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NFPWA

Niagara Falls Public Water Authority

AGENDA

July 24, 2026 at 1:00 p.m.
Michael C. O'Laughlin Municipal Water Plant
5815 Buffalo Avenue, Niagara Falls, NY 14304

1. Call to Order

Roll Call: Michael Monaco _____ Jason Murgia _____

2. Public Speakers (All speakers must register with Chairman prior to Roll Call and are limited to 3 minutes per person – total time for all speakers may not exceed one hour).

3. Items for Action from Secretary

A. Approval of June 9, 2026 Meeting Minutes

B. Resolution 2026-02 – Regarding the Incorporation of Resolution 2024-02 Into the Superseding Terms of Resolution 2026-03

C. Resolution 2026-03 - Authorizing the Issuance of the Authority's Sewer System Revenue Bonds and Execution of Related Documents
   a. Excerpts from Preliminary Engineering Report dated February 27, 2026, titled "Evaluation of the Conversion and Modification of the Niagara Falls Water Board WWTP into a Biological Treatment Process of Alternative Improvements to Meet Water Quality Standards"
      i. Cover Page
      ii. Table of Contents
      iii. Executive Summary
      iv. Section 2.3, Project Affordability
      v. Section 6, Preferred Alternatives Evaluation
      vi. Section 7, Recommended Alternative
      vii. Appendix N, Detailed Cost Estimate, Itemized Costes – MBBR and Disc Filter Alternative – New Disc Filter Building

D. Resolution 2026-04 - Authorizing the Issuance of the Authority's Sewer System Revenue Bonds and Execution of Related Documents
   a. Engineering Report dated May 28, 2026 titled "Niagara Falls Water Board Water Treatment Plant Capital Improvements" (without appendices)

E. Resolution 2026-05 - Authorizing the Issuance of the Authority's Sewer System Revenue Bonds and Execution of Related Documents
    a. Engineering Report dated May 2026 titled “Wastewater Treatment Plant Capital Improvement Projects Engineering Report and Estimates, Wastewater Treatment Plant Phase 2 Improvements Related to Consent Order R9-20170906-129, DASNY SAM Grant 15689 (Phase 2)” (without appendices)

4. New Business & Additional Items

5. Adjournment of Meeting

NFPWA

Niagara Falls Public Water Authority

MEETING MINUTES

June 9, 2026 at 12:00 p.m. (meeting start postponed to 1:00 p.m.)
Michael C. O'Laughlin Municipal Water Plant
5815 Buffalo Avenue, Niagara Falls, NY 14304

Authority Members Present:	Jason Murgia Michael Monaco
Authority Members Absent:	None
Also Present:	Sean W. Costello, Authority Secretary and Niagara Falls Water Board General Counsel

1. Call to Order

Chairman Murgia called the meeting to order at 1:09 p.m.

2. Public Speakers (All speakers must register with Chairman prior to Roll Call and are limited to 3 minutes per person – total time for all speakers may not exceed one hour).

There were no public speakers.

3. Items for Action from Secretary

A. Resolution 2026-01 - Authorizing the Issuance of the Authority's Sewer System Revenue Bonds and Execution of Related Documents
   a. Summary of Project Costs and Funding - WWTP Capital Projects CWSRF C9-6603-16-00
   b. Engineering Report for WWTP Capital Improvements Projects CWSRF C9-6603-16-00

Motion by Mr. Monaco seconded by Chairman Murgia to approve Resolution 2026-07.

Monaco: Yes. Murgia: Yes.

Motion carried, 2-0.

4. New Business & Additional Items

5. Adjournment of Meeting

Motion by Mr. Monaco seconded by Chairman Murgia to adjourn at 2:24 p.m.

Monaco: Yes. Murgia: Yes.

Motion carried, 2-0.

NIAGARA FALLS PUBLIC WATER AUTHORITY RESOLUTION # 2026-02

REGARDING THE INCORPORATION OF RESOLUTION 2024-02 INTO THE SUPERSEDING TERMS OF RESOLUTION 2026-03

WHEREAS, the Niagara Falls Public Water Authority ("Authority") by way of Resolution 2024-02 duly authorized the issuance of revenue bonds in the amount of $263,224,352 to fund capital improvements to be undertaken to the Niagara Falls Water Board ("Water Board") System consisting of the conversion of the wastewater treatment plant to a biological treatment process (the "Project"); and

WHEREAS, subsequent engineering work has provided an updated estimate of $338,239,000 for the total project cost, and the Water Board now seeks to apply for grant funding for the Project, including through the NYS Water Infrastructure Improvement Act (WIIA) grant program, application for which requires a certified bond resolution for the total Project cost; and

WHEREAS, in order for the Water Board to obtain grant funding necessary for the completion of the Project, it is necessary for the Authority to authorize the issuance of bonds for the full $338,239,000 cost of the project, which the Authority proposes to do by way of Resolution 2026-03; and

WHEREAS, in order to keep clear and accurate records of its activities and proceedings, the Authority desires to pass a resolution to make clear that the bonds authorized by Resolution 2026-03 are inclusive of and not in addition to the bonds authorized by Resolution 2024-02;

NOW THEREFORE BE IT

RESOLVED, that Niagara Falls Public Water Authority Resolution 2024-02 is rescinded except to the extent of any expenditures or encumbrances made thereunder; and

IT IS FURTHER RESOLVED, that the Niagara Falls Public Water Authority hereby declares that the bond issuance approved by Resolution 2024-02 shall be incorporated and subsumed into the bond issuance that is the subject of Resolution 2026-03, with total bonds authorized by the two resolutions limited to $338,239,000, plus any amounts necessary to fund reserves and to pay costs of issuance (with such amount to be reduced by grants).

On July 24, 2026, the question of the adoption of the foregoing Resolution was duly put to a vote on roll call, which resulted as follows:

	Yes	**No**	**Abstain**	**Absent**
Michael Monaco	**[ ]**	**[ ]**	**[ ]**	**[ ]**
Jason Murgia	**[ ]**	**[ ]**	**[ ]**	**[ ]**

Vote Witnessed By:

_____

Sean W. Costello, Secretary to the Authority

NIAGARA FALLS PUBLIC WATER AUTHORITY RESOLUTION 2026-03

RESOLUTION AUTHORIZING THE ISSUANCE OF THE AUTHORITY'S WATER AND SEWER SYSTEM REVENUE BONDS AND THE APPROVAL AND EXECUTION OF RELATED DOCUMENTS

WHEREAS, Title 10-B of the Public Authorities Law of the State of New York, as amended (the "Act") created the Niagara Falls Public Water Authority (the "Authority") with the authority and power to issue its revenue bonds for the purpose of among other things, planning, developing, acquiring, constructing and financing the cost of any facility (as defined in the Act), including the acquisition of facilities of the City of Niagara Falls ("the City") (the "System") by the Niagara Falls Water Board (the "Board") or for any other corporate purpose, including the establishment of reserves to secure the bonds, the payment of principal of, premium, if any, and interest on the bonds and the payment of incidental expenses in connection therewith; and

WHEREAS, the City has sold, transferred and otherwise conveyed the City's title and interest in the System to the Board; and

WHEREAS, the Board has approved capital improvements to be undertaken to the System consisting of the conversion of the wastewater treatment plant to a biological treatment process (the "Project") and has requested that the Authority finance same; and

WHEREAS, in connection therewith, it is now desired to authorize the issuance of not exceeding $338,239,000 of bonds to the New York State Environmental Facilities Corporation ("EFC"), including any notes issued in anticipation thereof (the "Bonds") plus any amounts necessary to fund reserves and to pay costs of issuance (with such amount to be reduced by grants), and to approve and authorize the execution of related documents; NOW, THEREFORE,

BE IT RESOLVED by the Niagara Falls Public Water Authority as follows:

Section 1. The Authority hereby finds and determines:

(a) By virtue of the Act, the Authority has been vested with all powers necessary and convenient to carry out and effectuate the purposes and provisions of the Act and to exercise all powers granted to it under the Act.

(b) It is desirable and in the public interest for the Authority to issue and sell the Bonds pursuant to a certain General Revenue Bond Resolution dated as of May 1, 2003 (the "General Resolution"), adopted by the Authority, and pursuant to a Supplemental Resolution(s) (the "Supplemental Resolution") by and between the Authority and Manufacturers and Traders Trust Company, as trustee (the "Trustee") (the Supplemental Resolution, collectively with the General Resolution, the "Resolution") and to use the proceeds of said Bonds to pay for the Project, any required reserves and costs of issuance.

Section 2. In consequence of the foregoing, the Authority hereby determines to: (i) issue and sell the Bonds pursuant to the Supplemental Resolution and the General Resolution; (ii) use the proceeds of the Bonds as previously described and as provided in the Supplemental Resolution, (iii) enter into each agreement hereafter identified in this resolution; and (iv) execute such

other documents and take such other action as may be necessary to effectuate the purposes of this resolution.

Section 3. The Authority is hereby authorized to issue, execute, sell and deliver the Bonds to EFC in the aggregate principal amount, maturing in such years at such amounts, in serial or term form, at the rate of interest and upon such terms as shall be approved by the Chairman or the vice-Chairman, provided that:

(a) The Bonds are hereby authorized to be issued, executed and delivered and shall be issued, executed and delivered at such time as the Chairman or the Vice-Chairman of the Authority shall determine.

(b) The Bonds shall be issued solely for the purposes previously described.

(c) The Bonds and the interest thereon are not and shall never be a debt of the State of New York or any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, and neither the State of New York nor any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, shall be liable thereon.

Section 4. The Authority is hereby authorized to enter into a Project Finance Agreement (the "Finance Agreement") with EFC and such other agreements and documents relating to the Bonds as required by EFC.

Section 5. The Bonds shall not be issued, executed or delivered until the prior approval of the State Comptroller shall have been obtained as required by the Act.

Section 6. (a) The Chairman or the vice-Chairman of the Authority are hereby authorized, on behalf of the Authority, to execute and deliver the Supplemental Resolution, the Bonds, and the Finance Agreement, all as described above (collectively, the "Financing Documents"), and the Secretary of the Authority is hereby authorized to affix the seal of the Authority to the Supplemental Resolution and the Bonds and to attest the same. The execution thereof by the Chairman or the Vice-Chairman shall constitute conclusive evidence of such approval.

(b) The Chairman or the vice-Chairman of the Authority are further hereby authorized, on behalf of the Authority, to designate any additional Authorized Representatives of the Authority (as used or defined in and pursuant to the Resolution) to execute, on behalf of the Authority, any Financing Documents.

Section 7. The members, officers, employees and agents of the Authority are hereby authorized and directed for and in the name and on behalf of the Authority to do all acts and things required or provided for by the provisions of the Financing Documents, and to execute and deliver all such additional certificates, instruments and documents, pay all such fees, charges and expenses and to do all such further acts and things as may be necessary or, in the opinion of the member, officer, employee or agent acting, desirable and proper to effect the purposes of this resolution and to cause

compliance by the Authority with all of the terms, covenants and provisions of the Financing Documents.

Section 8. This resolution shall take effect immediately and the Bonds are hereby ordered to be issued in accordance with this resolution.

At a regular meeting of the Niagara Falls Public Water Authority, held at the Authority's office, 5815 Buffalo Avenue, Niagara Falls, New York 14304, at 1:00 o'clock P.M., on the 24th day of July, 2026, the following members of the Authority were:

PRESENT:

ABSENT:

ALSO PRESENT:

After the meeting had been duly called to order, the Chairman announced that among the purposes of the meeting was to consider and take action on certain matters pertaining to the issuance and sale of the Authority's proposed Water and Sewer System Revenue Bonds.

The following resolution was duly moved, seconded, discussed and adopted with the *following members voting in open session:*

AYE	NAY

STATE OF NEW YORK)
ss.:
COUNTY OF NIAGARA)

I, the undersigned Secretary of the Niagara Falls Public Water Authority, DO HEREBY CERTIFY:

That I have compared the annexed extract of the minutes of the meeting of the Niagara Falls Public Water Authority, including the resolution contained therein, held on July 24, 2026, with the original thereof on file in my office, and that the same is a true and correct transcript therefrom and of the whole of said original so far as the same relates to the subject matters therein referred to.

I FURTHER CERTIFY that all members of said Authority had due notice of said meeting.

I FURTHER CERTIFY that, pursuant to Section 103 of the Public Officers Law (Open Meetings Law), said meeting was open to the general public.

I FURTHER CERTIFY that, PRIOR to the time of said meeting, I duly caused a public notice of the time and place of said meeting to be given to the following newspapers and/or other news media as follows:

Newspaper and/or other news media	Date given
Niagara Gazette	July 23, 2026
Buffalo News	July 23, 2026
WKBW/7 News	July 23, 2026
WIVB/News 4	July 23, 2026
WBFO/Buffalo Toronto Public Media	July 23, 2026
Additional Notice	
Posted to the Exterior Posting Board of Authority's Office, 5815 Buffalo Avenue, Niagara Falls, NY 14304	July 23, 2026
Posted online to NFWB.org/news and NFWB.org/NFPWA	July 23, 2026

I FURTHER CERTIFY that PRIOR to the time of said meeting, I duly caused public notice of the time and place of said meeting to be conspicuously posted in the following designated public location on the following dates:

Designated Location of Posted Notice	Date of posting
None	

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Authority on July 24, 2026.

(CORPORATE SEAL)

_____
Sean W. Costello, Esq., Secretary

Hazen and Sawyer
1 Seneca Street, Suite 1050
Buffalo, NY 14203

Evaluation of the Conversion and Modification of the Niagara Falls Water Board WWTP into a Biological Treatment Process or Alternative Improvements to Meet Water Quality Standards

Preliminary Engineering Report
February 27, 2026
Niagara Falls Water Board
SPDES #NY0026336
90564-001

Hazen and Sawyer

STATE OF NEW YORK
MICAH BLATE
108527
LICENSED PROFESSIONAL ENGINEER

Hazen and Sawyer
1 Seneca Street, Suite 1050
Buffalo, NY 14203

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Hazen and Sawyer
1 Seneca Street, Suite 1050
Buffalo, NY 14203

List of Acronyms

Abbreviation	Definition
AAA	Alternating Activated Adsorption
AACE	Association for the Advancement of Cost Engineering
AR	Affordability Ratio
ATRT	Adams Tail Race Tunnel
AWWA	American Water Works Association
BAF	Biologically Active Filter
BOD	Biochemical Oxygen Demand
CCT	Chlorine Contact Tank
CDR	Continuing Disclosure Report
CEPT	Chemically Enhanced Primary Treatment
CIP	Capital Improvement Plan
COD	Chemical Oxidation Demand
CSIRU	Commercial, Small Industrial, and Residential Users
CSO	Combined Sewer Overflow
DF	Disc Filter
DO	Dissolved Oxygen
ECDSM	Erie County Division of Sewerage Management
ELAP	Environmental Laboratory Approval Program
EPA	Environmental Protection Agency
GAC	Granular Activated Carbon
GPM	Gallon Per Minute
GPS	Gorge Pumping Station
HFNF	Hollow Fiber Nanofiltration
HMGP	Hazard Mitigation Grant
HP	Horsepower
Hr	Hour

IO	Input Output
IPaC	Information for Planning and Consultation
IPP	Industrial Pretreatment Program
kV	Kilovolt
kWh	Kilowatt-Hour
lbs	Pounds
MBBR	Moving Bed Biofilm Reactor
MCC	Motor Control Center
mg/L	Milligram Per Liter
MGD	Million Gallons Per Day
MHI	Median Household Income
MOPO	Maintenance of Plant Operations
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NFWB	Niagara Falls Water Board
NPV	Net Present Value
NYSDEC	New York State Department of Environmental Conservation
NYSEFC	New York State Environmental Facilities Corporation
PEJA	Potential Environmental Justice Area
PEMB	Pre-Engineered Metal Building
POSS	Publicly Owned Sewer System
QTY	Quantity
SCFM	Standard Cubic Foot Per Minute
SEAF	Short Environmental Assessment Form
SEQR	State Environmental Quality Review
SFHA	Special Flood Hazard Areas
SIU	Significant Industrial Users
SOC	Soluble Organic Carbon
SPDES	State Pollutant Discharge Elimination System

SSI	Southside Interceptor
TOC	Total Organic Carbon
TP	Total Phosphorous
TRC	Total Residual Chlorine
TSS	Total Suspended Solids
USFWS	U.S. Fish and Wildlife Service
VFDs	Variable Frequency Drives
WQIP	Water Quality Improvement Project
WSE	Water Surface Elevation
WWTP	Wastewater Treatment Plant
XRD	X-Ray Diffraction

Executive Summary

The Niagara Falls Water Board (NFWB) operates a 48 million gallon per day (MGD) physical-chemical wastewater treatment plant (WWTP) in the City of Niagara Falls. In 2024, the NFWB entered into Order on Consent R9-20230411-13 with the New York State Department of Environmental Conservation (NYSDEC) to address ongoing challenges. The NFWB also must evaluate improvements required to ensure compliance with new draft discharge permit requirements (NY0026336). The Order and draft permit establish more stringent effluent criteria with a number of proposed changes to the former permit including:

- New effluent limitations for Biochemical Oxygen Demand (BOD_5).
- New effluent limitations for Settleable Solids.
- New effluent limitation for Total Sulfides.
- New monitoring requirements for Apparent Color.
- Modified effluent limitations for Total Phenolics.
- Modified effluent limitations for Mercury.
- New effluent limitation for Dieldrin.
- Removed monitoring requirements for Enterococci.
- New effluent limitation for Total Cyanide.
- New effluent limitation for Total Dissolved Solids.
- New WET Testing action levels and limits.
- Updated Compliance Level for Polychlorinated biphenyls (PCBs).
- New monitoring for Emerging Contaminants.
- Revised sampling frequencies for all parameters.

Project Background

To address the Consent Order and proposed SPDES Permit, NFWB retained Hazen and Sawyer (Hazen) to review the Order, evaluate the draft SPDES permit, and conduct a preliminary engineering assessment of process improvement alternatives. The evaluation focused on identifying feasible upgrades that would integrate with the existing treatment system and achieve the proposed limits. Based upon NFWB's influent characteristics and requirements in the draft SPDES permit, it will be necessary to retain the existing granular activated carbon (GAC) filters, while adding an additional treatment process. Three types of treatment processes were evaluated as part of this PER:

1. Physical-chemical improvements
    - Ozonation, ion exchange, ultrafiltration
2. Addition of a biological process
    - Suspended growth, fixed film

3. Hybrid options, adding a physical-chemical component in combination with a biological component

    - Membrane with biological treatment of reject/brine stream

Evaluation Process for Treatment Improvements

As noted previously, three main categories of treatment process improvements were evaluated. Through bench-scale testing, the treatability efficiency was identified for both biological and physical-chemical processes, which provided insight into selecting technologies that could reliably and cost-effectively meet the proposed permit limits, as shown on **Table 1**. The physical-chemical improvements, such as ozonation and ultra/nanofiltration, proved unable to cost-effectively meet treatment requirements on their own, resulting in continued concerns with BOD removal, sulfate reduction, and continued visible contrast issues. Other alternatives were eliminated due to the limited number of installations in the United States. Biological treatment via fixed film process, such as biologically active filter (BAF) or a moving bed biofilm reactor (MBBR), combined with the existing GAC filters were determined to have potential to reliably meet the permit requirements.

Table 1: Process Evaluation and Short-Listing Findings

Process Category	Finding
Physical-Chemical Treatment	Inability to reliably and cost-effectively meet proposed permit limits
Biological Process Addition	Meet treatment objectives, and the proposed permit constraints discussed within this evaluation. Two fixed-film biological treatment processes were short-listed for more thorough evaluation: 1. Moving Bed Biofilm Reactor (MBBR) 2. Biologically active filter (BAF)
Hybrid Alternative	Limited full-scale installations, complex treatment process flow, and not cost-effective

The MBBR and BAF alternatives therefore were developed further, evaluating plant hydraulics, site layouts, and ancillary requirements, including the need for electrical improvements. Using a defined scoring matrix, the two alternatives were evaluated based on qualitative (non-cost) criteria. In addition, a capital cost estimate consistent with Association for the Advancement of Cost Engineering (AACE) Level 4 expectations and operational (i.e., recurring) costs were calculated and used to develop a 25-year net present value to compare the two alternatives.

Recommended Process

Following the evaluation and scoring of the two alternatives, the MBBR plus disc filter alternative offered both operational and economic advantages over the BAF alternative and is the recommended treatment strategy. A simplified process flow diagram (PFD) of the MBBR alternative is shown on Figure 1. As indicated, the MBBR and disc filters will be upstream of the existing GAC, with the goal of removing organic carbon and BOD, while also providing oxic conditions as flow is conveyed to the GACs, to minimize sulfate reduction.

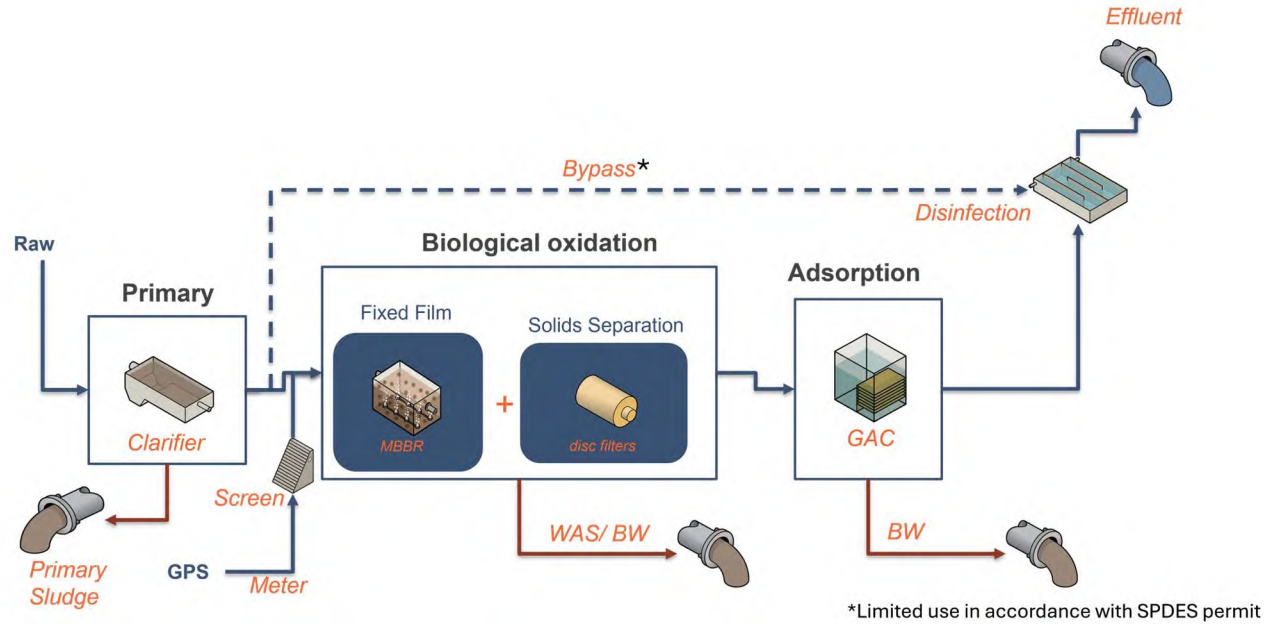

Figure 1: Proposed Process Train

The preliminary evaluation also included a condition assessment of the plant, which identified several needed process and facility upgrades critical to existing treatment processes if they are to be integrated into an upgraded plant. Generally, these additional upgrades include:

- Replacement of rapid mix diversion gates
- Replacement of ferric chloride tank
- Intermediate pump station replacement
- Carbon media replacement
- HVAC replacement in Power Center No. 1
- Structural evaluation of skylights in Carbon Building
- Carbon bed facility roof replacement

Recommended Permit Limits

As required by the Consent Order to be included in the PER, **Table 2** outlines the recommended final effluent limits based upon the evaluation and selection of the proposed treatment process. Additionally, NYSDEC has provided NFWB with new proposed limits. These are also included in the table. It is noted that NFWB has previously provided written comments to NYSDEC regarding these new proposed limits. As discussed in more detail in the PER, the recommended final limits are based on the analysis included herein and the following key points:

- Unique and dilute nature of influent wastewater
- Code of Federal Regulations Part 133.102 regarding 30-day minimum
- Revisions to the dilution factors

Specifically, the PER recommends modifications to NYSDEC's newly proposed daily minimum 85% BOD_5 and TSS removal, sulfide limit, TRC limit, and WET limits that are described in the draft SPDES permit.

Table 2: Proposed Permit Limits

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
Flow	48 MGD	Monthly Average	48 MGD	Monthly Average	-
Total Organic Carbon (TOC)	15,200 lbs/day	Monthly Average	15,200 lbs/day	Monthly Average	-
	22,800 lbs/day	7-Day Average	22,800 lbs/day	7-Day Average	-
Biochemical Oxygen Demand (BOD_5)	N/A	N/A	30 mg/L	Monthly Average	30 mg/L is achievable
	N/A	N/A	45 mg/L	7-Day Average	45 mg/L is achievable
	N/A	N/A	85% Removal	Daily Minimum	Not Achievable / Not Recommended Dilute nature of influent wastewater makes achieving an 85% removal as a daily minimum difficult. Average BOD_5 is ~65 mg/L, to achieve an 85% removal, requires <9 mg/L BOD_5 in effluent, which is unreasonably low on a daily minimum. Per Code of Federal Regulations Part 133.102, the minimum level of BOD_5 removal requires a 30-day average of 85%

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
					removal Refer to Section 2.4.3.2 for more detail.
Total Suspended Solids (TSS)	30 mg/L 12,000 lbs/day	Monthly Average	30 mg/L 12,000 lbs/day	Monthly Average	-
	45 mg/L 18,000 lbs/day	7-Day Average	45 mg/L 18,000 lbs/day	7-Day Average	-
	N/A	N/A	85% Removal	Daily Minimum	Not Recommended Per Code of Federal Regulations Part 133.102, the minimum level of TSS removal requires a 30-day average of 85% removal. Refer to Section 2.4.3.2 for more detail.
Settleable Solids	N/A	N/A	0.30 mL/L	Daily Maximum	-
Total Phosphorous (as P)	1.0 mg/L	Monthly Average	1.0 mg/L	Monthly Average	1.0 mg/L is achievable
Total Sulfides	N/A	N/A	32 ug/L 13 lbs/day	Daily Maximum	Monitor only until treatment performance of new process is shown. Refer to Section 2.4.3.4 for more detail.
Total Dissolved Solids (TDS)	N/A	N/A	2,000 mg/L	Daily Maximum	-

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
Ammonia (as N)	N/A	N/A	Monitor, mg/L	Seasonal Monthly Average	-
Color (apparent)	N/A	N/A	Monitor, PCU	Daily Maximum	-
Total Phenolics	61 lbs/day	Monthly Average	5 ug/L 4 lbs/day	Daily Maximum	It will be necessary to maintain GAC to treat for phenolics.
Total Cyanide	N/A	N/A	52 ug/L	Daily Maximum	-
Alpha-BHC	0.01 ug/L	Monthly Average	0.01 ug/L	Monthly Average	-
Beta-BHC	0.02 ug/L	Monthly Average	0.02 ug/L	Monthly Average	-
Delta-BHC	0.02 ug/L	Monthly Average	0.02 ug/L	Monthly Average	-
Gamma-BHC	0.04 ug/L	Monthly Average	0.04 ug/L	Monthly Average	-
Hexachlorobenzene	0.20 ug/L	Monthly Average	0.20 ug/L	Monthly Average	-
Mercury	50 ng/L	Daily Maximum	50 ng/L	Daily Maximum	-
	N/A	N/A	16 ng/L	12 MRA	-
Mirex	0.4 ug/L	Daily Maximum	0.4 ug/L	Daily Maximum	-
PCB-1248	0.2 ug/L	Daily Maximum	0.095 ug/L	Daily Maximum	-
4,4'-DDD	0.04 ug/L	Monthly Average	0.04 ug/L	Monthly Average	-

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
4,4'-DDE	0.02 ug/L	Monthly Average	0.02 ug/L	Monthly Average	-
4,4'-DDT	0.05 ug/L	Monthly Average	0.05 ug/L	Monthly Average	-
Dieldrin	N/A	N/A	0.002 ug/L	Monthly Average	-
Fecal Coliform	200 No./100 mL	30-Day Geometric Mean	200 No./100 mL	30-Day Geometric Mean	-
	400 No./100 mL	7-Day Geometric Mean	400 No./100 mL	7-Day Geometric Mean	-
Total Residual Chlorine (TRC)	3.0 mg/L	Daily Maximum	0.05 mg/L	Daily Maximum	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent TRC of 1.0 mg/L. Refer to Section 2.4.3.4 for more detail and other decay, uptake, and dilution factors.
WET	15.3 TUa	Acute Invertebrate	2.4 TUa	Acute Invertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 7.2 TUa. Refer to Section 2.4.3.4 for more detail.
	15.3 TUa	Acute Vertebrate	2.4 TUa	Acute Vertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 7.2 TUa.

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
					Refer to Section 2.4.3.4 for more detail.
	101 TUa	Chronic Invertebrate	10 TUc	Chronic Invertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 34 TUc. Refer to Section 2.4.3.4 for more detail.
	101 TUa	Chronic Vertebrate	10 TUc	Chronic Vertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 34 TUc. Refer to Section 2.4.3.4 for more detail.

Project Affordability

To assess household affordability for the proposed NFWB WWTP improvements, Environmental Protection Agency (EPA) guidance "Clean Water Act Financial Capability Assessment Guidance" was consulted to provide a method of affordability measurement. This method utilizes the median household income as a representative household variable. The EPA's Residential Indicator metric assesses the financial burden of water and wastewater service costs by comparing the average annual residential bill to the community's median household income. This metric categorizes the resulting percentage into "low," "mid-range," or "high" financial impact level to evaluate the relative strain placed on residential customers. For the City of Niagara Falls, the Residential Indicator was calculated at 2.7%, placing the community firmly within EPA's "high impact" range and indicating that the current cost of NFWB services already imposes a significant financial burden on local households.

To further evaluate the financial impacts of the recommended improvements at the NFWB WWTP, the American Water Works Association (AWWA) guidance titled "Improving the Evaluation of Household-Level Affordability in SDWA Rulemaking: New Approaches" was consulted to provide a more representative approach for assessing household-level affordability than simply relying on median household income. AWWA framework incorporates essential living costs, the proportion of income dedicated to water and sewer services, and conditions affecting low-income households when assessing affordability. The City of Niagara Falls is considered a low-income area with a high poverty rate. An estimated 40% of households are considered low-income and 27.3% of residents live below the federal poverty line. For this reason, the 20th percentile household income for the City of Niagara Falls was

utilized as a representative level of income for this community along with the median household income. The evaluations indicated that 20th percentile and median income households in the City of Niagara Falls must allocate more than one-quarter (>25%) and 7%, respectively, of their disposable income to meet basic water and sewer service needs. These levels of burden are significantly above commonly referenced affordability thresholds, between 2% and 4%, and therefore signifies a severe affordability challenge for approximately half of the households within the service area.

Any increase in water or sewer service rates to fund the improvements recommended in this PER will therefore impose a substantial and disproportionate financial impact on the residential population, particularly low-income and fixed-income households who already face considerable economic hardship. Given these conditions, it is anticipated that the project will require substantial external financial assistance. The financing strategy will rely on grants and low-interest loans from NYSEFC and/or USEPA funding through the Water Quality Improvement Project (WQIP) Program, the Water Infrastructure Improvement (WIIA) program, and be supplemented by the NFWB Capital Improvement Plan (CIP) budget and system revenues. The improvements recommended in this PER cannot be considered affordable because existing resources, including existing grant programs, are not expected to be sufficient to avoid alarming and unaffordable increases in sewer rates without additional direct funding from State or Federal sources.

Recommended Next Steps and Necessary Components of Overall Project

It was concluded from the PER that the project currently is unaffordable and any potential cost savings must be considered. One option to potentially reduce costs, though not likely enough to make the project affordable without additional savings measures, is derating the plant flows to reduce the size of needed improvements and therefore their construction cost. Derating may be possible because the historical average daily influent flow is significantly less than the design flow of the plant. Accordingly, an evaluation examining potential derating of the facility is recommended. The derating evaluation would be informed by data gathered from a hydraulic study:

- **Hydraulic Study and WWTP Derating Evaluation** – The recommended improvements will significantly alter the hydraulic profile and plant operations. Additionally, as flows have declined over time, it may be prudent for NFWB to pursue derating of the dry weather flow capacity of the WWTP as part of the proposed improvements to reduce future capital and operational costs. The NFWB has begun procuring engineering services for the hydraulic study and anticipates completion of this study by the end of 2026.

Additional necessary components of the project that will need to be completed either during detailed design or thereafter include:

- **Updated Industrial Pretreatment Program (IPP)** – The IPP will need to be updated to include appropriate measures to protect the upgraded plant and to meet its permit. The IPP is also anticipated to inform the Rate Structure Study.
- **Rate Structure Study** – The capital and operational requirements of the proposed improvements are significant. The NFWB will need to complete a rate study to equitably allocate these costs among its user classes. The recent reduction in Industrial discharges could

shift a significant portion of the future capital and operational costs on to homeowners many of whom will have difficulty in affording significantly higher rates.

Table 5: City of Niagara Falls Population Trends

Year	Population	Source
2000	55,677	U.S. Census Bureau*
2010	50,193	U.S. Census Bureau*
2020	48,671	U.S. Census Bureau*
2023	48,198	2023 5-Year Estimate (American Community Survey) *
*Source: www.census.gov		

According to their 2025 CDR (**Appendix F**), the NFWB customer base consists of 17,633 residential accounts, 259 industrial accounts, and 22 SIU accounts.

2.3 Project Affordability

2.3.1 Financial Status

The NFWB's main source of income is the user charges for water and sewer. According to the 2025 NFWB CDR (**Appendix F**), the total revenue earned in 2024 was $38.2 million, with $24 million coming from wastewater services. It is expected that with a 5.9% increase in water and wastewater rates in 2026, the system will generate approximately $38.3 million in revenue. This rate increase is based on a decrease in consumption within the service area along with an increase in capital water and sewer costs and also was calculated by NFWB to meet covenants with bondholders.

The NFWB's wastewater billing rate schedule, including conveyance and treatment, consolidates all consumers into two classes: 1) SIUs and 2) Commercial, Small Industrial, and Residential Users (CSIRUs). The 2026 wastewater user charges for both classes of customers are presented below in **Table 6** and

Table 7. Sewer rates for CSIRU class customers are determined by total metered water consumption each quarter and are billed once per quarter. Rates for SIU customers are based on measured quantities of discharge parameters. Conventional pollutant parameters and substances of concern parameters, listed in **Table 8**, are calculated based on actual values once per quarter, with monthly estimated bills issued between quarterly bills.

Table 6: CSIRU Rates for the City of Niagara Falls

Location	Minimum Charge	Volume Charge
City of Niagara Falls	$81.64 with a usage allowance of up to 1,300 cubic feet of flow	$6.28 per 100 cubic feet in excess of 1,300 cubic feet
Outside the City	$218.62 with a usage allowance of up to 1,300 cubic feet of flow	$16.81 per 100 cubic feet in excess of 1,300 cubic feet

Table 7: SIU Rates for the City of Niagara Falls

Flow Charge	Suspended Solids Charge	Soluble Organic Carbon Charge
$4,415.18 per million gallons	$1.42/lb	$2.44/lb

Table 8: Substances of Concern Rates for the City of Niagara Falls

Parameter	Unit Rate/lb
Benzene	$487.24/lb
Chloroform	$86.77/lb
Dichloroethylenes	$530.14/lb
Toluene	$23.49/lb
Trichloroethanes	$110.17/lb
Trichloroethylene	$140.60/lb
Vinyl Chloride	$70.38/lb
Monochlorotoluenes	$4.76/lb
Tetrachloroethylene	$65.64/lb
Total Phenols	$10.71/lb

The projected NFWB debt service for 2026 is approximately $8.3 million. Outstanding bonds and remaining principal amounts for the overall system includes Niagara Falls Public Water Authority Bonds, New York State Environmental Facilities Corporation (NYSEFC) Water Revolving Funds Revenue Bonds, and a NYS Power Authority Loan presented in **Table 9** below.

Table 9: NFWB Outstanding Debt

Debt Instrument	Principal Balance December 31, 2024
Niagara Falls Public Water Authority Bonds	
Series 2022A Bonds	$35,355,000
Series 2016A Bonds	$17,380,000
NYSEFC Water Revolving Funds Revenue Bonds	
Series 2013B—Clean Water	$7,440,000
Series 2014B—Drinking Water	$2,780,000
Series 2012B—Clean Water	$4,290,000
NY Power Authority	
Series 2019 Mortgage Loan	$949,673
Total	**$68,194,673**

The NFWB anticipates that additional debt for capital projects undertaken since 2017 with EFC short-term financing will convert to long-term debt in 2026 and 2027, increasing its principal balance and annual debt service in subsequent years. This increased debt service will require corresponding increases to water and sewer rates charged to NFWB users.

2.3.2 Median Household Income

According to the 2024 American Community Survey's 5-Year Estimate, the median household income (MHI) for the City of Niagara Falls is $49,101. The Survey further categorizes MHI by types of households: families, married-couple families, and nonfamily households. **Table 10** summarizes the median household income for the City of Niagara Falls.

Table 10: MHI for the City of Niagara Falls

Type of Household	Median Income
Overall	$49,101
Families	$64,754
Married-couple Families	$84,222
Nonfamily Households	$34,013

2.3.3 Household Level Affordability

2.3.3.1 Environmental Protection Agency Residential Indicator

The Environmental Protection Agency (EPA) provides structured guidance for evaluating a community's ability to finance required water quality improvements while maintaining affordability for ratepayers.[1] The EPA guidance outlines the financial indicators, residential burden metrics, and socioeconomic factors that municipalities must consider when developing implementation schedules for compliance measures.

The EPA's Residential Indicator metric assesses the financial burden of water and wastewater service costs by comparing the average annual residential bill to the community's median household income. As mentioned above, the MHI for the City of Niagara Falls is $49,101. This metric categorizes the resulting percentage into "low," "mid-range," or "high" financial impact level to evaluate the relative strain placed on residential customers. The threshold ranges used for this determination are shown in **Figure 15.** For the City of Niagara Falls, the Residential Indicator was calculated at 2.7%, placing the community firmly within EPA's "high impact" range and indicating that the current cost of NFWB services already imposes a significant financial burden on local households.

[1] EPA (March 2024), Clean Water Act Financial Capability Assessment Guidance

Exhibit 1. Residential Indicator Score

RESIDENTIAL INDICATOR FINANCIAL IMPACT	RESIDENTIAL INDICATOR (CPH AS % MHI)[12]
Low	Less than 1.0 Percent of MHI
Mid-Range	1.0 to 2.0 Percent of MHI
High	Greater than 2.0 Percent of MHI

Figure 15: EPA Residential Indicator Impact Score

2.3.3.2 American Water Works Association Affordability Ratio

To further evaluate the financial impacts of the recommended improvements at the NFWB WWTP, the American Water Works Association (AWWA) was consulted to provide a more representative approach for assessing household-level affordability than simply relying on median household income. The AWWA framework[2] incorporates essential living costs, the proportion of income dedicated to water and sewer services, and conditions affecting low-income households when assessing affordability. The City of Niagara Falls is considered a low-income area with a high poverty rate. An estimated 40% of households are considered low-income and 27.3% of residents live below the federal poverty line. For this reason, the 20th percentile household income for the City of Niagara Falls, estimated at $13,000 according to the 2024 ACS 5-Year Survey, was utilized as a representative level of income for this community along with the median household income.

To evaluate affordability, the analysis applies the Affordability Ratio (AR), recommended[3] as a more appropriate metric for low-income communities. AR measures the share of disposable income required for basic water and sewer services, as defined below:

$$AR = \frac{p(W+S)}{I-E}$$

Table 11 summarizes the variables used in this calculation as applied to the City of Niagara Falls. Quarterly values are shown to align with NFWB's quarterly billing structure.

[2] AWWA (April 2021), Improving the Evaluation of Household-Level Affordability in SDWA Rulemaking: New Approaches
[3] Teodoro, Manuel (February 2018), Measuring Household Affordability for Water and Sewer Utilities, Journal AWWA

Table 11: Affordability Ratio Variables

Variable	Definition at the 20th Percentile of Household Income	Value for City of Niagara Falls
p	Average number of people in a household	2 (5-Year American Community Survey)
W	Household cost of essential NFWB water services	$64.70 per quarter
S	Household cost of essential NFWB sewer services	$85.60 per quarter
I_M, I_{20}	Household Incomes at the Median and 20th Percentile	$12,275.00 per quarter $3,325 per quarter (5-Year American Community Survey)
E_M, E_{20}	Essential Household Expenses at Median and 20th Percentile Incomes (not including NFWB services)	$7,979.00 per quarter $2201.75 per quarter (U.S. Bureau of Labor)

The resulting AR values using I_M and I_{20} are 28 % and 7.1%, respectively. These levels of burden are above commonly referenced affordability thresholds, between 2% and 4%, and therefore signify an affordability challenge for the residents of Niagara Falls.

An increase in water or sewer service rates to fund the upgrades described in this PER will therefore impose a substantial and disproportionate financial impact on the residential population, particularly low-income and fixed-income households who already face considerable economic hardship. Given these conditions, it is anticipated that the project will require substantial external financial assistance. The financing strategy will rely on grants and low-interest loans from NYSEFC and funding through the Water Quality Improvement Project (WQIP) Program, supplemented by the NFWB CIP and system revenues. Because funding available through WQIP is limited, the NFWB will require substantial State or Federal financial assistance if improvements are to be constructed without a drastic negative impact on the households and businesses of Niagara Falls.

2.4 Existing Facilities and Present Conditions

The NFWB WWTP was constructed in the mid-1970s and became operational in April 1977. The facility was originally designed to utilize—and continues to rely on—physical-chemical treatment of combined municipal and industrial wastewater through chemically enhanced primary treatment (CEPT) followed by GAC filtration. This treatment configuration reflected the influent conditions of the time when significant industrial discharges contributed to high pollutant loadings to the treatment system and rendered biological treatment processes ineffective. Prior to the establishment of federal industrial pretreatment regulations, untreated industrial wastewater entered the collection system and was conveyed directly to the WWTP. Shortly after the plant was placed into operation, the USEPA implemented national pretreatment requirements that limited industrial pollutant discharges, and in 1984, the NFWB implemented a pretreatment program for its industrial customers. Over subsequent decades, both the number of industrial users and the volume of industrial wastewater entering the plant have substantially

6. Preferred Alternatives Evaluation

The preferred alternatives evaluation took into consideration non-monetary criteria, which are aligned with stakeholder priorities, in addition to economic criteria to identify the final recommended technology. The criteria and sub-criteria are assigned a corresponding weight based on the needs of the NFWB and are then scored.

The criteria, sub-criteria, weightings and reference values for the preferred alternatives at the NFWB WWTP are presented in **Table 45**.

Table 45: Preferred Alternatives Scoring Criteria/Sub-criteria and Proposed Weightings

Criteria		Weight	Reference Values
Economic	Capital	50%	$1,000M
	Totalized Operation and Maintenance	20%	$100M
Operability	Number of Instruments	10%	100
	Number of Basins	5%	10
Technical	Flexibility for Future	10%	-
Siting	Footprint Sq. Ft.	5%	100,000 ft^2
	Total	**100%**	**-**

The scoring methodology uses reference values to set the zero of the scoring range. Using a system footprint of 25,000 ft^2 for Siting as an example, a footprint of 25,000 ft^2 would be scored as follows:

$$\%\,Weight\ x\ \left(1-\frac{Value}{Reference\ Value}\right)=5\%\ x\ \left(1-\frac{25{,}000\ ft2}{100{,}000\ ft2}\right)$$

This results in a score of 3.8% for Siting.

6.1 Non-Monetary Scoring Criteria

Non-monetary scoring criteria are further described with the scoring basis and rationale in the following sections.

6.1.1.1 Operability

Operability considers the operational complexity of the alternative technologies by considering the following:

- The number of instruments is compared and used as a surrogate for complexity of controls and automation. The alternative with fewer instruments receives a higher score.
- The number of biological treatment basins is compared to assess the number of assets requiring operation and maintenance. The alternative with fewer process basins receives a higher score.

6.1.1.2 Technical

Technical criteria consider the ability for the alternatives to have flexibility towards meeting future treatment requirements, most notably TP limits. The alternative that demonstrates better flexibility with future technical requirements receives a higher score.

6.1.1.3 Siting

Siting compares the footprint of each alternative with the smaller footprint receiving a higher score.

6.1.2 Economic Scoring Criteria

A 25-year net present value (NPV) is the value of all current and future costs over 25 years discounted to the present value. While the 25-year NPV is not included as part of the scoring criteria, its two major components are included: capital cost and annual O&M cost. The approaches to calculating the capital cost and annual O&M costs are outlined in later sections. The 25-year NPV will provide value for NFWB to use when assessing future budgets. The 25-year NPV has been calculated for both of the treatment alternatives using the following assumptions:

- Inflation rate is assumed as 4.0% per year.
- Discount rate is assumed as 3.0% per year.

The approaches and assumptions for estimating capital cost and annual O&M cost are summarized in the proceeding sections.

6.1.2.1 Capital Cost

Capital costs for the preliminary design are compiled using methodology of an AACE Class 3 cost estimate. However, given the level of design, the recommended contingency for the cost estimate is 35% (and as recommended by the EFC Engineering Report Outline), resulting in an AACE Level 4 cost estimate. Below outlines the components of the cost estimate:

- Defined for projects up to 15% design
- Accuracy ranges:
- Low end: -15% to -30%
- High end: +20% to +50%
- Contingency: 35%

In addition to the cost improvements associated with each alternative, the capital cost estimates also include the following upgrades for each alternative:

- Eight Rapid Mix Diversion Gates
- Two 7,000 gallon Ferric Chloride Storage Tanks
- Carbon removal and replacement for all 28 GAC Filters
- Replacement of the Carbon Filter Building roof
- Addition of a dechlorination facility if required
- Piping allowance for misc. piping improvements throughout the plant

Additionally, escalation costs assuming 2029 construction were included. The alternative with the lower capital cost received a higher score in the scoring matrix.

6.1.2.2 Annual O&M Cost

Annual O&M costs for the alternatives were compiled based on vendor quotes and the following assumptions:

- Annual average flow assumed as 23.0 MGD and remains constant through NPV duration
- Power costs assumed at $0.123/kWh
- Maintenance costs estimated at 2.5% per year of equipment capital cost
- Labor hours and FTE's were estimated per New England Interstate Water Pollution Control Commission (NEIWPCC) Northeast Guide for Estimating Staffing at Publicly and Privately Owned WWTP's.
- Hourly labor cost assumed at $75/hour

The alternative with the lower O&M costs received a higher score in the scoring matrix.

6.2 Preferred Alternative Scoring

6.2.1 Economic Analysis

The economic analysis for each alternative is presented in **Table 46**. Note the MBBR alternative includes a cost if the Sedimentation Basin is repurposed for the disc filters as well as a cost for a new disc filter building.

Table 46: Preferred Alternatives Economic Analysis

Parameter	Alternative		
	BAF Alternative	MBBR + DF (Sed. Basin) Alternative	MBBR + New DF Building
Capital Cost	$407M ($285M – $611M)	$337M ($236M – $505M)	$338M ($237M – $507M)
Annual O&M Cost	$1.1M	$1.0M	$1.0M
25-Year NPV	$437M	$364M	$365M

A detailed breakdown of the cost is included in **Appendix N**. Note, the unit costs include material and installation costs. The scoring breakdown is included in the subsequent tables.

Table 47: Preferred Alternatives Economic Raw Values

Criteria/Sub-criteria		Reference	BAF	MBBR+DF
Economic	Capital Cost	$1,000M	407M	338M
	Totalized O&M	$100M	30.4	27

6.2.2 Non-Monetary Raw Values

The non-monetary raw values were collected from vendor quotes and information including proposals, layout drawings, P&ID's, etc. The raw values along with reference values used for scoring are summarized in **Table 48**.

Table 48: Preferred Alternatives Non-Monetary Raw Values

Criteria/Sub-criteria		Reference	BAF	MBBR+DF
Operability	Number of Instruments	100	69	28
	Number of Basins	10	7	8
Technical	Flexibility for Future	-	100	100
Siting	Footprint Sq. Ft.	100,000	37,088	16,000

The following should be noted:

- BAF's are heavily automated, upflow filters. While the automation can simplify normal operation, it increases operational demands due to increased instrument quantity and associated O&M.
- For number of basins, only reactor basins for the BAF filters and MBBR process train were considered. Backwash tanks, wet wells, and the Disc Filters were not included in this assessment.
- Both alternatives allow for additional chemical phosphorus removal and are compatible with further chemical phosphorus removal in the primary clarifiers. The MBBR + Disc Filter alternative, however, requires the installation of rapid mix, coagulation, and flocculation tanks and is deemed more complex installation or retrofit and has been scored lower than the BAF.
- While both alternatives are compact with relatively low footprints, the MBBR + Disc Filter option has a lower footprint.

6.2.3 Scoring Summary

The scoring including non-monetary and economic criteria is summarized in **Table 49**.

Table 49: Preferred Alternatives Economic Analysis

Criteria/Sub-criteria		Weight	BAF	MBBR+DF
Economic	Capital	50%	29.7	33.1
	Operation and Maintenance	20%	13.9	14.6
Operability	Number of Instruments	10%	3.1	7.2
	Number of Basins	5%	1.5	1.0
Technical	Flexibility for Future	10%	10.0	10.0
Siting	Sq. Ft.	5%	3.1	4.2
	Total	**100%**	**61.3**	**70.1**

7. Recommended Alternative

The recommended alternative based on the evaluation is the MBBR + New Disc Filter Building followed by the existing GAC filters. In addition to yielding the highest score and lowest cost, the following additional benefits would be realized:

- MBBR and Disc Filter technologies are widely established within the wastewater industry, with numerous suppliers and manufacturers, allowing for a more competitive market.
- Compared to the BAF alternative, MBBR + Disc Filters will reliably produce high quality effluent. This may have the added benefit of potentially further mitigating anaerobic conditions and reducing backwash frequency on the downstream carbon filters.
- The MBBR + Disc Filters can be easily upgraded to increase treatment capacity.
    - MBBR treatment capacity can be increased by adding additional media up to 55-60% fill.
    - Filtration: Additional disc filter(s) could be added significantly cheaper than if additional BAF Filter cells were required.

7.1 Recommended Effluent SPDES Permit

Based upon the evaluation and selection of the proposed treatment process, proposed and recommended final effluent limits, as required by the Consent Order to be included in the PER, are shown in **Table 50**. As discussed in detail in the PER, the proposed limited are based on:

- Unique and dilute nature of influent wastewater
- Code of Federal Regulations Part 133.102 regarding 30-day minimum
- Revisions to the dilution factors

Specifically, the PER recommends modifications to the daily minimum 85% BOD_5 and TSS removal, sulfide limit, TRC limit, and WET limits that are described in the draft SPDES permit.

Table 50: Proposed Permit Limits

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
Flow	48 MGD	Monthly Average	48 MGD	Monthly Average	-
Total Organic Carbon (TOC)	15,200 lbs/day	Monthly Average	15,200 lbs/day	Monthly Average	-
	22,800 lbs/day	7-Day Average	22,800 lbs/day	7-Day Average	-
	N/A	N/A	30 mg/L	Monthly Average	30 mg/L is achievable

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
Biochemical Oxygen Demand (BOD_5)	N/A	N/A	45 mg/L	7-Day Average	45 mg/L is achievable
	N/A	N/A	85% Removal	Daily Minimum	Not Achievable / Not Recommended Dilute nature of influent wastewater makes achieving an 85% removal as a daily minimum difficult. Average BOD_5 is ~65 mg/L, to achieve an 85% removal, requires <9 mg/L BOD_5 in effluent, which is unreasonably low on a daily minimum. Per Code of Federal Regulations Part 133.102, the minimum level of BOD_5 removal requires a 30-day average of 85% removal Refer to Section 2.4.3.2 for more detail.
Total Suspended Solids (TSS)	30 mg/L 12,000 lbs/day	Monthly Average	30 mg/L 12,000 lbs/day	Monthly Average	-
	45 mg/L 18,000 lbs/day	7-Day Average	45 mg/L 18,000 lbs/day	7-Day Average	-
	N/A	N/A	85% Removal	Daily Minimum	Not Recommended Per Code of Federal Regulations Part 133.102, the minimum level of TSS removal requires a 30-day average of 85% removal. Refer to Section 2.4.3.2 for more detail.
Settleable Solids	N/A	N/A	0.30 mL/L	Daily Maximum	-
Total Phosphorous (as P)	1.0 mg/L	Monthly Average	1.0 mg/L	Monthly Average	1.0 mg/L is achievable
Total Sulfides	N/A	N/A	32 ug/L 13 lbs/day	Daily Maximum	Monitor only until treatment performance of new process is shown. Refer to Section 2.4.3.4 for more detail.
Total Dissolved Solids (TDS)	N/A	N/A	2,000 mg/L	Daily Maximum	-

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
Ammonia (as N)	N/A	N/A	Monitor, mg/L	Seasonal Monthly Average	-
Color (apparent)	N/A	N/A	Monitor, PCU	Daily Maximum	-
Total Phenolics	61 lbs/day	Monthly Average	5 ug/L 4 lbs/day	Daily Maximum	It will be necessary to maintain GAC to treat for phenolics.
Total Cyanide	N/A	N/A	52 ug/L	Daily Maximum	-
Alpha-BHC	0.01 ug/L	Monthly Average	0.01 ug/L	Monthly Average	-
Beta-BHC	0.02 ug/L	Monthly Average	0.02 ug/L	Monthly Average	-
Delta-BHC	0.02 ug/L	Monthly Average	0.02 ug/L	Monthly Average	-
Gamma-BHC	0.04 ug/L	Monthly Average	0.04 ug/L	Monthly Average	-
Hexachlorobenzene	0.20 ug/L	Monthly Average	0.20 ug/L	Monthly Average	-
Mercury	50 ng/L	Daily Maximum	50 ng/L	Daily Maximum	-
	N/A	N/A	16 ng/L	12 MRA	-
Mirex	0.4 ug/L	Daily Maximum	0.4 ug/L	Daily Maximum	-
PCB-1248	0.2 ug/L	Daily Maximum	0.095 ug/L	Daily Maximum	-
4,4’-DDD	0.04 ug/L	Monthly Average	0.04 ug/L	Monthly Average	-
4,4’-DDE	0.02 ug/L	Monthly Average	0.02 ug/L	Monthly Average	-
4,4’-DDT	0.05 ug/L	Monthly Average	0.05 ug/L	Monthly Average	-
Dieldrin	N/A	N/A	0.002 ug/L	Monthly Average	-
Fecal Coliform	200 No./100 mL	30-Day Geometric Mean	200 No./100 mL	30-Day Geometric Mean	-
	400 No./100 mL	7-Day Geometric Mean	400 No./100 mL	7-Day Geometric Mean	-

Parameter	Previous SPDES Permit		Draft SPDES Permit		PER Recommendation
	Effluent Limitation	Type	Effluent Limitation	Type	
Total Residual Chlorine (TRC)	3.0 mg/L	Daily Maximum	0.05 mg/L	Daily Maximum	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent TRC of 1.0 mg/L. Refer to Section 2.4.3.4 for more detail and other decay, uptake, and dilution factors.
WET	15.3 TUa	Acute Invertebrate	2.4 TUa	Acute Invertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 7.2 TUa. Refer to Section 2.4.3.4 for more detail.
	15.3 TUa	Acute Vertebrate	2.4 TUa	Acute Vertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 7.2 TUa. Refer to Section 2.4.3.4 for more detail.
	101 TUa	Chronic Invertebrate	10 TUc	Chronic Invertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 34 TUc. Refer to Section 2.4.3.4 for more detail.
	101 TUa	Chronic Vertebrate	10 TUc	Chronic Vertebrate	Adjusted dilution factors per mixing analysis contained herein warrants a modified effluent limit of 34 TUc. Refer to Section 2.4.3.4 for more detail.

7.2 Recommended Next Steps and Necessary Components of Overall Project

It was concluded from the PER that the project currently is unaffordable and any potential cost savings must be considered. One option to potentially reduce costs, though not likely enough to make the project affordable without more, is derating the plant flows to reduce the size of needed improvements and therefore their construction cost. This derating may be possible because the historical average dry weather influent flow is significantly less than the design flow of the plant. Accordingly, an evaluation examining potential derating of the facility is recommended. The derating evaluation would be informed by data gathered from a hydraulic study:

- **Hydraulic Study and WWTP Derating Evaluation** – The recommended improvements will significantly alter the hydraulic profile and plant operations. Additionally, as flows have declined over time, it may be prudent for NFWB to pursue derating of the dry weather flow capacity of the WWTP as part of the proposed improvements to reduce future capital and operational costs, given project affordability, while balancing user rates with capital expenditures. NFWB has begun procuring engineering services for this study and anticipates completion of this study by the end of 2026.

Additional necessary components of the project that will need to be completed either during detailed design or thereafter:

- **Updated Industrial Pretreatment Program (IPP)** – The IPP will need to be updated to include appropriate measures to protect the upgraded plant and to meet its permit. The IPP is also anticipated to inform the Rate Structure Study.
- **Rate Structure Study** – The capital and operational requirements of the proposed improvements are significant. The NFWB will need to complete a rate study to equitably allocate these costs among its user classes. The recent reduction in Industrial discharges could shift a significant portion of the future capital and operational costs on to homeowners many of whom will have difficulty in affording significantly higher rates.

Itemized Costs - MBBR and Disc Filter Alternative - New Disc Filter Building

Item	Units	Quantity	Units	Unit Cost	Cost
General Improvements				**$**	**575,000**
Site Preparation	LS	1	LS	$ 75,000	$ 75,000
Removal of Existing Concrete Foundations (Former Papermill)	LS	1	LS	$ 500,000	$ 500,000
General Site Details				**$**	**5,164,400**
For Soil Excavation	CY	15,000	CY	$ 40	$ 600,000
For Rock Excavation	CY	1,750	CY	$ 250	$ 437,500
Dewatering	LS	1	LS	$ 70,000	$ 70,000
For installing backfill	CY	1,750	CY	$ 12	$ 21,000
For furnishing and installing 72" RCP yard piping	LF	210	LF	$ 1,000	$ 210,000
For furnishing and installing 54" RCP yard piping	LF	370	LF	$ 700	$ 259,000
For furnishing and installing 36" DIP yard piping	LF	42	LF	$ 950	$ 39,900
For furnishing and installing 18" DIP yard piping	LF	260	LF	$ 450	$ 117,000
For furnishing and installing 72" Isolation Valve	EA	2	EA	$ 150,000	$ 300,000
Valve Vault	EA	2	EA	$ 250,000	$ 500,000
For furnishing and installing 54" Isolation Valve	EA	1	EA	$ 100,000	$ 100,000
Valve Vault	EA	1	EA	$ 200,000	$ 200,000
For furnishing and installing 36" Isolation Valves	EA	3	EA	$ 40,000	$ 120,000
Valve Vault	EA	1	EA	$ 180,000	$ 180,000
For furnishing and installing 36"x36"x36" tee	EA	1	EA	$ 27,000	$ 27,000
For furnishing and installing new Asphalt Pavement	SY	4,000	SY	$ 75	$ 300,000
For furnishing and installing top coat - asphalt pavement	SY	62,000	SY	$ 20	$ 1,240,000
For furnishing and installing Concrete Sidewalk	SY	250	SY	$ 80	$ 20,000
For furnishing and installing curbing	LF	100	LF	$ 30	$ 3,000
Clearing and Grubbing	LS	1	LS	$ 50,000	$ 50,000
Site Restoration	SY	15,000	SY	$ 20	$ 300,000
Erosion and Sediment Control	AC	3.5	AC	$ 20,000	$ 70,000
INFLUENT SCREENING STRUCTURE/BUILIDNG				**$**	**6,792,935**
Structural:					
CIP Base Slab	CY	93	CY	$ 1,200	$ 111,111
CIP Walls	CY	198	CY	$ 1,500	$ 296,300
CIP Bypass Channel	CY	2	CY	$ 1,500	$ 3,000
Architectural / HVAC / Plumbing / Safety/Security:					
ARCH/Above Grade Building (Masonry/Block)	SF	900	SF	$ 1,200	$ 1,080,000
HVAC Equipment/Systems Allowance	SF	900	SF	$ 75	$ 67,500
Plumbing Equipment/Systems Allowance	SF	900	SF	$ 20	$ 18,000
Safety/Security Equipment/Systems Allowance	SF	900	SF	$ 25	$ 22,500
Process:					
Influent Screening Equipment (includes installation)	EA	2	EA	$ 1,500,000	$ 3,000,000
Washer Compactor Allowance	LS	1	LS	$ 500,000	$ 500,000
Bypass Piping Allowance	LS	1	LS	$ 50,000	$ 50,000
Instrumentation:					
Allowance: Influent Screen Bldg. Process Instrumentation / Integration	LS	1		10%	$ 514,841
Influent Flow Meter (36" Flow Meter)	EA	1	EA	$ 100,000	$ 100,000
Electrical:					
Allowance: Influent Screen Bldg. (Bldg. Utility & Equipment power, lighting, etc.)	LS	1		20%	$ 1,029,682
DISTRIBUTION BOX				**$**	**258,280**
Structural:					
CIP Base Slab	CY	31	CY	$ 1,250	$ 38,890
CIP Walls	CY	111	CY	$ 1,500	$ 166,500
CIP Elevated Slab	CY	31	CY	$ 1,700	$ 52,890
MBBR AND DISC FILTER TREATMENT SYSTEMS				**$**	**43,412,163**
Structural:					
MBBR Electrical/Blower Building Foundation Piles	SF	1,600	SF	$ 54	$ 86,400
MBBR CIP Base Slab	CY	1,185	CY	$ 1,250	$ 1,481,481
MBBR CIP Walls	CY	1,493	CY	$ 1,500	$ 2,240,000
Disc Filter CIP Base Slab	CY	783	CY	$ 1,250	$ 979,186
Disc Filter CIP Walls	CY	714	CY	$ 1,500	$ 1,070,548
Furnish and Install aluminum grating for disc filter building	SF	6,345	SF	$ 100	$ 634,500
For furnishing and installing multiple staircases for access	EA	3	EA	$ 5,000	$ 15,000
Misc. concrete (equipment pads, electrical pads, etc.)	CY	5	CY	$ 1,250	$ 6,250
Architectural / HVAC / Plumbing / Safety/Security:					
ARCH - MBBR Blower/Electrical Bldg. (Masonry/Block)	SF	1,600	SF	$ 1,200	$ 1,920,000
ARCH - Furnish and install Disc Filter Building (PEMB)	SF	12,690	SF	$ 350	$ 4,441,500
ARCH - Furnish and install Polymer Building (Masonry/Block)	SF	150	SF	$ 1,200	$ 180,000
HVAC - Blower/Electrical Bldg.	SF	1,600	SF	$ 125	$ 200,000
HVAC - Disc Filter Building	SF	12,690	SF	$ 75	$ 951,750
HVAC - Polymer Building	SF	1,500	SF	$ 75	$ 112,500
Plumbing - Blower/Electrical Bldg.	LS	1	LS	$ 75,000	$ 75,000
Plumbing Equipment/Systems Allowance	SF	1,600	SF	$ 20	$ 32,000
Safety/Security Equipment/Systems Allowance	SF	1,600	SF	$ 25	$ 40,000

Itemized Costs - MBBR and Disc Filter Alternative - New Disc Filter Building

Item	Units	Quantity	Units	Unit Cost	Cost
Process:					
MBBR Vendor supplied equipment	LS	1	LS		$ 16,554,000.00
Installation	LS	1	LS	$ 200,000.00	$ 200,000.00
Aeration piping	LF	100	LF	$ 500.00	$ 50,000.00
Hydrostatic testing of concrete tank	LS	1	LS	$ 10,000	$ 10,000
Disc Filter Piping					
30" Steel Pipe	LF	140	LF	$ 450	$ 63,000
24"Steel Pipe	LF	200	LF	$ 350	$ 70,000
30" 90-deg bends	EA	14	EA	$ 21,000	$ 294,000
24" 90-deg bends	EA	14	EA	$ 12,500	$ 175,000
54" Steel Pipe	LF	120	LF	$ 1,450	$ 174,000
54" 90-deg bend	EA	1	EA	$ 120,000	$ 120,000
72" Steel Pipe	LF	100	LF	$ 2,000	$ 200,000
Piping Allowance (fittings, etc.)	LS	1	LS	$ 100,000	$ 100,000
Instrumentation:					
Allowance: MBBR Process Instrumentation / Integration	LS	1		10%	$ 3,247,612
Disc Filter flow meters - 30"	EA	7	EA	$ 90,000	$ 3,090,823
Electrical:					
New MBBR MCC - equipment and install	LS	1	LS	$ 750,000	$ 750,000
VFDs - equipment and install	EA	5	EA	$ 120,000	$ 600,000
Allowance: MBBR Structure/Bldg. (Bldg. Utility & Equipment power, lighting, etc.)	LS	1		10%	$ 3,247,612
EFFLUENT STRUCTURE					**$ 67,627**
Structural:					
Foundation Piles	SF	240	SF	$ 54	$ 12,960
CIP Base Slab	CY	9	CY	$ 1,250	$ 11,111
CIP Walls	CY	19	CY	$ 1,500	$ 28,444
CIP Elevated Slab	CY	9	CY	$ 1,700	$ 15,111
INTERMEDIATE PUMP STATION STRUCTURE					**$ 10,032,546**
Structural:					
CIP Base Slab	CY	65	CY	$ 1,250	$ 81,020
CIP Walls	CY	204	CY	$ 1,500	$ 305,562
CIP Elevated Slab	CY	65	CY	$ 1,700	$ 110,187
Architectural / HVAC / Plumbing / Safety/Security:					
HVAC Equipment/Systems Allowance	SF	1,575	LS	$ 75	$ 118,125
Safety/Security Equipment/Systems Allowance	SF	1,575	SF	$ 25	$ 39,375
Process:					
Demolish existing Intermediate Pump Station pumps and suction piping	LS	1	LS	$ 80,000	$ 80,000
Furnish and install 250 hp intermediate pumps	EA	3	EA	$ 2,000,000	$ 6,000,000
Furnish and install new intermediate pump 36" discharge piping (3-250 hp pumps)					
36" check valves	EA	3	EA	$ 175,000	$ 525,000
36" Gate valves (actuated)	EA	3	EA	$ 105,000	$ 315,000
36" DIP	LF	30	EA	$ 4,050	$ 121,500
36" elbow	EA	1	EA	$ 28,000	$ 28,000
36" tee	EA	2	EA	$ 41,500	$ 83,000
54" DIP	LF	20	EA	$ 13,150	$ 263,000
54" to 36" reducer	EA	1	EA	$ 48,000	$ 48,000
Bypass Pumping Allowance	LS	1	LS	$ 100,000	$ 100,000
Pump Station Allowance	LS	1	LS	$ 30,000	$ 30,000
Instrumentation:					
Allowance: Influent Pump Instrumentation / Integration	LS	1		10%	$ 751,350
Electrical:					
Furnish and install intermediate Pump VFDs	3	EA	EA	$ 120,000	$ 360,000
Allowance: Influent Pump Bldg. (Bldg. Utility & Equipment power, lighting, etc.)	LS	1		10%	$ 673,427
MISC. PROCESS IMPROVEMENTS					**$ 23,910,800**
Rapid Mix Diversion Gates	EA	8	EA	$ 60,000	$ 480,000
Woodstave Ferric Chloride Tank	EA	2	EA	$ 80,000	$ 160,000
Carbon Removal and Disposal	TN	2334	TN	$ 200	$ 466,800
Carbon Replacement	TN	2875	TN	$ 1,420	$ 4,082,500
Dechlorination Facility	LS	1	LS	$ 15,000,000	$ 15,000,000
Replacement of Carbon Filter Roof	SF	55000	SF	$ 36.36	$ 2,000,000.00
Backwash Pumps	EA	2	EA	$ 800,000.00	$ 1,600,000
Piping Replacement Allowance (36")	LF	30	LS	$ 4,050	$ 121,500
SITE ELECTRICAL IMPROVEMENTS					**$ 5,752,250**
New Power Center (13.8V-480V transformers and 480V switchgear - equipment only	LS	1	LS	$ 3,000,000	$ 3,000,000
Furnish and install two - 15kV cables - new ductbank/extension	LF	1000	LF	$ 450	$ 450,000
Furnish and install two - 15kV cables - new ductbank/extension (to Power Centers 4 thru 6)	LF	1500	LF	$ 450	$ 675,000
Modernization/Upgrades at Existing Substation E-house	LS	1	LS	$ 100,000	$ 100,000
Restore all explosion proof fixtures in Main Channel area	LS	1	LS	$ 100,000	$ 100,000
Electrical Allowance	LS	1	LS	25%	$ 1,081,250
Instrumentation and Controls	LS	1	LS	8%	$ 346,000
HVAC ALLOWANCE					**$ 75,000**
HVAC Allowance	LS	1	LS	$ 75,000	$ 75,000
PLUMBING ALLOWANCE					**$ 75,000**
Plumbing Improvements Allowance	LS	1	LS	$ 75,000	$ 75,000
Direct Construction Costs 2026					**$96,116,000**

Itemized Costs - MBBR and Disc Filter Alternative - New Disc Filter Building

Item	Units	Quantity	Units	Unit Cost	Cost
General Conditions	20%				$19,223,200
Special Conditions (Tie-ins, small tools, overtime)	2%				$1,922,320
Permits	1.0%				$961,160
Contractor's Risk/Tariffs	10%				$9,611,600
Insurance (Builders Risk, Gen. Liability, etc.)	3%				$2,883,480
Bonds	3.0%				$2,883,480
Subtotal Construction Costs					**$133,601,240**
Contractor's O & P	20%				$26,720,248
Subtotal Construction Costs, w/ O & P					**$160,321,488**
Design Contingency (including rate study)	35%				$56,112,521
Total Construction Costs (2026)					**$216,434,009**
Escalation Adder (5%/yr, w/ NTP 06/2029 @ 24-months = 23.54%)	**23.5%**				**$50,948,566**
Subtotal Construction Costs					**$267,382,575**
Project Contingency (Management Reserves)	10%				$26,738,258
Subtotal Construction Costs					**$294,120,833**
Engineering, Implementation, and Study (Design, Hydraulic Study, IPP Analysis, and Rate Study) Fees	***15%***				$44,118,125
TOTAL ESTIMATED PROJECT COST (POINT)					**$338,239,000**
LOW (-30%)	**70.0%**				**$236,767,300**
HIGH (+50%)	**50.0%**				**$507,358,500**

NIAGARA FALLS PUBLIC WATER AUTHORITY RESOLUTION 2026-04

RESOLUTION AUTHORIZING THE ISSUANCE OF THE AUTHORITY'S WATER AND SEWER SYSTEM REVENUE BONDS AND THE APPROVAL AND EXECUTION OF RELATED DOCUMENTS

WHEREAS, Title 10-B of the Public Authorities Law of the State of New York, as amended (the "Act") created the Niagara Falls Public Water Authority (the "Authority") with the authority and power to issue its revenue bonds for the purpose of among other things, planning, developing, acquiring, constructing and financing the cost of any facility (as defined in the Act), including the acquisition of facilities of the City of Niagara Falls ("the City") (the "System") by the Niagara Falls Water Board (the "Board") or for any other corporate purpose, including the establishment of reserves to secure the bonds, the payment of principal of, premium, if any, and interest on the bonds and the payment of incidental expenses in connection therewith; and

WHEREAS, the City has sold, transferred and otherwise conveyed the City's title and interest in the System to the Board; and

WHEREAS, the Board has approved capital improvements to be undertaken to the System consisting of the improvements to the water treatment plant and 56th Street water storage tank (the "Project") and has requested that the Authority finance same; and

WHEREAS, in connection therewith, it is now desired to authorize the issuance of not exceeding $9,782,000 of bonds to the New York State Environmental Facilities Corporation ("EFC"), including any notes issued in anticipation thereof (the "Bonds") plus any amounts necessary to fund reserves and to pay costs of issuance (with such amount to be reduced by grants), and to approve and authorize the execution of related documents; NOW, THEREFORE,

BE IT RESOLVED by the Niagara Falls Public Water Authority as follows:

Section 1. The Authority hereby finds and determines:

(a) By virtue of the Act, the Authority has been vested with all powers necessary and convenient to carry out and effectuate the purposes and provisions of the Act and to exercise all powers granted to it under the Act.

(b) It is desirable and in the public interest for the Authority to issue and sell the Bonds pursuant to a certain General Revenue Bond Resolution dated as of May 1, 2003 (the "General Resolution"), adopted by the Authority, and pursuant to a Supplemental Resolution(s) (the "Supplemental Resolution") by and between the Authority and Manufacturers and Traders Trust Company, as trustee (the "Trustee") (the Supplemental Resolution, collectively with the General Resolution, the "Resolution") and to use the proceeds of said Bonds to pay for the Project, any required reserves and costs of issuance.

Section 2. In consequence of the foregoing, the Authority hereby determines to: (i) issue and sell the Bonds pursuant to the Supplemental Resolution and the General Resolution; (ii) use the proceeds of the Bonds as previously described and as provided in the Supplemental Resolution, (iii) enter into each agreement hereafter identified in this resolution; and (iv) execute such

other documents and take such other action as may be necessary to effectuate the purposes of this resolution.

Section 3. The Authority is hereby authorized to issue, execute, sell and deliver the Bonds to EFC in the aggregate principal amount, maturing in such years at such amounts, in serial or term form, at the rate of interest and upon such terms as shall be approved by the Chairman or the vice-Chairman, provided that:

(a) The Bonds are hereby authorized to be issued, executed and delivered and shall be issued, executed and delivered at such time as the Chairman or the Vice-Chairman of the Authority shall determine.

(b) The Bonds shall be issued solely for the purposes previously described.

(c) The Bonds and the interest thereon are not and shall never be a debt of the State of New York or any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, and neither the State of New York nor any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, shall be liable thereon.

Section 4. The Authority is hereby authorized to enter into a Project Finance Agreement (the "Finance Agreement") with EFC and such other agreements and documents relating to the Bonds as required by EFC.

Section 5. The Bonds shall not be issued, executed or delivered until the prior approval of the State Comptroller shall have been obtained as required by the Act.

Section 6. (a) The Chairman or the vice-Chairman of the Authority are hereby authorized, on behalf of the Authority, to execute and deliver the Supplemental Resolution, the Bonds, and the Finance Agreement, all as described above (collectively, the "Financing Documents"), and the Secretary of the Authority is hereby authorized to affix the seal of the Authority to the Supplemental Resolution and the Bonds and to attest the same. The execution thereof by the Chairman or the Vice-Chairman shall constitute conclusive evidence of such approval.

(b) The Chairman or the vice-Chairman of the Authority are further hereby authorized, on behalf of the Authority, to designate any additional Authorized Representatives of the Authority (as used or defined in and pursuant to the Resolution) to execute, on behalf of the Authority, any Financing Documents.

Section 7. The members, officers, employees and agents of the Authority are hereby authorized and directed for and in the name and on behalf of the Authority to do all acts and things required or provided for by the provisions of the Financing Documents, and to execute and deliver all such additional certificates, instruments and documents, pay all such fees, charges and expenses and to do all such further acts and things as may be necessary or, in the opinion of the member, officer, employee or agent acting, desirable and proper to effect the purposes of this resolution and to cause

compliance by the Authority with all of the terms, covenants and provisions of the Financing Documents.

Section 8. This resolution shall take effect immediately and the Bonds are hereby ordered to be issued in accordance with this resolution.

At a regular meeting of the Niagara Falls Public Water Authority, held at the Authority's office, 5815 Buffalo Avenue, Niagara Falls, New York 14304, at 1:00 o'clock P.M., on the 24th day of July, 2026, the following members of the Authority were:

PRESENT:

ABSENT:

ALSO PRESENT:

After the meeting had been duly called to order, the Chairman announced that among the purposes of the meeting was to consider and take action on certain matters pertaining to the issuance and sale of the Authority's proposed Water and Sewer System Revenue Bonds.

The following resolution was duly moved, seconded, discussed and adopted with the *following members voting in open session:*

AYE	NAY

STATE OF NEW YORK)
ss.:
COUNTY OF NIAGARA)

I, the undersigned Secretary of the Niagara Falls Public Water Authority, DO HEREBY CERTIFY:

That I have compared the annexed extract of the minutes of the meeting of the Niagara Falls Public Water Authority, including the resolution contained therein, held on July 24, 2026, with the original thereof on file in my office, and that the same is a true and correct transcript therefrom and of the whole of said original so far as the same relates to the subject matters therein referred to.

I FURTHER CERTIFY that all members of said Authority had due notice of said meeting.

I FURTHER CERTIFY that, pursuant to Section 103 of the Public Officers Law (Open Meetings Law), said meeting was open to the general public.

I FURTHER CERTIFY that, PRIOR to the time of said meeting, I duly caused a public notice of the time and place of said meeting to be given to the following newspapers and/or other news media as follows:

Newspaper and/or other news media	Date given
Niagara Gazette	July 23, 2026
Buffalo News	July 23, 2026
WKBW/7 News	July 23, 2026
WIVB/News 4	July 23, 2026
WBFO/Buffalo Toronto Public Media	July 23, 2026
Additional Notice	
Posted to the Exterior Posting Board of Authority's Office, 5815 Buffalo Avenue, Niagara Falls, NY 14304	July 23, 2026
Posted online to NFWB.org/news and NFWB.org/NFPWA	July 23, 2026

I FURTHER CERTIFY that PRIOR to the time of said meeting, I duly caused public notice of the time and place of said meeting to be conspicuously posted in the following designated public location on the following dates:

Designated Location of Posted Notice	Date of posting
None	

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Authority on July 24, 2026.

(CORPORATE SEAL)

_____
Sean W. Costello, Esq., Secretary

Hazen and Sawyer
1 Seneca St, Suite 1050
Buffalo, NY 14203 • 716.427.1546

Niagara Falls Water Board Water Treatment Plant Capital Improvements

Engineering Report

DWSRF-BIL/General Supplement
Niagara Falls Water Board
Hazen No. 90519-001
May 28, 2026

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List of Acronyms

Abbreviation	Definition
AWWA	American Water Work Association
CCT	Corrosion Control Treatment
CRS	Community Rating System
DAC	Disadvantaged Community
DWSRF	Drinking Water State Revolving Fund
EDU	Equivalent Dwelling Unit
EPA	Environmental Protection Agency
gpm	Gallons Per Minute
GRR	Galvanized Requiring Replacement
IPaC	Information for Planning and Conservation
LCR	Lead and Copper Rule
LCRI	Lead and Copper Rule Improvements
LSL	Lead Service Line
MG	Million Gallon
MGD	Million Gallons Per Day
mg/L	Milligrams Per Liter
NFIP	National Flood Insurance Program
NFWB	Niagara Falls Water Board
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
PAC	Powdered Activated Carbon
PACL	Polyaluminum Chloride
PEJA	Potential Environmental Justice Area
SFHA	Special Flood Hazard Area
µg/L	Micrograms Per Liter
WTP	Water Treatment Plant

Executive Summary

The Niagara Falls Water Board (NFWB) operates a 17.9 million gallon per day (MGD) water treatment plant (WTP) serving nearly 50,000 customers in the City of Niagara Falls. To prepare for compliance with the Lead and Copper Rule Improvements (LCRI) and improve service to customers with other water system improvements, NFWB evaluated their corrosion control treatment (CCT) to proactively reduce lead release and improve drinking water quality.

To prepare for compliance with the LCRI, the NFWB has initiated a CCT evaluation. Implementation of recommendations from this effort will help the NFWB identify steps to optimize CCT to proactively reduce lead release into drinking water and prepare for a lower lead action level of 10 µg/L under the LCRI. The purpose of this engineering report is to review the engineering, construction, and post construction sample monitoring effort required for the NFWB to implement chemical improvements identified in the May 2026 *Desktop Corrosion Control Treatment Evaluation* to support compliance with LCRI.

Following a review of potential alternatives, a cost estimate was developed considering the rehabilitation of existing NFWB equipment and infrastructure to streamline project cost and schedule. Table ES-1 provides an overview of the anticipated project cost for major project components identified in the CCT evaluation report and related filter media, underdrain and 56th Street storage improvements to further strengthen facility operations and water quality.

Table ES-1: Project Cost Estimate

Project Component	Cost Estimate
Update CCT Chemical System to Phosphoric Acid	$650,000
Renew Caustic Chemical System	$485,000
Renew Acid Feed Chemical System	$850,000
Filter Media Replacement and Underdrain Improvements	$3,080,000
56th Street Tank Interior and Exterior Improvements	$3,000,000
Administration, Engineering, and Construction Phase Services	$1,717,000
Total Project Cost	$9,782,000

Following a solicitation period to select an engineering consultant, **Table ES-2** summarizes the estimated project schedule, assuming notification of Award in August 2026:

Table ES-2: Project Schedule

Activity	Timeframe
Project Award	8/1/2026
NFWB Agreement Start Date	9/1/2026
Design Phase	9/1/2026 – 2/28/2027
Bidding and Contractor Award	3/1/2027 – 5/1/2027
Construction Phase	5/1/2027 – 10/1/2027
Post Construction Implementation Plan	10/1/2027 – 12/31/2027

1. Project History and Background

The Niagara Falls Water Board (NFWB) owns and operates a 17.9 million gallon per day (MGD) water treatment plant (WTP) located in the City of Niagara Falls (City), providing drinking water to nearly 50,000 customers through approximately 18,000 service lines. In the NFWB distribution system, property owners own the entire service line from the watermain to the meter. The NFWB maintains the portion of the service line from the watermain to the curb box to facilitate construction and maintenance efforts. It is estimated that there could be 8,000 to 10,000 lead service lines (LSLs) and 5,000 galvanized requiring replacement (GRRs) across the distribution system based on historical records, water system and field crew observations.

To prepare for compliance with the Lead and Copper Rule Improvements (LCRI), the NFWB has initiated a corrosion control treatment (CCT) evaluation. Implementation of recommendations from this effort will help the NFWB identify steps to improve CCT to proactively reduce lead release into drinking water and prepare for a lower lead action level of 10 µg/L under the LCRI. The purpose of this engineering report is to review the engineering, construction, and post construction sample monitoring effort required for the NFWB to implement chemical improvements identified in the May 2026 *Desktop Corrosion Control Treatment Evaluation* to support compliance with LCRI.

1.1 Site Information

The NFWB was established in 2002 through New York State legislation. It owns and operates the Michael C. O'Laughlin Water Treatment Plant (WTP) which went online in 1996. The WTP treats an average of 17.9 million gallons per day (MGD) from the Niagara River through conventional treatment (**Figure 1-1**). Chlorine is added to the pre-treatment tanks for disinfection and polyaluminum chloride (PACL) added to the rapid-mix chambers for coagulation. Downstream of filtration, chlorine is added again for secondary disinfection. Chemical addition also includes fluoride for dental health and a poly/orthophosphate blend for CCT.

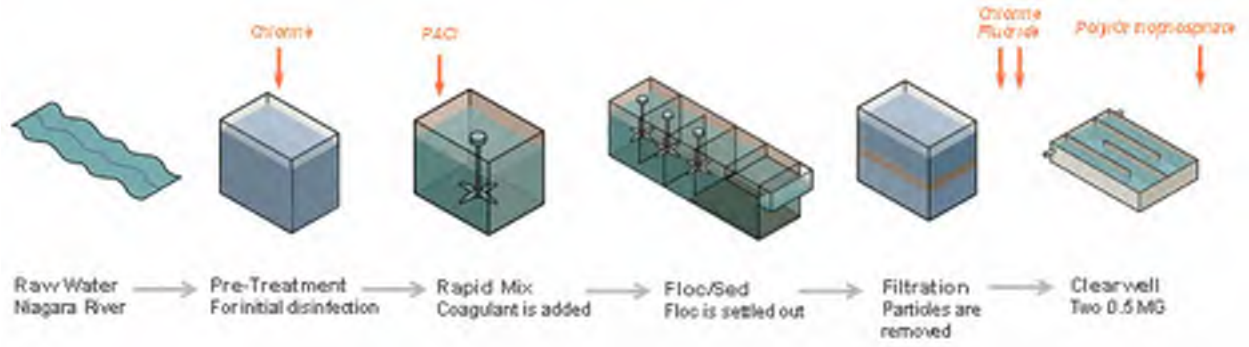

Figure 1-1: Treatment Plant Process Flow Diagram

1.1.1 Location

The project is located at 5815 Buffalo Ave, Niagara Falls, NY. This is in the southwestern portion of Niagara County, on the southwest side of the City of Niagara Falls, along the Niagara River, at the Water Treatment Plant as shown in **Figure 1-2**.

NFWB Treatment Plant Overview

Michael C. O'Laughlin Municipal Water Plant

Figure 1-2: NFWB WTP Overview

1.1.2 Geological Conditions and Environmental Resources

Using the New York State Museum map for Drift Thickness in Niagara County, it is indicated that the approximate depth to bedrock at the water treatment plant is 50 feet. As the WTP is located in a heavily developed corridor adjacent to the Niagara River, there is a high presence of variable urban fill over glacial till and relatively high groundwater. Note that recommended improvements identified as part of this project will be limited to the existing NFWB WTP and distribution system and not require the installation of new infrastructure on undeveloped lands requiring further geological/geotechnical consideration.

Based on the New York State Department of Environmental Conservation's (NYSDEC) Environmental Resource Mapper there are rare plants and animals located within and in the vicinity of the project site. Specifically, the project site is in the vicinity of significant Gull colony as well as rare Freshwater Mussels and other animals listed as endangered or threatened.

The project area does not fall within any NYS agricultural districts. Near the WTP is the Niagara Falls State Park; which is managed by the New York State Office of Parks, Recreation, and Historic Preservation.

1.1.3 Local Flora and Faune

The United States Fish and Wildlife Service's Information for Planning and Conservation (IPaC) database was researched for the project area. The IPaC preliminary results indicate that the Salamander Mussel and the Tricolored Bat are candidates for listing as endangered species may occur in the project area. The database also indicates that the Monarch Butterfly may exist in the project area and is a candidate for listing as a threatened species. Additionally, habitats exist for 11 migratory birds. This project is unlikely to impact any of these species where planned work is recommended to occur.

1.1.4 Floodplain Considerations

The City of Niagara Falls is a participant in the National Flood Insurance Program (NFIP). The NFIP provides flood insurance as required by the National Flood Insurance Act of 1968 in communities that have Special Flood Hazard Areas (SFHA, also known as "flood zones"). There are four SFHAs in the City of Niagara Falls. These SFHAs include Cayuga Creek, Gill Creek, the Little Niagara River, and the Niagara River. Flooding in and around these areas is most likely to occur during periods of unusual rain events, heavy snowmelt and ice jams. The City is also an active Certified Community Rating Systems (CRS) community, which is a voluntary incentive program that recognizes and encourages floodplain management activities that exceed minimum NFIP requirements. By participating in the CRS program, the City's efforts are rewarded with a 10% discount on flood insurance premiums for those that have flood insurance.

The flood zone map for the project location is included as **Figure 1-3**. The map shows that the area containing the Water Treatment Plant is within Zone X, which represents a 0.2% annual chance flood hazard.

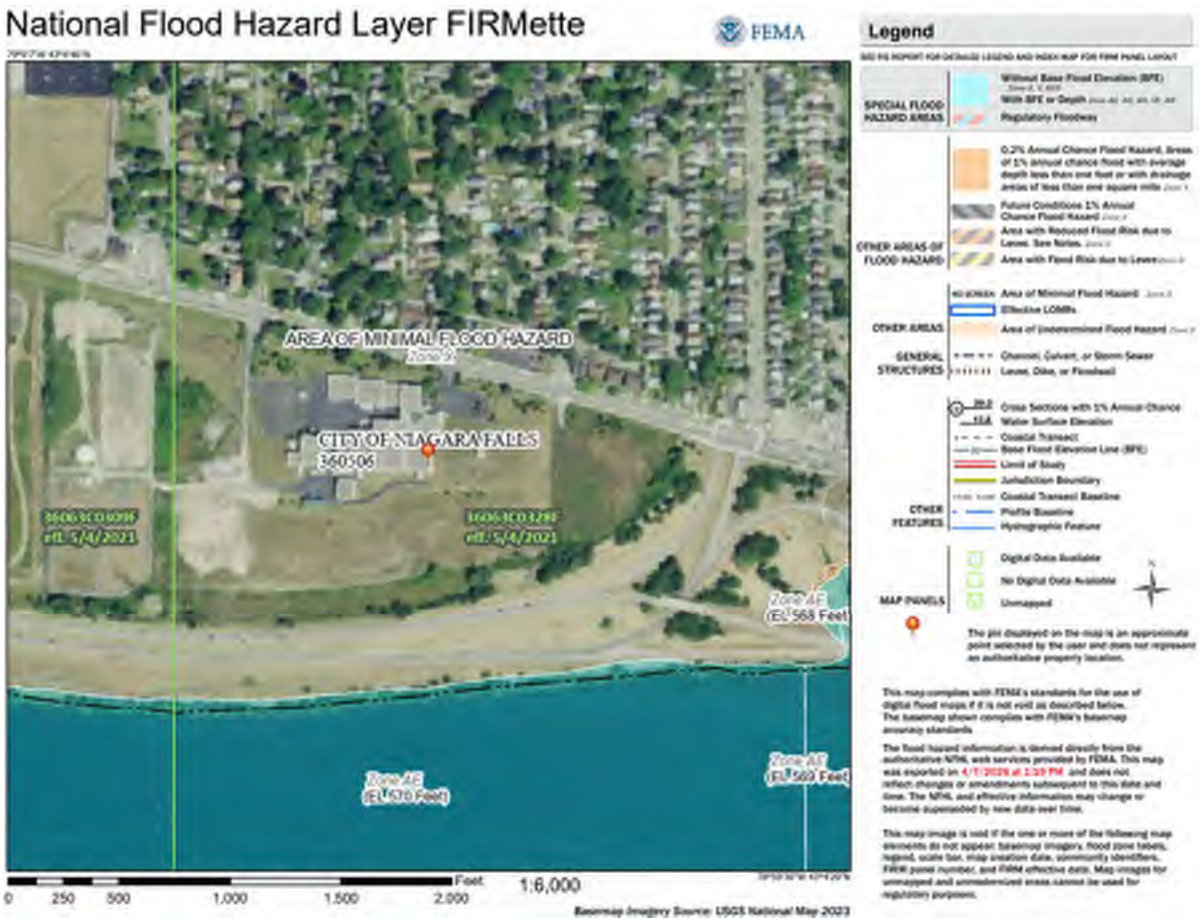

Figure 1-3: FEMA Flood Hazard Map of the Project Site

1.1.5 Environmental Justice Areas

Significant portions of the NFWB service area are listed as a Potential Environmental Justice Area as shown in **Figure 1-4**. The City of Niagara Falls has an estimated 24% of the population below the economic Poverty Level and 38.6% considered of a minority status.

NFWB Potential Environmental Justice Area Map

Percentage Below Poverty Level

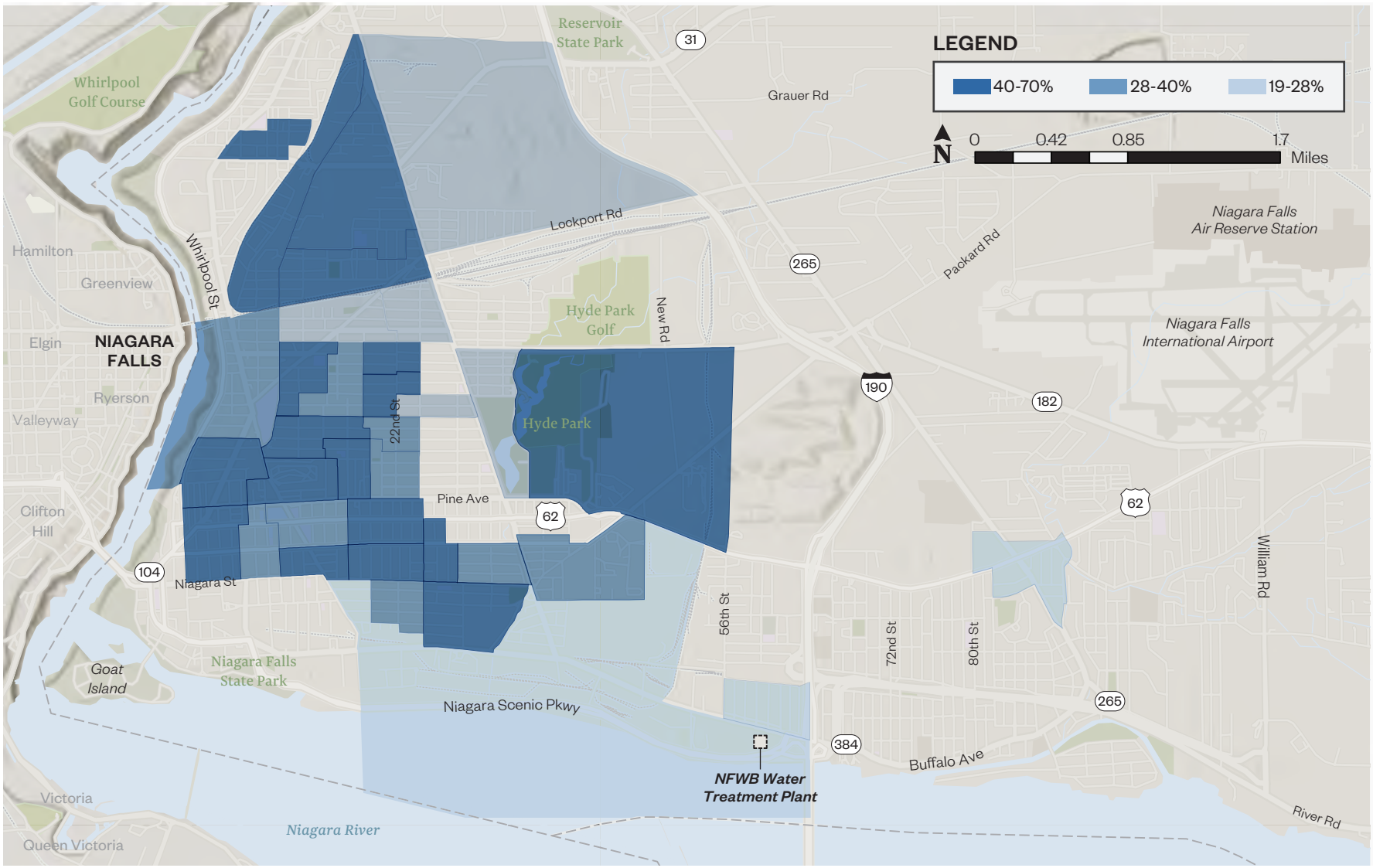

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Figure 1-4: NFWB PEJA Map

1.2 Ownership and Service Area

1.2.1 Service Area

The WTP provides potable water to the City of Niagara Falls and small portions of the Town of Niagara, supplying water for an estimated 50,000 customers representing approximately 30,417 equivalent dwelling units (EDUs). The NFWB's service area primarily consists of residential users, key industrial users, and commercial properties along main corridors in the City of Niagara Falls. Two elevated water storage tanks provide storage and hydraulic stability to the water system that includes 265 miles of water main throughout the service area. **Figure 1-5** summarizes the NFWB service area.

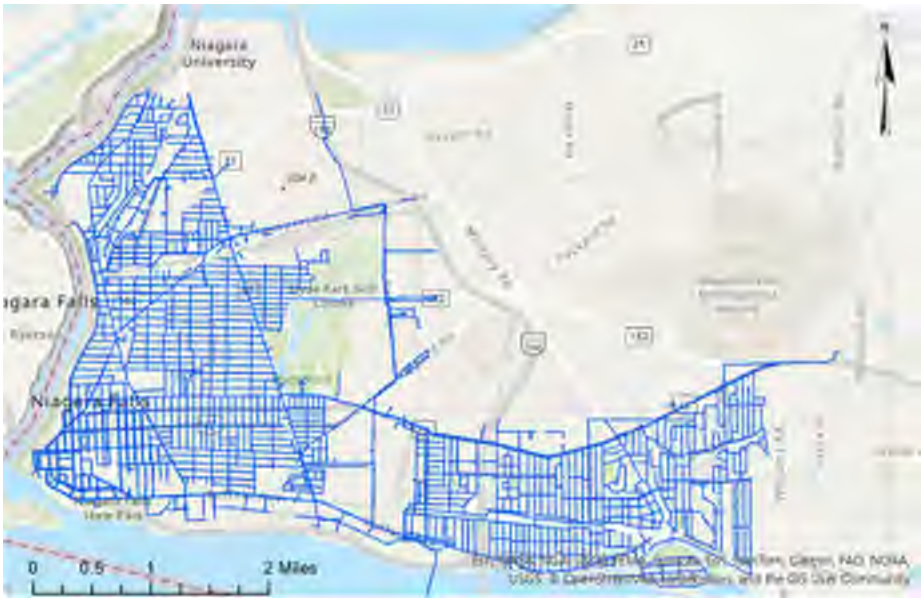

Figure 1-5: NFWB Service Area

Shown below in **Table 1-1** is a list of the current water system operators and their respective certification levels.

Table 1-1. Water System Operators and Certification Levels

Water System Operator	Title
Rob Rowe	Chief Operator
Tim LaGamba	Senior Operator
Mike Alfiere	Senior WTP Operator
Dave Roeser	Senior WTP Operator
Kevin Lubkowski	Operator
Joe Lewis	Operator

1.2.2 Population Trends and Growth

The total population of the City is presented in **Table 1-2**. Niagara County and New York State populations are provided for comparison. The overall trend for the City shows a decline in total population from 2010 to 2024.

Table 1-2. City of Niagara Falls Population Trends

	Population 2010	Population 2020	Population 2024 (estimate)	Percent Change in Population from 2010 to 2020	Percent Change in Population from 2020 to 2024
City of Niagara Falls	50,193	48,671	47,512	-3.1%	-2.4%
Niagara County	216,469	212,666	209,570	-1.8%	-1.5%
New York State	19,378,102	20,201,249	19,867,248	+4.2%	-1.7%

Source: United States Census Bureau

Table 1-3. City of Niagara Falls Population Projection Over the Next 20 Years

	Population 2025 (estimate)	Population 2030 (estimate)	Population 2035 (estimate)	Population 2040 (estimate)	Population 2045 (estimate)
City of Niagara Falls	47,274	46,093	44,940	43,817	42,721
Niagara County	208,816	205,057	201,366	197,741	194,182
New York State	19,787,779	19,392,023	19,004,183	18,624,099	18,251,617

Method: 2.5% decrease per 5 years for City of Niagara Falls, 1.8% decrease per 5 years for Niagara County, 2.0% decrease per 5 years for New York State

1.2.3 Historical and Projected Water Use Data

The total number of EDUs served by the NFWB WTP is approximately 30,417. It is estimated that there are 20,557 residential EDUs, 9,047 commercial EDUs, and 813 institutional EDUs.

1.2.4 Adjacent or Nearest Public Water Systems

Table 1-4 includes a summary of nearby Public Water Systems to the Niagara Falls Water Board:

Table 1-4. Summary of Adjacent or Nearest Public Water Systems

Public Water System ID	Water System Name	Population Served
NY3100554	Niagara County Water District	110,000
NY3100572	City of North Tonawanda	31,500
NY3100543	City of Lockport	21,000
NY1400449	Erie County Water Authority	>500,000

1.2.5 Community Involvement

It is a priority of the NFWB to keep customers informed with water system updates. The NFWB website (url: nfwb.org) and social media accounts are often used to communicate water system news to residents. As information is relevant to the public, the NFWB will develop communications strategy and inform residents, businesses, and necessary health officials on project specifics.

For treatment changes resulting from this project, a comprehensive outreach and communication plan will be developed to inform the public of these updates and request sampling locations from residents in key areas of the water system. A start-up and water quality monitoring plan of the NFWB WTP and across the distribution system to 1) establish an initial start-up dose and duration to achieve target dose; 2) identify lead testing sites and strategies for monitoring pre- and post-orthophosphate addition; 3) utilize existing water quality parameters sites and identify additional sites (if needed) to effectively monitor orthophosphate addition; establish monitor frequency during the transition phase; and 4) coordinate with the NCDOH and NYSDOH on orthophosphate implementation and approval of optimal water quality parameters.

1.2.6 Existing Facilities and Summary of Design Conditions

Although enhanced coagulation, pH adjustment, and a higher dose of orthophosphate for corrosion control were key components of the WTP Basis of Design, the plant does not currently utilize these.

In 1997, the plant began adding zinc orthophosphate to the treatment process following a 1994 pipe loop demonstration study. The plant observed reduced lead levels; however, it caused a white precipitate to form and clog strainers, soil water meters, and deposits in turbidimeters.

In 1999, a corrosion inhibitor trial was conducted using Parafos, a non-zinc poly orthophosphate blend, for roughly two months. The trial showed no reduction in corrosion control and no evidence of precipitate formation. Based on these results, the plant requested approval from the Niagara County Health Department to transition from a zinc-based inhibitor to a non-zinc poly-phosphate inhibitor. **Figure 1-6** describes the history of corrosion control treatment at the NFWB WTP. A summary of the original plant Basis of Design Report is provided in **Appendix A**.

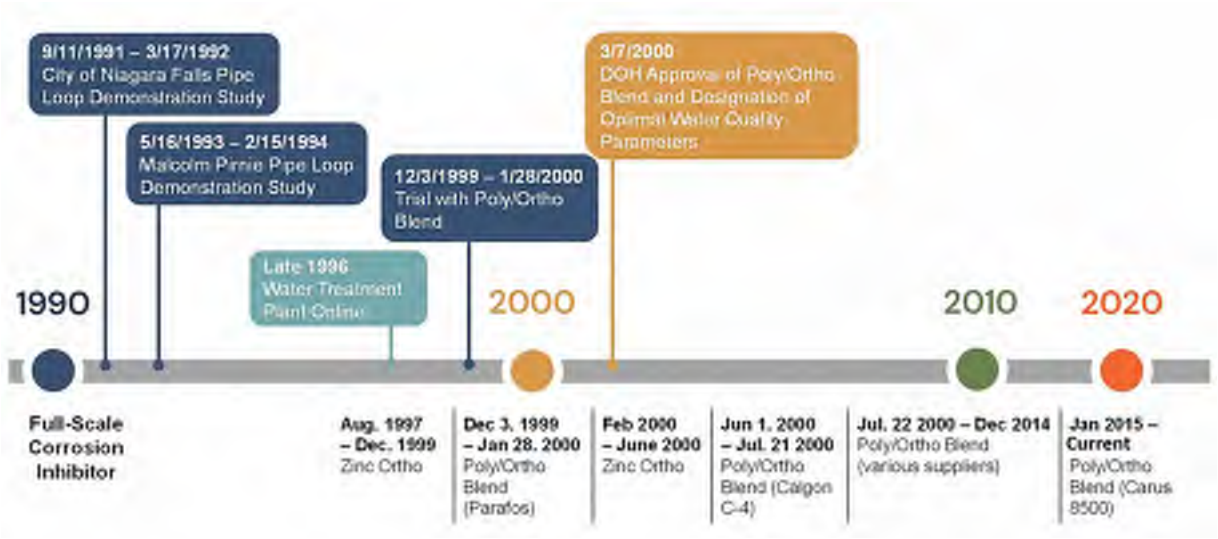

Figure 1-6: Corrosion Control History Timeline

1.2.7 Water Quality Conditions

Historical lead and copper compliance results were reviewed. A comprehensive water quality analysis was also conducted that focused on the concentrations and variability of water quality parameters that most greatly impact corrosion, including pH, alkalinity, chlorine residual, and orthophosphate residual. Monthly operating reports (MOR), and biweekly laboratory and distribution data (15 distribution system sites) were reviewed, and notable findings are summarized below. More details and figures are provided in **Appendix B**.

A summary of key findings from the water quality analysis is presented as follows:

Historical Lead Compliance

- While NFWB's 90th percentile lead levels have remained below the LCR Action Level (AL) of 15 µg/L since promulgation of the rule, 90th percentile lead levels of 10.3, 11.3, 13.9, 13.0, and 10.5 µg/L exceeded the future LCRI AL of 10 µg/L in 1999 (1st monitoring period), 2002, 2005, 2011, and 2020, respectively (**Figure 1-7**).
- Elevated lead levels have been observed at homes served by a LSL. But considering that 1st liter samples typically capture premise plumbing, homes built in 1980's with a higher likelihood of copper pipe with leaded solder (CPLS) could also be contributing to high lead levels as observed in one home.
- Sampling since 1999 has indicated individual maximum lead levels between 12 µg/L (2014) and 32 µg/L (2017) as shown by the blue diamonds in **Figure 1-7**. Elevated lead levels (at or above 10 µg/L) have been observed at 27 individual sites at least once. Under the future LCRI, further water quality investigation and testing will be required at homes with elevated lead levels above 10 µg/L.

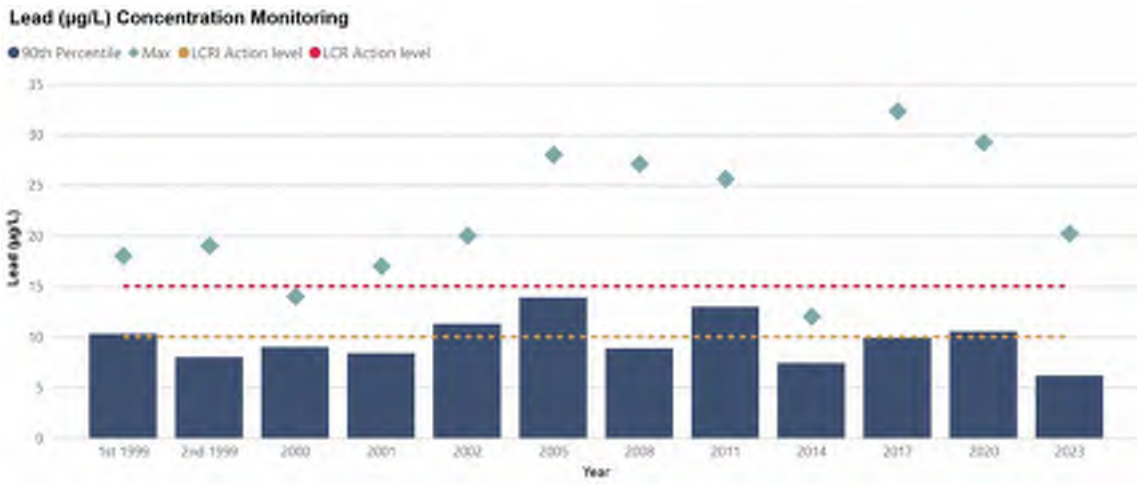

Figure 1-7: Historical Lead Compliance Tap Monitoring

Historical Copper Compliance

- Both 90th percentile and maximum copper levels have remained well below the LCR/LCRR/LCRI AL of 1.3 mg/L, with a historical maximum copper concentration of 0.4 mg/L.

pH Analysis

- Results from the analysis revealed variability in both the raw water and finished water.
- The pH in the raw water varied between 7.2 and 8.6, with an average pH of 7.9.
- The pH levels in the finished water fluctuated between 7.0 and 7.9, with an average pH of 7.4 and standard deviation of 0.2. This is not unexpected given the NFWB currently does not have the ability to adjust pH within their treatment process.
- Compared to the finished water, pH in the distribution system varied between 7.3 and 7.9 based on the limited dataset available.

Alkalinity Analysis

- Historical average total alkalinity in the finished water was 87 mg/L as calcium carbonate (CaCO3) with a minimum of 68 and a maximum of 97 mg/L as CaCO3. Distribution monitoring at 9 sites in 2023 and 2024 revealed alkalinity values between 83 and 95 mg/L as CaCO3. Seasonal variation was observed and is consistent with trends at other water treatment plants that treat Niagara River source water.

Chlorine Analysis

- The historical average chlorine residual in the finished water was 1.43 mg/L with a minimum of 1.27 and maximum of 1.90 mg/L. Spatial analysis of chlorine residual across the distribution system revealed median residuals at or above 0.5 mg/L, well above the AWWA goal of 0.2 mg/L. Seasonal variation was observed across the sites with the highest and lowest residuals occurring from December – February and July - September, respectively. Notable locations, including 226 Council St. and 9501 Colvin Blvd had the lowest average chlorine residuals of 0.45 and 0.46 mg/L, respectively.

Orthophosphate Analysis

- Historical data show that the NFWB is achieving an average orthophosphate residual of 0.14 mg/L as PO_4 in the finished water. Similarly, the analysis revealed low median orthophosphate residuals of 0.07 to 0.09 mg/L as PO_4 across the distribution system sampling locations

This data analysis and subsequent on-site jar testing supported development of the May 2026 *Corrosion Control Treatment Desktop Evaluation.* The full report is provided in **Appendix C.** Recommendations from this report include various treatment improvements to support a higher dose of orthophosphate addition, pH control and distribution system monitoring.

1.3 Need for Project

The USEPA's Lead and Copper Rule Improvements strengthens key components of the Lead and Copper Rule Revisions, including a lowered AL (removal of the Trigger Level) of 10 µg/L as the 90th percentile, which is based on the highest sample result of the 1st and 5th Liter. Given the past 1st Liter lead compliance sample history of NFWB described in Figure 4-1, it is likely that NFWB will exceed the AL without improved corrosion control treatment. An Action Level exceedance will result in the following required actions:

System-wide Lead Action Level Exceedance (ALE)

- Tier 1 Public Notification within 24-hours
- Pipe Loop Demonstration Study at Prescribed Testing Conditions
- Submit certification to State within 10-days of issuing Public Notification
- Offer follow-up tap sampling to customers
- Source water monitoring

3 consecutive ALEs in 5-year rolling period will increase mandatory compliance activities including the following:

- Pitcher Filter + 6 Month Supply of Cartridges within 60 days after end of sampling period

- Additional public education/outreach activity (public meeting/email/phone call/door hanger)
- Conduct PE and distribute filters every 6-months until the system no longer has at least three ALEs in a 5-year rolling period unless State allows to discontinue

1.4 Capacity Development

The Capacity Development form is provided in **Appendix D** for this submission.

2. Alternatives Analysis

The following sections describe the alternatives for compliance with the USEPA LCRI. Following a review of the "No Action" alternative, options for implementing the corrosion control treatment strategy identified in the May 2026 *Desktop Corrosion Control Treatment Evaluation* report or accelerated service line replacements prior to LCRI compliance sampling or in response to an Action Level exceedance were reviewed to determine the recommended path forward.

2.1 Alternatives Analysis

2.1.1 Alternative 1: No Action

2.1.1.1 Description

Under this alternative, there would be no changes to NFWB's corrosion control treatment strategy, likely resulting in an AL exceedance. A harvested pipe loop demonstration study would be required to be conducted at defined testing intervals and delay the implementation of inhibitor addition to customers. It is anticipated that until a new corrosion inhibitor is placed online that lead levels would remain above 10 µg/L.

In the event of three AL exceedances, NFWB would be required to distribute pitcher filters to all unknown, LSL and GRR customers in the water system; significantly increasing recurring costs and complexity to the organization.

2.1.1.2 Cost Estimate

Table 2-1 provides a summary of the costs associated with non-compliance with LCRI. Optimal corrosion control treatment and LSL replacement would still need to be completed.

Table 2-1. "Do Nothing" Cost Estimate

Category	Cost Assumptions	Estimated Cost
Public Notification	• Tier 1 Public Notification • Additional Public Outreach • Public Education on 6-month basis	$150,000
Pitcher Filter Distribution	• Pitcher Filter with 6 months of cartridges • Continued distribution of pitcher filters	$7.5 million (annually) Based on anticipated LSL, GRR and Unknowns
Pipe Loop Demonstration Study	• Weekly sampling at testing conditions • Construction and Maintenance of Pipe Loop	$1.5M
Follow Up Sampling	• Public outreach to customers • Laboratory handling and testing costs • Distribution of sample results to residents	$200,000 Based on assumed customer participation rate and certified laboratory sampling costs
	Total	$1.5M (Pipe Loop) $7.85M (Annually)

2.1.1.3 Non-Monetary Factors

Non-compliance with LCRI would cause an internal resource strain for existing NFWB staff to support mandatory compliance activities. These staff are critical in their current roles in the operations, emergency response, and capital planning and financial administration of the organization. As this alternative is not viable, it was eliminated from further evaluation.

2.1.2 Alternative 2: Implement Optimal Corrosion Control Treatment

2.1.2.1 Description

Under this alternative, NFWB would proceed with the recommended improvements identified in the May 2026 *Desktop Corrosion Control Treatment Evaluation.* Specifically, this includes the following major improvements:

- Improvements to the existing corrosion inhibitor bulk storage tanks, fill and injection piping sized for 3.0 mg/L of phosphoric acid
- Restore caustic use to control pH variability in the finished water. This includes third party inspection of the existing bulk tank, code review of the existing system to meet all current regulations and standards, and health and safety standard operating procedure development for worker safety
- Restoration of the acid feed system and associated process/mechanical assets to lower pH in the raw water. This process of enhanced coagulation was identified in the plant Basis of Design and never utilized. Reducing pH in the raw water to goal target ranges can minimize formation of precipitant; currently causing maintenance issues for NFWB and providing less consistency in key CCT parameters

- Replacement of filter media and spot repair of existing filter underdrain. The current filter media is original to the WTP commissioning in 1996 and is at the end of its useful life. Media would be replaced in-kind meeting AWWA B100 standards including specifications for replacement sand, gravel, and anthracite. This improvement is based on field observations of critical repairs necessary to the filter underdrain system and media testing completed by a third-party laboratory.
- Rehabilitation of 56th Street Water Storage Tank following the inspection and recommendations included in Appendix E. This generally includes interior and exterior coating with associated surface preparation and other improvements.

2.1.2.2 Cost Estimate

Table 2-2 provides a cost estimate overview for implementation of the recommended corrosion control treatment improvements, replacement of existing filter media and repairs to the existing filter underdrain and 56th Street Storage tank.

Table 2-2. Alternative 2 Cost Estimate

Improvement	Description of Major Work	Cost Estimate
Update CCT Chemical System to Phosphoric Acid	• Third party inspection and completion of identified improvements for reuse of existing chemical bulk tanks sized for 3.0 mg/L of phosphoric acid • New chemical metering pumps and day tank with associated instrumentation	$650,000
Renew Caustic Chemical System	• Third party inspection and completion of identified improvements for reuse of existing chemical bulk tank • New chemical metering pumps and day tank with associated instrumentation	$485,000
Renew Acid Feed Chemical System	• Third party inspection and completion of identified improvements for reuse of existing chemical bulk tanks • New chemical metering pumps and day tank with associated instrumentation	$850,000
Filter Media Replacement and Underdrain Improvements	• Spot repair of select areas of existing filter media underdrain to restore asset reliability • Replacement of existing media meeting AWWA B-100 standards • The existing sludge removal system is original to the WTP and target process parameters indicate this equipment may be beyond its useful life. Further verification and improvements to this system may be incorporated via the project contingency allowance if determined by the design team to be critical to maintaining optimal corrosion control treatment	$3,080,000
56th Street Storage Tank	• Implementation of interior and exterior rehabilitation strategy identified in Appendix E	$3,000,000

2.1.2.3 Non-Monetary Factors

Reuse of existing assets will expedite construction timeframe and support compliance with key LCRI compliance dates. Given the caustic and sulfuric acid tanks have been used minimally in the WTP history and the inherent flexibility of wood stave material and internal chemical liner design, comprehensive replacement is unlikely and will result in increased capital cost and construction duration. Third party inspection during the design development period and implementation sampling in close coordination with the local and state health departments will refine optimal dosing and monitor for water quality.

2.1.3 Alternative 3: Accelerated Lead Service Line Replacements

2.1.3.1 Description

Under this alternative, NFWB would proactively advance replacement of all LSLs as a means of removing sources of lead from the water system. Thousands of unknowns remain the NFWB water system and a structured approach to water main and LSL replacement is ongoing leveraging existing funding programs. As lead was a common construction material from the water main to the curb box, it is estimated that 4,000 – 6,000 LSLs or GRRs exist in the service line inventory.

2.1.3.2 Cost Estimate

The AWWA funded a report titled *Considerations when Costing Lead Service Line Identification and Replacement* to inform the USEPA's development of the LCRI. **Table 2-3** provides an overview of the major categories necessary to complete full LSLR at an estimated 5,000 locations based on available industry data, cost trends and utility surveys. The average cost of $12,500 per LSL was used in determining the total estimated cost.

Table 2-3. Alternative 3 Cost Estimate

LSLR Component	Minimum Cost ($/LSLR)	Average Cost ($/LSLR)	Maximum Cost ($/LSLR)
Full Replacement (Utility and Private Side)	$6,000	$9,900	$30,000
Restoration	$1,769	$8,847	$2,919
Engineering Services	$660	$1,090	$3,300
Internal Labor Administration	$175	$289	$876
Customer Outreach	$108	$178	$539
Permitting	$576	$950	$2,879
LSLR Unit Cost			**$12,500**
Quantity of LSLs			**5,000**
Total LSL Replacement Construction Cost			**$62,500,000**

2.1.3.3 Non-Monetary Factors

While comprehensive replacement of LSLs and GRRs is mandated under the LCRI regardless of approach to CCT, completion of all required LSL replacements prior to the first standard monitoring compliance round poses several non-monetary challenges. First, identification of all unknown service lines in this timeframe is near impossible as it requires an immense amount of resources and internal staffing not reflected in the construction cost estimate for this timeframe. As other nearby utilities completed service line replacements to improve compliance, it is likely that a shortage of qualified outside staffing (i.e. Contractors, Consultants, etc.) will be available to complete 5,000 LSL replacements in just over one year. Coordination of post replacement sample results and notification to residents is another example of a potential supply chain constraint associated with this alternative.

3. Summary and Comparison of Alternatives

Table 3-1 provides an overview of Alternatives 1-3 identified for this project including major differences, pros and cons, non-monetary factors, and costs.

Table 3-1. Summary of Alternatives

Alternative No.	Alternative Description	Advantages	Disadvantages	Cost Estimate		
				Construction Estimate	Engineering, Admin, Legal	Annual O&M
1	"Do Nothing"	• None	• Increased costs due to non-compliance • Risk to public health • Administrative and resource burden of mandatory actions	-	-	-
2	Implement Optimal Corrosion Control Treatment with Storage Improvements	• Improve compliance with LCRI • Improve consistency in raw and finished water quality • Use of existing assets to streamline cost and construction schedule	• Recurring chemical cost of new corrosion inhibitor and restoration of caustic • Development and training of Standard Operator Procedures to ensure worker safety • Implementation of comprehensive implementation plan to monitor impacts of treatment improvements	$8,065,000	$1,717,000	$1,100,000 (approx. chemical usage)
3	Accelerated Lead Service Line Replacement	• Remove primary source of lead in the water system • Proactively address LSL replacement requirement • Potential avoidance of CCT updates if all LSLs and unknowns are removed from water system	• Capital cost to achieve LSLR is greater than available annual grant/financing programs and NFWB funds • Potential lack of available workers to complete intensive replacement program • Property access with homeowners likely to create schedule constraint	$62,500,000	$8,000,000	$5,200,000

4. Recommended and Selected Alternatives

4.1 Recommended Alternative

Based on the alternatives evaluation completed in Section 3, it is recommended that NFWB proceed with Alternative 2 which includes completion of improvements identified in the May 2026 *Desktop Corrosion Control Treatment Evaluation*.

4.2 Basis of Selection

As the "Do Nothing" alternative would result in non-compliance with LCRI and a significant amount of public outreach, coordination and cost to correct deficiencies, it was removed for further consideration. Accelerated LSL removal is possible, but comprehensive success is unlikely given the described resource, financial and time constraints. NFWB will proceed with LSL and GRR removal to achieve LCRI compliance under the current 10-year timeframe.

Alternative No. 2 was selected as it follows the sampling, historic water quality review, and initial Basis of Design for the NFWB WTP. An implementation sampling plan will be developed and implemented in close coordination with regulators to ensure that final dosing and coordination with the public is followed.

4.3 Cost Estimate

Table 4-1 summarizes the project cost per equivalent dwelling unit (EDU) based on typical assumptions and percentages for project administration, planning and construction phase support. Note that costs are assumed for the mid-point of construction in Q4 2027.

Table 4-1. Project Cost Estimate

Project Component	Cost Estimate
Update CCT Chemical System to Phosphoric Acid	$650,000
Renew Caustic Chemical System	$485,000
Renew Acid Feed Chemical System	$850,000
Filter Media Replacement and Underdrain Improvements	$3,080,000
56th Street Tank Interior and Exterior Improvements	$3,000,000
Administration, Engineering, and Construction Phase Services	$1,717,000
Total Project Cost	$9,782,000

4.4 Project Schedule

Table 4-2 provides an anticipated project schedule based on an assumption of project funding award date of August 1st, 2026.

Table 4-2. Project Schedule

Activity	Timeframe
Project Award	8/1/2026
NFWB Agreement Start Date	9/1/2026
Design Phase	9/1/2026 – 2/28/2027
Bidding and Contractor Award	3/1/2027 – 5/1/2027
Construction Phase	5/1/2027 – 10/1/2027
Post Construction Implementation Plan	10/1/2027 – 12/31/2027

4.5 Next Steps

Should the recommended alternative move forward, the following steps are likely to occur:

- NFWB would issue a Request for Qualifications to engineering consulting firms for design and construction phase support
- Following selection of an engineering consultant, the project would proceed with a design/bid/build approach that includes a SEQR Review
    - As the work is contained to the existing NFWB WTP and improves upon existing equipment and infrastructure, the following draft SEQR Type II determination could be utilized pending further refinement and review of the project scope of work:
        - "In accordance with the New York State Environmental Quality Review Act (SEQRA), the NFWB in its capacity as a Type II Action under SEQRA regulations Section 617.5(c)(1) and 617.5(c)(2). These sections state that actions involving (1)"*maintenance or repair involving no substantial changes in the existing structure or facility*" and (2)"replacement, rehabilitation or reconstruction of a structure or facility, in kind, on the same site, including upgrading buildings to meet building, energy or fire codes unless such action meets or exceeds any of the thresholds in section 617.4 of the Part" would render the project to be a Type II action.
- During the project design period and after meetings with local and state regulators, a public outreach plan would be administered to inform the public of treatment changes, solicit interested participants for implementation planning and address concerns.
- Following project construction, an implementation plan would be administered in coordination with regulatory officials to monitor water quality, identify maintenance concerns and evaluate CCT effectiveness

NIAGARA FALLS PUBLIC WATER AUTHORITY RESOLUTION 2026-05

RESOLUTION AUTHORIZING THE ISSUANCE OF THE AUTHORITY'S WATER AND SEWER SYSTEM REVENUE BONDS AND THE APPROVAL AND EXECUTION OF RELATED DOCUMENTS

WHEREAS, Title 10-B of the Public Authorities Law of the State of New York, as amended (the "Act") created the Niagara Falls Public Water Authority (the "Authority") with the authority and power to issue its revenue bonds for the purpose of among other things, planning, developing, acquiring, constructing and financing the cost of any facility (as defined in the Act), including the acquisition of facilities of the City of Niagara Falls ("the City") (the "System") by the Niagara Falls Water Board (the "Board") or for any other corporate purpose, including the establishment of reserves to secure the bonds, the payment of principal of, premium, if any, and interest on the bonds and the payment of incidental expenses in connection therewith; and

WHEREAS, the City has sold, transferred and otherwise conveyed the City's title and interest in the System to the Board; and

WHEREAS, the Board has approved capital improvements to be undertaken to the System consisting of the improvements to the wastewater treatment plant sludge handling, electrical, chemical, and heating, ventilation, and air-conditioning systems (the "Project") and has requested that the Authority finance same; and

WHEREAS, in connection therewith, it is now desired to authorize the issuance of not exceeding $11,634,000 of bonds to the New York State Environmental Facilities Corporation ("EFC"), including any notes issued in anticipation thereof (the "Bonds") plus any amounts necessary to fund reserves and to pay costs of issuance (with such amount to be reduced by grants), and to approve and authorize the execution of related documents; NOW, THEREFORE,

BE IT RESOLVED by the Niagara Falls Public Water Authority as follows:

Section 1. The Authority hereby finds and determines:

(a) By virtue of the Act, the Authority has been vested with all powers necessary and convenient to carry out and effectuate the purposes and provisions of the Act and to exercise all powers granted to it under the Act.

(b) It is desirable and in the public interest for the Authority to issue and sell the Bonds pursuant to a certain General Revenue Bond Resolution dated as of May 1, 2003 (the "General Resolution"), adopted by the Authority, and pursuant to a Supplemental Resolution(s) (the "Supplemental Resolution") by and between the Authority and Manufacturers and Traders Trust Company, as trustee (the "Trustee") (the Supplemental Resolution, collectively with the General Resolution, the "Resolution") and to use the proceeds of said Bonds to pay for the Project, any required reserves and costs of issuance.

Section 2. In consequence of the foregoing, the Authority hereby determines to: (i) issue and sell the Bonds pursuant to the Supplemental Resolution and the General Resolution; (ii) use the proceeds of the Bonds as previously described and as provided in the Supplemental Resolution, (iii) enter into each agreement hereafter identified in this resolution; and (iv) execute such

other documents and take such other action as may be necessary to effectuate the purposes of this resolution.

Section 3. The Authority is hereby authorized to issue, execute, sell and deliver the Bonds to EFC in the aggregate principal amount, maturing in such years at such amounts, in serial or term form, at the rate of interest and upon such terms as shall be approved by the Chairman or the vice-Chairman, provided that:

(a) The Bonds are hereby authorized to be issued, executed and delivered and shall be issued, executed and delivered at such time as the Chairman or the Vice-Chairman of the Authority shall determine.

(b) The Bonds shall be issued solely for the purposes previously described.

(c) The Bonds and the interest thereon are not and shall never be a debt of the State of New York or any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, and neither the State of New York nor any political subdivision thereof other than the Authority, including without limitation the City of Niagara Falls, shall be liable thereon.

Section 4. The Authority is hereby authorized to enter into a Project Finance Agreement (the "Finance Agreement") with EFC and such other agreements and documents relating to the Bonds as required by EFC.

Section 5. The Bonds shall not be issued, executed or delivered until the prior approval of the State Comptroller shall have been obtained as required by the Act.

Section 6. (a) The Chairman or the vice-Chairman of the Authority are hereby authorized, on behalf of the Authority, to execute and deliver the Supplemental Resolution, the Bonds, and the Finance Agreement, all as described above (collectively, the "Financing Documents"), and the Secretary of the Authority is hereby authorized to affix the seal of the Authority to the Supplemental Resolution and the Bonds and to attest the same. The execution thereof by the Chairman or the Vice-Chairman shall constitute conclusive evidence of such approval.

(b) The Chairman or the vice-Chairman of the Authority are further hereby authorized, on behalf of the Authority, to designate any additional Authorized Representatives of the Authority (as used or defined in and pursuant to the Resolution) to execute, on behalf of the Authority, any Financing Documents.

Section 7. The members, officers, employees and agents of the Authority are hereby authorized and directed for and in the name and on behalf of the Authority to do all acts and things required or provided for by the provisions of the Financing Documents, and to execute and deliver all such additional certificates, instruments and documents, pay all such fees, charges and expenses and to do all such further acts and things as may be necessary or, in the opinion of the member, officer, employee or agent acting, desirable and proper to effect the purposes of this resolution and to cause

compliance by the Authority with all of the terms, covenants and provisions of the Financing Documents.

Section 8. This resolution shall take effect immediately and the Bonds are hereby ordered to be issued in accordance with this resolution.

At a regular meeting of the Niagara Falls Public Water Authority, held at the Authority's office, 5815 Buffalo Avenue, Niagara Falls, New York 14304, at 1:00 o'clock P.M., on the 24th day of July, 2026, the following members of the Authority were:

PRESENT:

ABSENT:

ALSO PRESENT:

After the meeting had been duly called to order, the Chairman announced that among the purposes of the meeting was to consider and take action on certain matters pertaining to the issuance and sale of the Authority's proposed Water and Sewer System Revenue Bonds.

The following resolution was duly moved, seconded, discussed and adopted with the *following members voting in open session:*

AYE	NAY

STATE OF NEW YORK)
ss.:
COUNTY OF NIAGARA)

I, the undersigned Secretary of the Niagara Falls Public Water Authority, DO HEREBY CERTIFY:

That I have compared the annexed extract of the minutes of the meeting of the Niagara Falls Public Water Authority, including the resolution contained therein, held on July 24, 2026, with the original thereof on file in my office, and that the same is a true and correct transcript therefrom and of the whole of said original so far as the same relates to the subject matters therein referred to.

I FURTHER CERTIFY that all members of said Authority had due notice of said meeting.

I FURTHER CERTIFY that, pursuant to Section 103 of the Public Officers Law (Open Meetings Law), said meeting was open to the general public.

I FURTHER CERTIFY that, PRIOR to the time of said meeting, I duly caused a public notice of the time and place of said meeting to be given to the following newspapers and/or other news media as follows:

Newspaper and/or other news media	Date given
Niagara Gazette	July 23, 2026
Buffalo News	July 23, 2026
WKBW/7 News	July 23, 2026
WIVB/News 4	July 23, 2026
WBFO/Buffalo Toronto Public Media	July 23, 2026
Additional Notice	
Posted to the Exterior Posting Board of Authority's Office, 5815 Buffalo Avenue, Niagara Falls, NY 14304	July 23, 2026
Posted online to NFWB.org/news and NFWB.org/NFPWA	July 23, 2026

I FURTHER CERTIFY that PRIOR to the time of said meeting, I duly caused public notice of the time and place of said meeting to be conspicuously posted in the following designated public location on the following dates:

Designated Location of Posted Notice	Date of posting
None	

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Authority on July 24, 2026.

(CORPORATE SEAL)

_____
Sean W. Costello, Esq., Secretary

NIAGARA FALLS WATER BOARD

WASTEWATER TREATMENT PLANT CAPITAL IMPROVEMENT PROJECTS ENGINEERING REPORT AND ESTIMATES

WASTEWATER TREATMENT PLANT PHASE 2 IMPROVEMENTS RELATED TO CONSENT ORDER R9-20170906-129

DASNY SAM GRANT 15689 (PHASE 2)

MAY 2026

Contract 1 - Intermediate Pump Rehabilitation
Contract 2 - Belter Filter Press Rebuild
Contract 3 - Power Center 1 Improvements
Contract 4 - Power Center 4 and Transformer Replacement
Contract 5 - Power Substation Improvements
Contract 6 - Sodium Hypochlorite Bulk Storage

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LIST OF APPENDICES

I. General

The Niagara Falls Water Board (NFWB), is a public benefit corporation created in 2002 by a special act of the New York State Legislature and is not a facet or function of the municipal government of the City of Niagara Falls, NY. It does, however, presently own and operate the potable water and wastewater treatment systems and the storm water conveyance facilities within the corporate boundary of the City of Niagara Falls, New York, and has done so since September 25th, 2003. The Niagara Falls Public Water Authority oversees the bonding and financing of the NFWB's assets and has annual operating revenue of approximately $30 Million (USD).

The NFWB continuously plans for improvements to the water system and treatment plant for which a Capital Improvement Plan (Appendix C) has been created and frequently updated. Several projects noted on this Plan have been selected to be implemented. These projects have been identified as having the potential for the greatest positive impact on daily operations and system reliability. This is anticipated to be achieved via the elimination of aging/failing piping and its replacement with hydraulically sound and structurally stable materials. Ancillary benefits to be achieved include: decreased overtime/emergency repair crew costs, elimination of ancillary pavement, margin and related right-of-way restoration costs, and the reduction in loss of service/private property damage claims. Improvements are needed for the treatment plant to provide control, security, chemical storage, chemical injections, and backup power to permit safe and continued supply of drinking water to the City of Niagara Falls.

As always, it is the Niagara Falls Water Board's intent through these projects to provide a safe and reliable potable water, fire protection, and to provide continuous year-round water service to the residential, commercial (including tourism industry) and industrial users of the City of Niagara Falls, New York.

In 2017, an accidental discharge of sediment basin material was made into the Lower Niagara River that caused discolored water. As this event impacted tourism activities, significant attention was received from the City of Niagara Falls and New York State. To address this, the NYS DEC became involved in ensuring improvements were made to the plant and operation practices through Consent Order R9-20170906-129. In 2018, to assist with these improvements, New York State offered a grant from the Dormitory Authority of New York State (DASNY ID #15688) and a loan from the Environmental Facilities

Corporation (EFC ID #C9-6603-12-00). As this funding totals $27 million dollars, these improvements are referred as to the "2018 $27 million dollar sewer plant improvements". Please note that these improvements are for only certain portions of the treatment plant.

Following the funding for the 2018 $27 million dollar sewer plant improvements, DASNY offered a secondary grant for the continuation of sewer treatment plant improvement projects. The total cost of these projects, referred to as Phase 2, amounts to $13 million dollars. These additional improvements are also related to the consent order issued by NYSDEC and are vital in the NFWB's commitment to maintaining its wastewater treatment facility. This report will serve as an amendment to include additional scope in the overall consent order project, in order to address WWTP needs that will ensure the NFWB complies with the NYSDEC requirements.

II. Project Planning Areas

A. Location(s)

There are six (6) separate wastewater treatment improvement projects associated with Phase 2, located at the treatment plant in City of Niagara Falls, New York:

Contract 1 - Intermediate Pump Rehabilitation
Contract 2 - Belter Filter Press Rebuild
Contract 3 - Power Center 1 Improvements
Contract 4 - Power Center 4 and Transformer Replacement
Contract 5 - Power Substation Improvements
Contract 6 - Sodium Hypochlorite Bulk Storage

Please note that Appendix A consists of an annotated City-Wide Site Map locating the wastewater treatment plant. Appendix B notes location of improvements at the wastewater treatment plant.

B. Joint Venture

The sewer collection system and treatment plant lies exclusively within the City of Niagara Falls' right-of-way. For that reason, as well as to insure the most efficient use of resources within both entities for the residents they jointly serve, the Niagara Falls Water Board enters into all of its collection and treatment projects with the municipality of Niagara Falls as eager and willing partners although the City generally is not a party to engineering or construction contracts and does not exercise control over NFWB work. Accommodations with respect to traffic

control and detouring, emergency service response, refuse disposal/recycling during construction are all examples of the unique relationship the NFWB and the City of Niagara Falls shares. The NFWB and City are parties to various agreements with respect to the acquisition, financing, and operation (including pilot equipment and certain services) of the NFWB system.

C. Environmental Resources Present

The proposed improvements are located within boundaries of the existing wastewater treatment plant. Work will be performed in areas of previous disturbance such as under lawn areas, parking lots and to existing buildings and equipment. There are no anticipated sources of chemical, petroleum-based, or radioactive contaminants within the project areas as they are presently defined, and no known wetland or historic preservation issues are expected.

The Adams Power Plant Transformer House is located adjacent to the east. This facility is designated as a National Resource (90NR01966). No impacts will occur to this adjacent facility as improvements are located away from the plant boundaries that border this facility.

D. Environmental Justice Areas

Per New York State GIS website "DEC info Locator", a majority of the City of Niagara Falls has areas of "Potential Environmental Justice Areas". The proposed improvements are located within these Environmental Justice areas.

E. Growth Areas and Population Trends

According to the United States Census, the City of Niagara Falls, NY had a population of 50,193 in 2010 and 48,027 in 2020 per US Census estimates. This number reflects a population decrease of approximately 4.5%. This percentage reflects a slight slowing of the shrinkage rate the City has been experiencing for decades.

III. Existing Facilities

A. Location Map

The projects are located at the existing wastewater treatment plant within the corporate boundary of the City of Niagara Falls, Niagara County, New York, as shown in Appendix A and Appendix B.

B. Existing Wastewater Treatment Plant

The wastewater treatment plant was constructed in the mid 1970's and placed into operation in April 1977. The plant utilizes a physical-chemical process to treat municipal and industrial wastewaters. This type of process was selected to treat an

anticipated large amount of organic and inorganic chemicals from industrial users within the City. The plant consists of four (4) 250 hp main influent pumps, four (4) 250 hp intermediate pumps, mechanical bar screens, ferric chloride chemical feed systems, five (5) sedimentation basins, acid mix tanks, twenty-eight (28) activated carbon filters, hydrogen peroxide & sodium hypochlorite chemical feed systems, grit separators, three (3) sludge belt presses ,and a final chlorination tank. Sewer influent is directed to the plant through three large sewers: (1) the 72-inch diameter Southside Interceptor; (2) the 36-inch Gorge Pump Station force main; and (3) a 30-inch diameter gravity sewer main.

The plant currently operates under SPDES permit (NY0026336) from the NYS DEC. The plant is permitted to treat 48 million gallons of water per day with a peak flow of 85 million gallons per day. Once treated, wastewater is discharged into Lower Niagara River in close proximity to the American Falls.
Please find below detailed information on the existing facilities that are in need of improvements. Refer to Appendix G for photographs of these facilities.

Intermediate Pump Rehabilitation

Currently, the WWTP has 4 Intermediate pumps that are in place to lift flow from the sedimentation basins to the GAC filters. In 2023, GHD completed an assessment of the current status of the 45 year old pumps and found that one of the four pumps is not used due to a bearing fault. During dry flow, two pumps are operated at their lowest speed using variable technology from the 1970s to control the speed. Since individual pumps can not turn on quickly enough to keep up with flow increases, the pumps run inefficiently in order to be sure that the proper flow volumes are met as best as possible.

As part of this project, the pump motors will be reduced and the pumps and valves will be rebuilt in order to allow more reliability and redundancy, while also providing more efficient pumping capabilities and speed control. In addition, new VFDs will be installed in order to operate the pumps more efficiently at different speeds to meet different levels of flow at the WWTP.

Rebuilding Existing Belt Filter Presses

As part of Project 3 associated with the Phase 1 WWTP Consent Order project, control panels were replaced for the three existing belt filter presses at the WWTP. Upon inspection of the filter equipment, the NFWB determined that the belt filters should be

rebuilt in order to provide more reliable and dependable service in the sludge handling at the WWTP.

Power Center 1 Improvements

As part of the Phase 1 project, Power Centers #2 and #5 were replaced under Project 5. The replacement of Power Center 1 will be an extension of this project and is proposed to be consistent within the NFWB long term goal to increase electrical system resilience.

Power Center 4 Improvements and Transformer Replacement

In recent years, NFWB has experienced failure of original PCB filled transformers in some of their existing power centers. A full electrical system assessment report developed by EI Team in 2019 identified that the existing transformers have reached the end of their useful life and recommended full replacement. Additionally, the existing PCB filled transformers are obsolete and represent a potential safety hazard for WWTP staff.

As part of the Phase 1 project, Power Centers #2 and #5 were replaced under Project 5. The replacement of Power Center 4 will be an extension of this project and is proposed to be consistent within the NFWB long term goal to increase electrical system resilience.

Power Substation Improvements

In 2019, the EI Team Electrical Distribution System Report developed for the NFWB WWTP identified concerns on the condition of the existing switchgear building and equipment. According to the report, much of the equipment in the building appeared obsolete and nearing the end of its useful life. Additionally, the walk-in switchgear building has deteriorated due to the elements and requires replacement. Therefore, it was recommended that the switchgear building and associated equipment be replaced in its entirety.

Sodium Hypochlorite Bulk Storage

One (1) 14,750 gallon fiberglass reinforced plastic storage tank exists to house sodium hypochlorite and two (2) 7,000 gallon carbon steel storage tanks exist to house ferric chloride. Additional piping, transfer pumps and injection points are associated with these tanks to provide chemicals feeds for the plant treatment processes. These tanks store harmful chemicals and have a limited service life that have been exceeded. Replacement of these tanks are necessary. Further, two of the tanks are located in a room that makes replacement difficult and from this, necessary replacement has been previously postponed.

C. Districts

In the City of Niagara Falls, NY in general, and the proposed project location herein specified, the Niagara Falls Water Board is solely responsible for providing sewer service.

D. Treatment Capacity

The treatment plant is currently permitted to receive and process following amounts of sewer flow:

Average Day	**48.0M** g.p.d.
Peak Hourly Rate	**85.0M** g.p.d.

IV. Need for Project

A. Wastewater Treatment Plant

The wastewater treatment plant was constructed in the mid 1970's with various improvements over the years. Improvements are continuously needed as equipment is utilized 24 hours a day and are situated in a corrosive environment. Having plant facilities in full operating condition is paramount to properly treating sewage flows before discharge into the Lower Niagara River, which is within close proximity to the American Falls. The NFWB has identified several improvements from their Capital Improvement Plan (Appendix C). Below is a detailed description of these improvements.

The alternatives included in the project are directly tied to the Order of Consent put in place by7 the NYSDEC, with aim of providing reliable, efficient and consistent wastewater treatment to avoid the likelihood of a discharge that occurred in 2017. The proposed projects' relevance to addressing items associated with the Consent Order are described below.

Reroute Outfall 003

In Item 14 of the Order of Consent, NFWB was required to submit an evaluation of relocating Outfall 003 identifying suitable locations, costs and schedule of compliance. Based on this evaluation, Alternate 4 was selected to relocate Outfall 003 from the Falls Street Tunnel to the Gorge Pump Station.

Underground Sewer Piping and Hypochlorite Piping

Items 2&3 of the Order of Consent are related to the operation of the Sedimentation Basins, specifically the effluent flow from the basins and the operation of where this treatment process discharges. This project will reroute a higher volume of flow to the head of the plant for treatment and reduce the amount of wastewater flow that is directed to the disinfection system and the outfall of the facility, without passing through the main treatment train. Doing so will provide more operation flexibility for the staff, as well as ensuring proper treatment to a higher volume of wastewater entering the facility.

Intermediate Pump Rehabilitation

The Intermediate pumps are downstream of the existing Sedimentation Basin, and their ability to lift water from the Basins to the filters directly impacts the volume of flow the WWTP is able to treat without bypassing the facility. By improving the efficiency and reliability of the intermediate pumps, the WWTP will be able to eliminate the need for bypassing the filters as frequently. The

Rebuilding Existing Belt Filter Presses

In Item 14 of the Order of Consent, NFWB was required to ensure that all 3 belt filter presses at the WWTP are available for operation at all times. As part of the Phase 1 project, the control panels for each filter press was replaced to aid in reliable and efficient operation. Upon inspection of the presses, it was determined that the equipment on the presses should be rebuilt. This alternative is a continuation of Project 3 of Phase 1, in continuing to ensure that the filter presses can all operate simultaneously.

Power Center 1 Improvements

As part of Project 5 and Project 7 of the Phase 1 WWTP Improvements, $1,000,000 was allocated to making electrical improvements on site at multiple locations throughout the facility. The Improvements required at Power Center 1 are related to the critical HVAC improvements in the wet well mandated by a DEC inspection. This work is a continuation of the improvements performed as part of Phase 1.

Power Center 4 Improvements and Transformer Replacement

As part of Project 5 and Project 7 of the Phase 1 WWTP Improvements, $1,000,000 was allocated to making electrical improvements on site at multiple locations throughout the facility. Power Center 2, 3 and 5 were identified in the

Engineering Report to be replaced, along with their accompanying transformers. Following the completion of those replacement projects, Power Center 4 is the next most in need of replacement, to ensure electrical reliability and resiliency at the WWTP.

Power Substation Improvements

On the site adjacent to the WWTP maintenance building, the NFWB has an outdoor power substation that steps down the medium voltage service to a load utilization level. At the switchyard site is a building that houses switchgear that has deteriorated to a point where it has reached the end of its useful life. This project will replace the building to protect the essential equipment housed in this building.

Sodium Hypochlorite Bulk Storage

Three tanks that store hazardous chemicals have been identified. Their replacement is required to allow for large storage volumes of chemicals that are used daily in treatment plant operations. The two (2) ferric chloride tanks were installed in 1976 and the one (1) sodium hypochlorite tank was installed in 2005. These tanks have been inspected every five (5) years, since being installed. It has been determined these tanks are beyond their useful service life and replacement is necessary.

V. Proposed Project

Wastewater Treatment Plant Improvements

These facilities are aged with system components between 20 and 50 years old. Continued maintenance, repairs and replacement of these items is required to provide safe and uninterruptable sewer service to the City of Niagara Falls in accordance with the NYSDEC's Order of Consent.

Wastewater Treatment Plant Estimate Capital Costs	
Intermediate Pump Rehabilitation	$3,000,000
Belt Filter Press Rebuild	$3,075,000
Power Center 1 Improvements	$220,000
Power Center 4 Improvements and Transformer Replacements	$2,000,000
Power Substation Improvements	$2,000,000
Sodium Hypochlorite Bulk Storage	$1,339,000
Estimated Capital Cost:	**$11,634,000**

A. Design Criteria

The proposed water distribution system improvements system will be designed in accordance with the following reference standards:

- Any/all applicable AWWA Standard Requirements governing the Installation of Piping and Valves
- The Recommended Standards for Wastewater Facilities (Ten-State Standards, 2014)
- TR-16 Guides for The Design of Wastewater Treatment Works.
- NYS Department of Environmental Conservation
- NYS Building Code
- Electrical Standards

B. Map

The existing wastewater treatment plant location within City of Niagara Falls is depicted in Appendix A. Proposed wastewater treatment plant improvements are also shown on the annotated facility plan included in Appendix B.

D. Environmental Impacts

There are no anticipated negative environmental impacts associated with the project. A SEQR review was performed by the NFWB along with SHPO consultation. A Type 2 SEQR action was processed as proposed work in maintenance to existing facilities and no environmental or historic impacts were found. All construction will be done within existing plant boundaries and proper construction mitigation and restoration efforts will be implemented as dictated by the above-referenced construction standards

E. Schedule

Design and construction contracts will be disbursed based on decision from the Water Board. Depending on when funding is released, a general project schedule is

displayed below.

Project Funding and Determination	Winter 2026
Engineering Design and Approvals	Spring-Winter 2027
Bidding	Spring 2028
Award	Spring 2028
Construction	Summer 2028 – Summer 2029
Final Completion	Fall 2029

VI. Conclusions

The Niagara Falls Water Board is committed to providing safe, reliable, sewage service to its residents and also properly treated effluent which is discharged into the Lower Niagara River. These specific capital improvement projects will be instrumental in meeting these goals and addressing the needs identified by the NYSDEC in the Order of Consent. It is recommended that the Niagara Falls Public Water Authority, through the actions of its Board and the commissioning/submission of this report, seek funding for completion of the aforementioned projects.