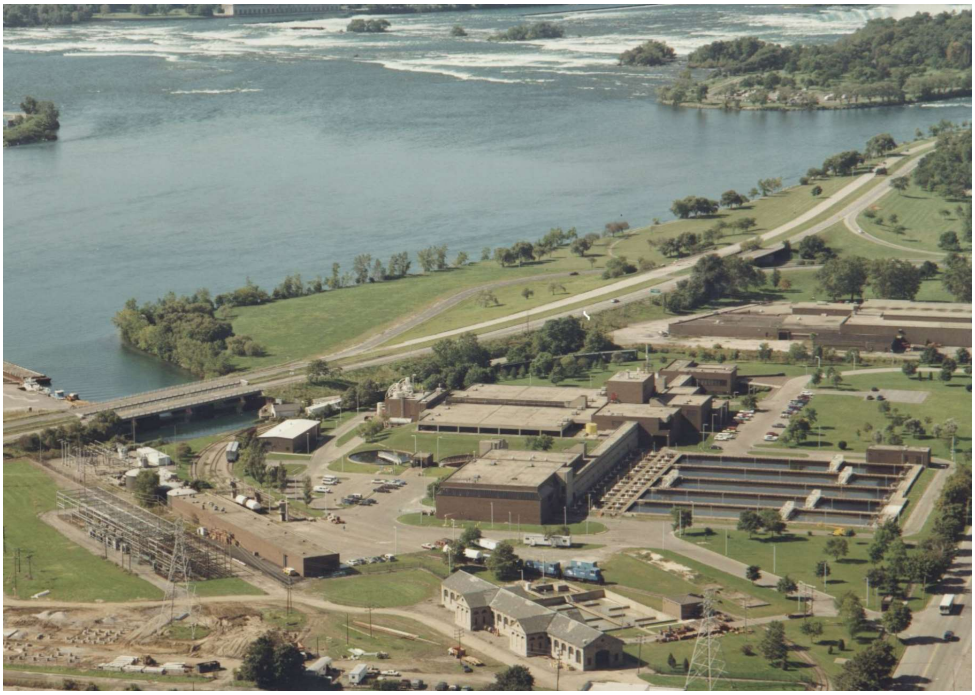

NIAGARA FALLS WATER BOARD

Prepared for Submission to:

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

Prepared By:

AECOM

50 Lakefront Boulevard Suite 111
Buffalo, New York 14202,

July 31, 2023

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Niagara Falls Water Board Order on Consent R9-20170906-129
Q2 2023 Quarterly Progress Report

July 31, 2023

Executive Summary

This document is the twenty second (22nd) 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 April 1, 2023 through June 30, 2023.

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 three exceptions for alpha-BHC (alpha-Hexachlorocyclohexane) in April, May, and June 2023. 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. Projects 2, 4, 6, 7, 8, 9, and 11 have been completed and work continues on Projects 1, 3, 5 and 10. Project 12 is expected to go out for Request for Proposal in the near future.

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 first (21st) quarterly report for the first quarter of 2023 (Q1 2023) was submitted April 30, 2023 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.

Niagara Falls Water Board Order on Consent R9-20170906-129
Q2 2023 Quarterly Progress Report

July 31, 2023

1. WWTP Performance

This section discusses the operation of the NFWB WWTP during the reporting period of April 1, 2023 through June 30, 2023. 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. 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 were three (3) reported SPDES permit excursions related to a low-level detection of alpha-BHC in each month. This is an ongoing issue since the facility's SPDES permit limits for alpha-BHC were lowered on October 29, 2021 and is being addressed through the hiring of a consultant in October 2022. It is expected that industrial BHC discharges to the WWTP will be reduced via lowered discharge limits imposed upon permitted industrial users. 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 low during the period and averaged 4,100 gallons per day during Q2 2023 compared to 6,900 gallons per day in Q1 2023. The practice of chlorinating the primary effluent was stopped on January 26, 2023 due to issues with the filters and reduced sulfide generation (see additional discussion below). Chlorination of the filter backwash water continues to be practiced.

The following operational considerations were noted during Q2 2023:

- Cascades has made progress on reducing their solids discharges during Q2 2023. By the end of Q2 2023 suspended solids loadings from Cascades were at 7,100 lbs./day (TSS) and the NFWB gravity thickener was generally overflowing clean. The suspended solids discharges from Cascades were not unduly affecting the WWTP sludge processing operations. Reductions in solids and organic carbon discharges from Cascades are believed to be responsible for the reduced consumption of sodium hypochlorite, in spite of the warming trend of wastewater temperature which generally results in increased sodium hypochlorite consumption.
- The carbon filters started out Q2 2023 with very high number of filter backwashes per day due to shorter run times. This was a continuation from Q1 2023. As a result of corrective measures implemented in Q1 2023 regarding filter operations, by the end of Q2 2023 filter backwashes have been reduced to approximately 40 to 50 backwashes per day and appear to be decreasing. All backwash water continues to be directed to the head of the plant where it is retreated through the sedimentation basins and activated carbon.

As of the end of Q2 the plant continues to work through these issues. Sedimentation Basin 3 construction began in March 2023 and is not available to the WWTP for use. Sedimentation Basin No. 4 was turned over to the WWTP with the new chain and flight sludge collector and new effluent weirs. During Q2 2023 Sedimentation Basin Nos. 4 and 5 monitoring systems for the new chain and flight (sprocket motion monitors) and old chain and flight (tipping pole proximity switches) have been activated and are operational. Sedimentation Basin 4 and 5 are being used to treat influent flow, while filter backwash continues to be directed to the head of plant.

1.2 Solids Removal Performance

A solids balance for April, May, and June 2023 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 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 a significant industrial user. During the past quarter influent suspended solids loadings averaged 231 dry tons per month (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 Q2 2023, the following can be said regarding treatment equipment operability:

- Four (4) Main Pumps are operational. Pump #4's variable frequency drive (VFD) has been replaced with a new VFD and the rental drive has been returned.
- Three (3) Intermediate Pumps are operational and control/VFD issues are being monitored. A project to evaluate the intermediate pumps, motors, drives, and controls is underway and the study outcome should be available in the next quarter.
- Four of the five sedimentation basins are functional, with Sedimentation Basin No. 3 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-seven (27) activated carbon filters are functional, with filter 27 requiring a repair to the 2” filter underdrain air bleed that appears to be damaged.
- The filter backwash system is functional including two backwash pumps and two blowers.
- Two (2) belt filter presses and related equipment (sludge and polymer feed pumps) are operational. One belt filter press (#1) is not being operated due to drain issues that lead to flooding of the maintenance shop.
- Two (2) pugmills, two (2) lime feed systems, and two (2) lime storage silos are fully functional.

Table 1

Q2 2023 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	%
Apr-23	28.3	77.7	5.7	8.5	1.32	1.71	11.5	20.6%	56.0	12.9	111%
May-23	20.7	92.9	8.0	7.3	1.10	1.54	10.0	19.3%	51.8	12.0	120%
Jun-23	19.8	68.6	9.3	4.9	1.18	1.64	7.7	21.0%	36.8	12.40	161%

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
April 30, 2023	AECOM	Item 15	The twenty first quarterly progress report for the first quarter of 2023 (Q1 2023) was submitted.

2.1.1 Existing WWTP Optimization Efforts

The plant is using Sedimentation Basin No. 5 as a treatment basin and will continue to direct filter backwash water to the head of the plant for retreatment through the sedimentation basins and carbon filters. This will likely continue until such time as all five (5) sedimentation basins are completed under Capital Project 1.

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 in 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

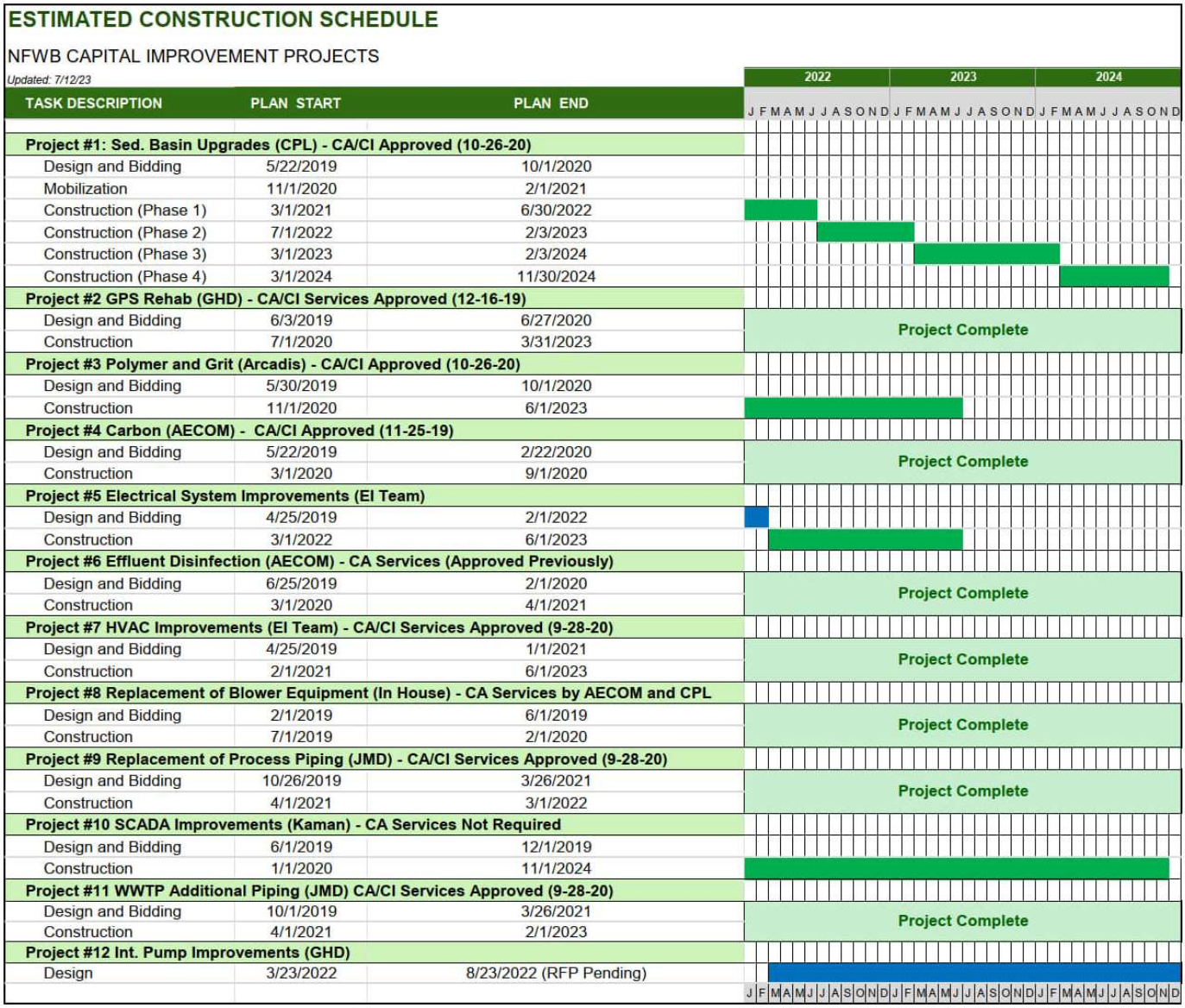
This category of projects includes work being undertaken by plant maintenance staff or outside contractors without the need for extensive design and engineering documents. This work is generally considered repair and/or replace in kind and therefore NYSDEC approval is not generally required prior to 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: 7/12/23

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	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	3/31/2023
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	6/1/2023
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)		
Design and Bidding	4/25/2019	2/1/2022
Construction	3/1/2022	6/1/2023
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	6/1/2023
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	2/1/2023
Project #12 Int. Pump Improvements (GHD)		
Design	3/23/2022	8/23/2022 (RFP Pending)