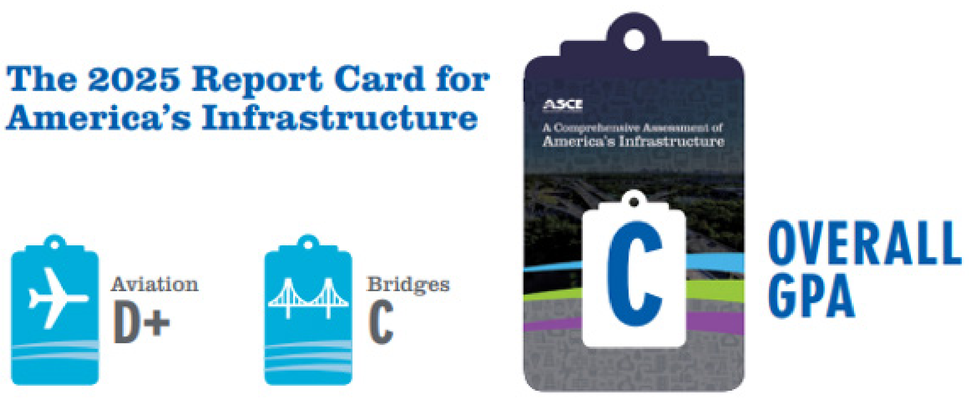
Station #1

Nationwide Context

Nationwide Context



Deteriorating Infrastructure

Drinking water infrastructure grade: C-

Challenges to utilities include:
- Aging infrastructure
- Emerging contaminants
- Increasingly severe effects of extreme weather

Aging & Retiring Workforce

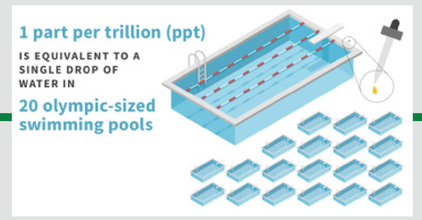
"In the next *five to ten years*, water sector workers will be eligible to retire at levels that will *stress our ability to operate this critical infrastructure*. The clean and safe water and *the way of life we have come to enjoy in this country cannot be sustained without our water protection specialists*. We must address this pending shortage with focused engagement at all levels of government and our public and private water sector partners."

- America's Water Sector Workforce Initiative: A Call to Action (USEPA, 2020)

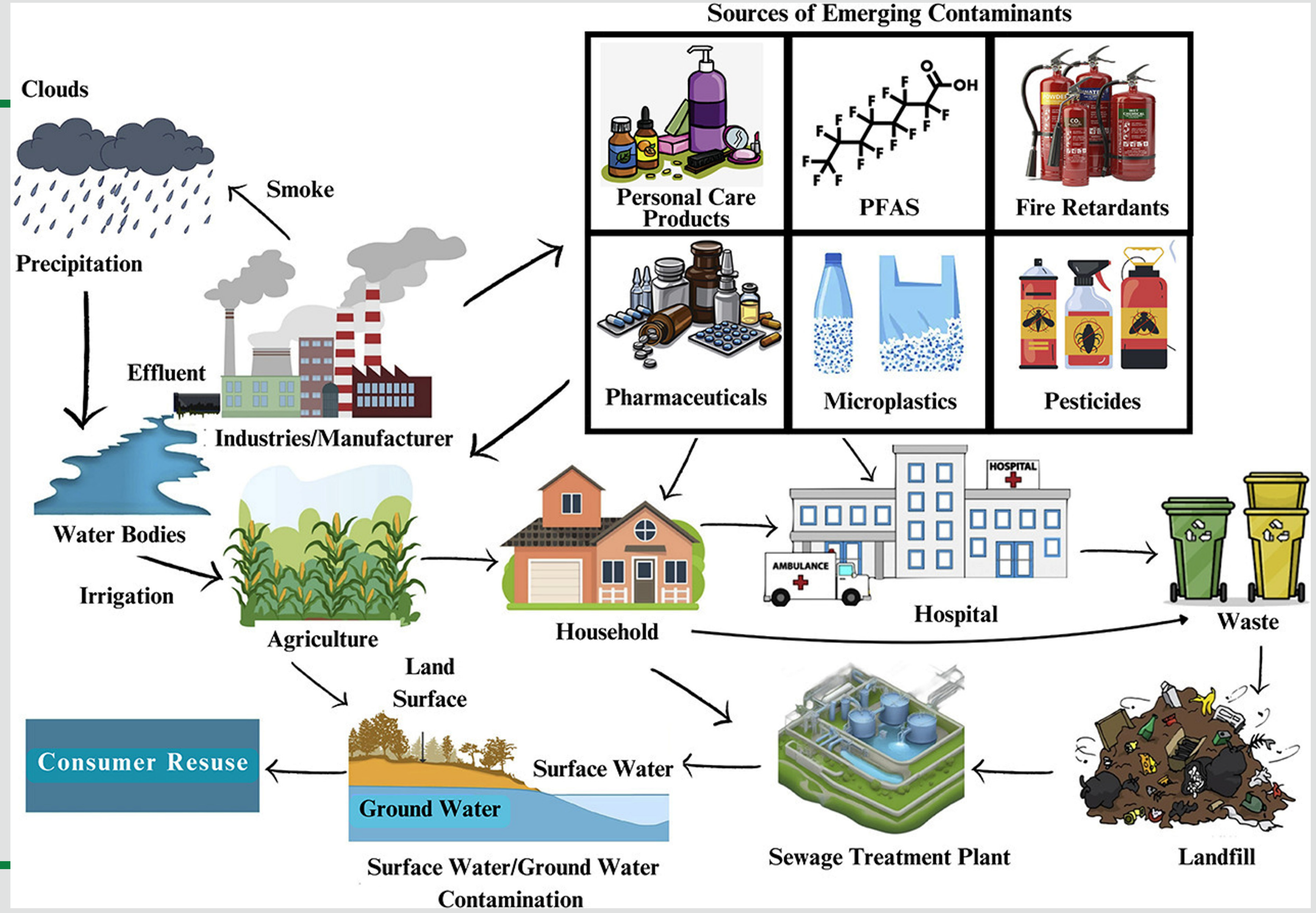
Percent of Workers	WTP, WWTP, & System Operators	All Occupations Nationally
Age 55 or older	30.9% (+7.4%)	23.5%
Age 45 or older	57.4% (+13.9%)	43.5%
Age 24 or younger	4.5% (-8.4%)	12.9%

Nationwide Context

Tightening Regulations



Source: West Bridgewater, MA



Source: P.S. Nishmitha et al, Understanding emerging contaminants in water and wastewater: A comprehensive review on detection, impacts, and solutions, Journal of Hazardous Materials Advances, Volume 18, 2025.

Nationwide Context

Cumulative Investment Needs

BY INFRASTRUCTURE CATEGORY BASED ON MAINTAINING CURRENT FEDERAL INVESTMENT LEVELS

ALL VALUES IN BILLIONS

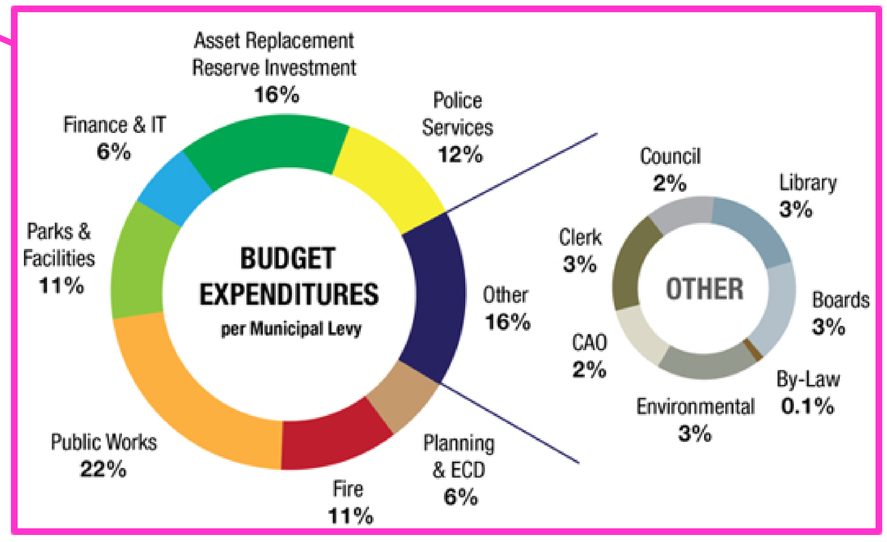
Infrastructure System	Needs[1]	Funded, 2024-33[2]	Funding Gap, 2024-33
Aviation[3]	$310	$197	$113
Bridges[4]	$538	$165	$373
Broadband[5]	$61	$61	$0
Dams[6]	$185	$20	$166
Drinking Water[7]	$670	$361	$309
Energy[8]	$1,886	$1,308	$578
Hazardous & Solid Waste[9]	$162	$146	$16
Inland Waterways & Ports[10]	$45	$32	$13
Levees[11]	$97	$7	$91
Public Parks[12]	$106	$62	$44
Rail[13]	$145	$113	$32
Roads[14]	$2,233	$1,549	$684
Schools[15]	$1,100	$671	$429
Transit[16]	$618	$466	$152
Wastewater + Stormwater[17]	$983	$293	$690
TOTAL	**$9,139**	**$5,450**	**$3,689**

Rising Costs

ASCE 2025 Report Card

Nation's water infrastructure needs stand at *$625 billion over 20 years* (EPA, 2023)

"*Funding shortfalls* continue in state revolving funds that support drinking water"



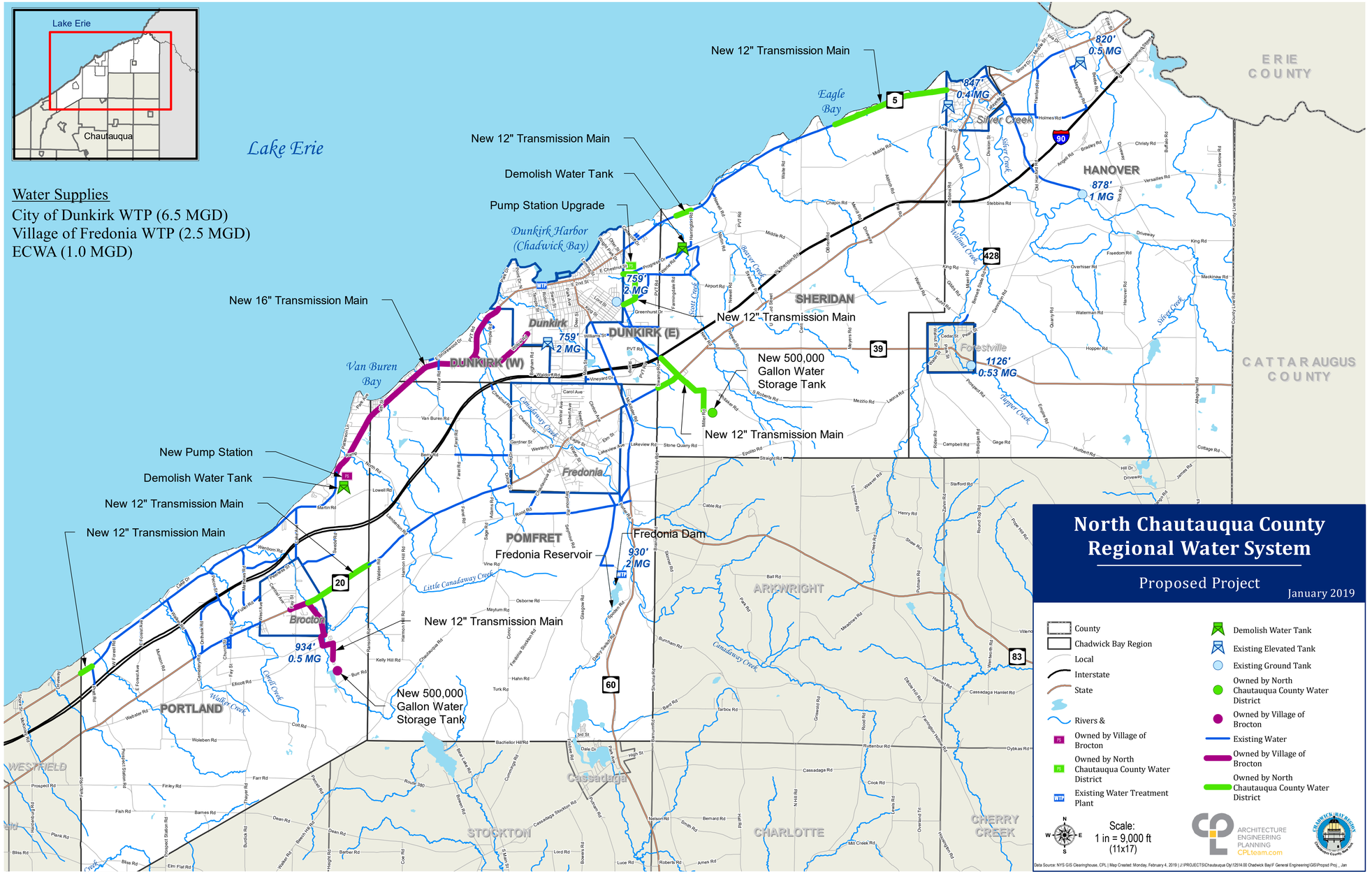
Courtesy: Millbrook, CA

Station #2

Existing Municipal Water Systems

Village of Fredonia
Water Service Area Map

NCCWD Water Service Area Map



Station #3

Chautauqua County Health Department, NYS Sanitary Code and Water Quality

Station #4

Village Alternatives Considered

Alternatives Considered

Alternative 1: Upgrade Village Water Treatment Plant & Reservoir

Major Scope Items

1. Construct Village Water Treatment Plant upgrades

- Construct a third clarifier
- Stabilize streambank
- Construct backwash water tank
- Improve chemical-related facilities

2. Construct potable water storage tank to increase available system storage

3. Implement distribution system piping modifications to ensure suitable system pressures

4. Complete spillway, dam, and intake improvements to bring dam and reservoir into compliance with regulatory standards

- Construct new spillway and core wall
- Install new low-level outlet and mid-level outlet gate at deepest point in reservoir and associated piping
- Repair existing-to-remain concrete, remove vegetation along abutment walls and embankment. Ensure adequate access around perimeter of reservoir for maintenance and inspection

Alternative 2: Interconnect with North Chautauqua County Water District, Decommission Village WTP, Drawdown Reservoir

Major Scope Items

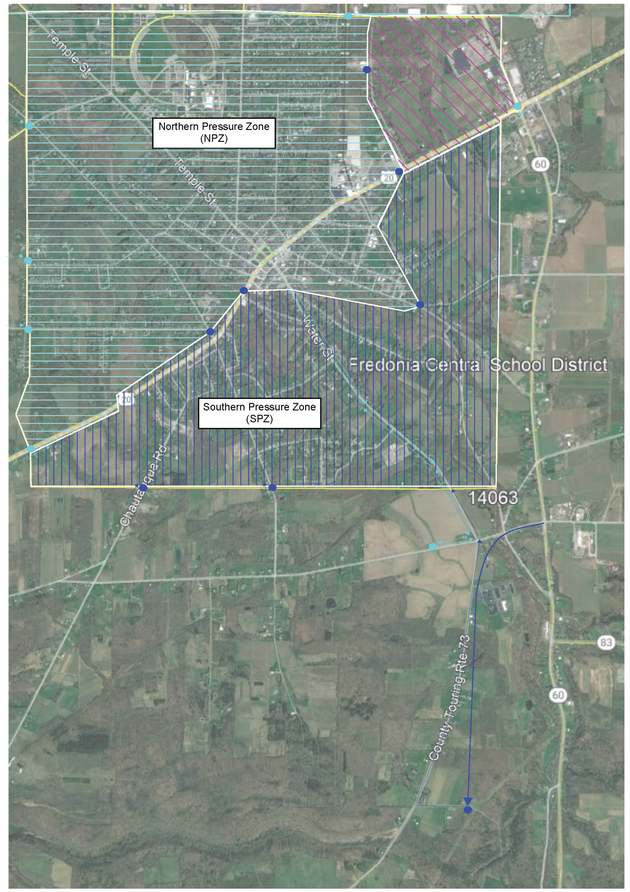
1. Construct improvements to interconnect Village and NCCWD systems, and divide Village system into two pressure zones

- Water St. water main improvements/ changes
- Construct PRV vaults
- Construct interconnection structures
- Interconnect with new Town storage tank (anticipated on Fredonia-Stockton Road)

2. Reconfigure Webster Rd. piping and valving

3. Implement structural/HVAC/ electrical repairs & improvements at Vineyard Dr. PS

4. Decommission Webster Rd. PS. and WTP



Selected Alternative

1991 reservoir 95% depleted

2007 reservoir 60% depleted

Alternative #2:
Interconnect with North Chautauqua County Water District; Decommission Village Water Treatment Plant; Drawdown Reservoir

Basis of Selection

- History of reservoir drought
- WTP site with significant constraints
- Streambank stabilization is continuing long-term challenge
- Possibility of increased climate-related concerns impacting the long-term feasibility of Overall Alternative 1
- History of regulatory compliance challenges
- Desire to reduce the Village's long-term liability associated with retaining a dam with a Class C High Hazard status
- Desire to reduce initial capital cost

Phasing Consideration

Phase 1 – $17.5M (est. construction midpoint 2028)

- Construct interconnections
- Complete distribution system improvements (tank, PRV vaults, metering vaults, Vineyard Dr.)
- Decommission WTP

Phase 2 – $4.0M (est. construction midpoint 2030)

- Reservoir drawdown / improvements to conform with regulatory requirements

VILLAGE ALTERNATIVES CONSIDERED

COST COMPARISON

Alternative	1: Upgrade WTP & Reservoir	2: Interconnect with NCCWD	2: Interconnect with NCCWD
Estimated as of:	Sep. 2025	Sep. 2025	Jul. 2026
WTP	Upgrade	Decommission	Decommission
Reservoir	Upgrade	Drawdown	Drawdown
Interconnection with NCCWD	-	Construct Interconnection	Construct Interconnection
Estimated Costs			
Funding Awarded	Excluded from this estimate	Excluded from this estimate	· $6.25M via grants · $12.5M of 0% loan
Estimated Total Project Cost	$34.9 M	$20.7 M	$20.7 M To be phased: Phase 1 (2028): $11.25 M Phase 2 (2030): $4.0 M
Estimated Avg. Annual Cost (30-yr):			
Debt Service	$2.1 M	$1.3 M	$0.5 M
System Operation & Maintenance	$4.8 M	$1.6 M	$1.6 M
Purchase Water	0	$4.7 M	$4.6 M
Estimated Annual Cost/EDU ***(assumes 300 gallons per day or 9,000 gallons per month)***	$1,581	$1,792	$1,602

COST COMPARISON EXCLUSIONS & ASSUMPTIONS

Exclusions & Assumptions: As written in September 2025 Engineering Report Amendment	Exclusions & Assumptions: July 2026 update
Excludes any grant funding.	Village has secured $6.25M in grant funding to date and is pursuing additional grant funding.
Village loans "project cost" (4% interest, 30 years).	Village has secured up to $12.5M in interest-free loan.

Excludes phasing considerations	• Village project is to be phased:
	  • Phase 1: $17.5M estimated cost
	  • Phase 2: $4.0M estimated cost

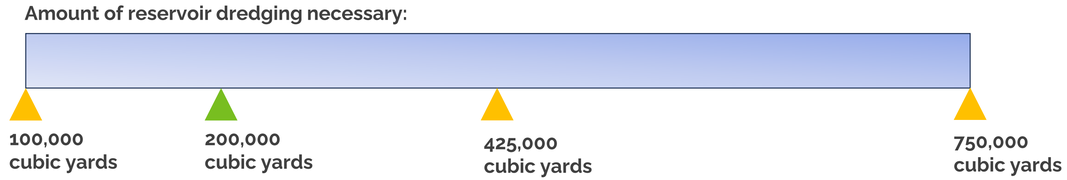
All water purchased from NCCWD at a rate of $6.50 per thousand gallons, escalated 3% annually.	• Approximately 200,000 gal/day purchased from Dunkirk via existing Vineyard Dr. Pump Station at a rate of $5.27 per thousand gallons, escalated 3% annually. • Remainder of water purchased from NCCWD at a rate of $6.50 per thousand gallons, escalated 3% annually.

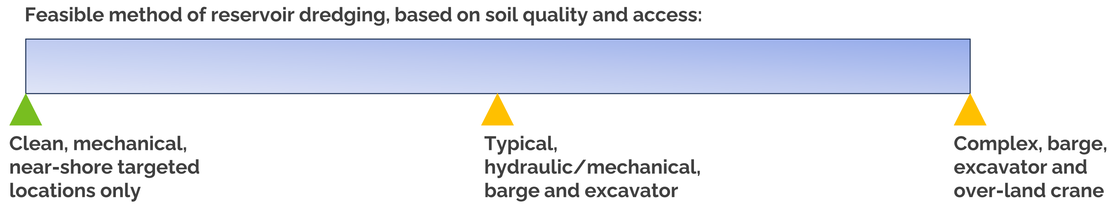
NON-MONETARY CONSIDERATIONS

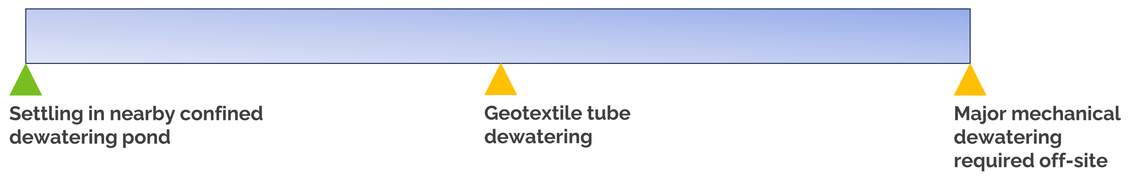
Consideration	Alternative 1: Upgrade WTP & Reservoir	Alternative 2: Interconnect with NCCWD
Source Water Reliability	Fredonia Reservoir has experienced droughts in past. Possibility of increased climate-related concerns impacting the long-term feasibility of this alternative.	Large abundant water source.
System Resilience	Dependent on one treatment facility and local water source; redundancy may be limited.	Large abundant water source and redundancy reduce risk from equipment failures, drought, or contamination.
Regulatory Compliance	Village remains responsible for meeting increasingly stringent standards and historically has had compliance challenges. Cost of more stringent standards to be responsibility of Village users.	Regional providers may have greater resources to meet evolving federal and NYS regulations.
Operational Expertise	Requires recruiting and retaining certified operators, which can be challenging.	Access to experienced operators, laboratories, and engineering support.
Emergency Response	Emergency response relies on local staff and available backup systems.	Larger systems typically have established emergency plans and mutual aid agreements.
Community Control	Maintains local governance and direct control over treatment decisions. Fewer external dependencies but greater individual responsibility.	Less local control over rates, operations, and future decisions. Requires long-term cooperation, contracts, and shared governance with neighboring utilities.
Dam-Related Liability	Maintains Village as liable to maintain a dam with a Class C High Hazard status,	Reservoir drawdown minimizes Village dam-related liability.
Future Growth	Village WTP lacks adequate capacity and significant site constraints exist that make expansion challenging. Capacity constraints or treatment limitations may restrict future development.	Easier to accommodate population or industrial growth if regional system has excess capacity. Reliable regional supply may attract commercial and industrial development.

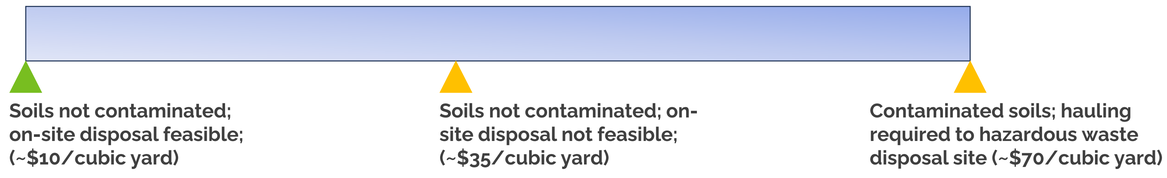
ALTERNATIVE 1: RESERVOIR-RELATED COST ESTIMATING UNCERTAINTIES

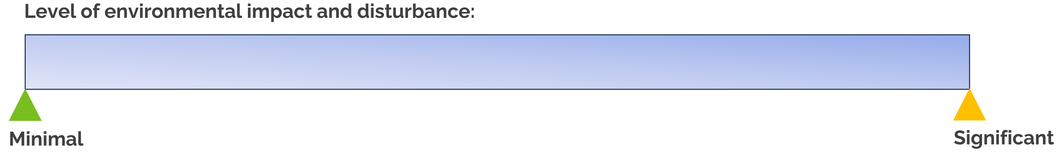
Estimating reservoir-related improvement costs as part of Alternative 1 requires making significant assumptions due to a lack of current, field-verified information to inform the estimate. The bar scales below present examples of the cost range associated with certain items of work that would require additional field investigations to clarify.

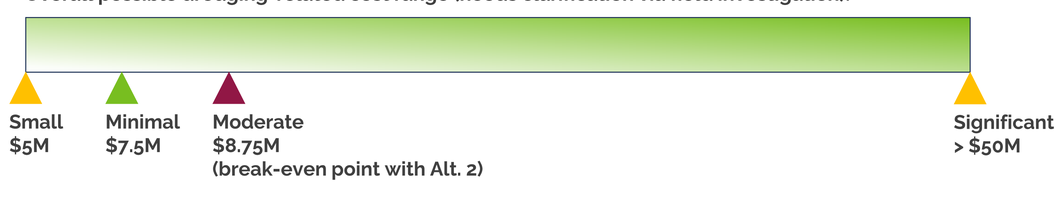










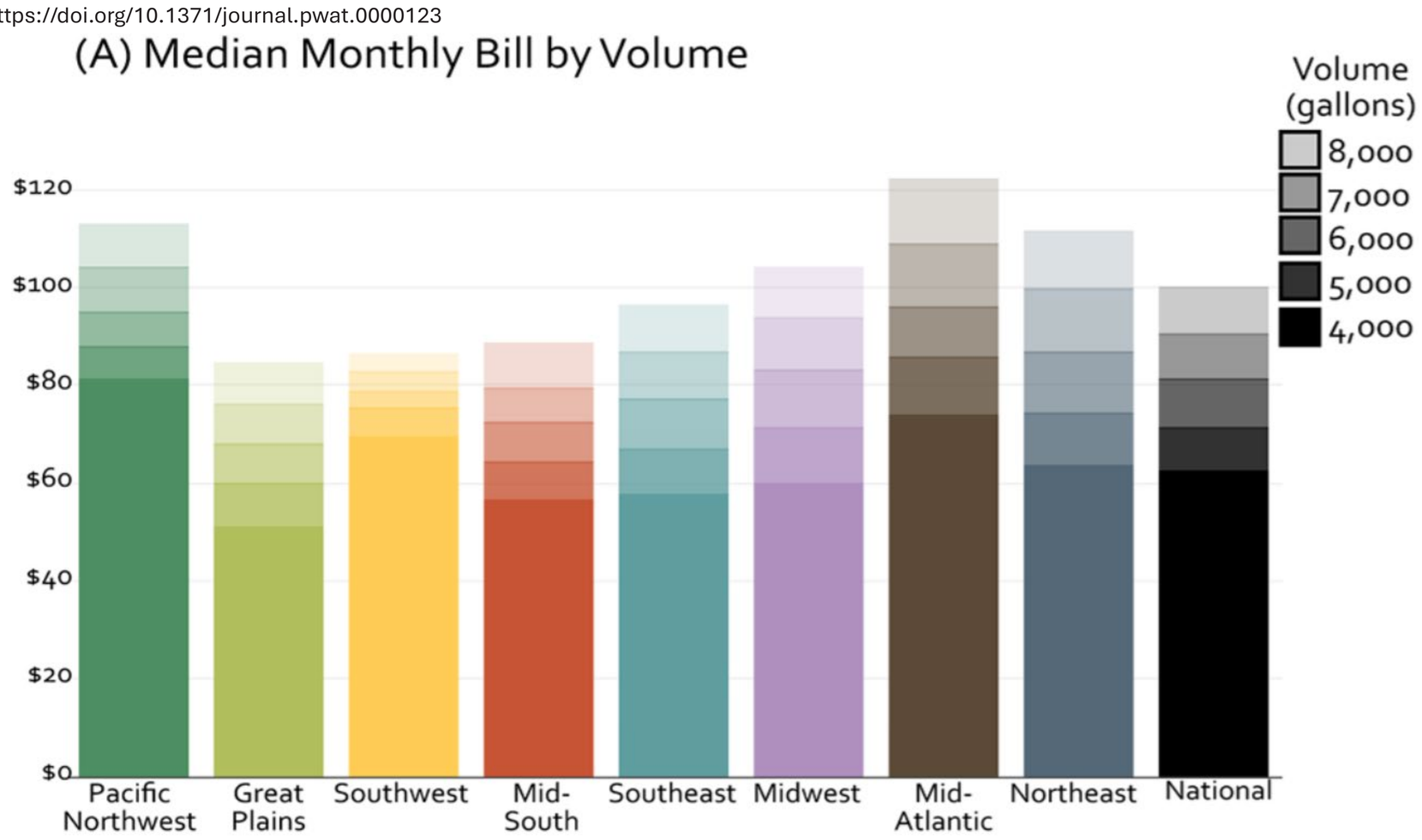


Station #5

Need for Project

Monthly Residential Water Bill

Patterson LA, Bryson SA, Doyle MW (2023) Affordability of household water services across the United States. PLOS Water 2(5): e0000123.
https://doi.org/10.1371/journal.pwat.0000123

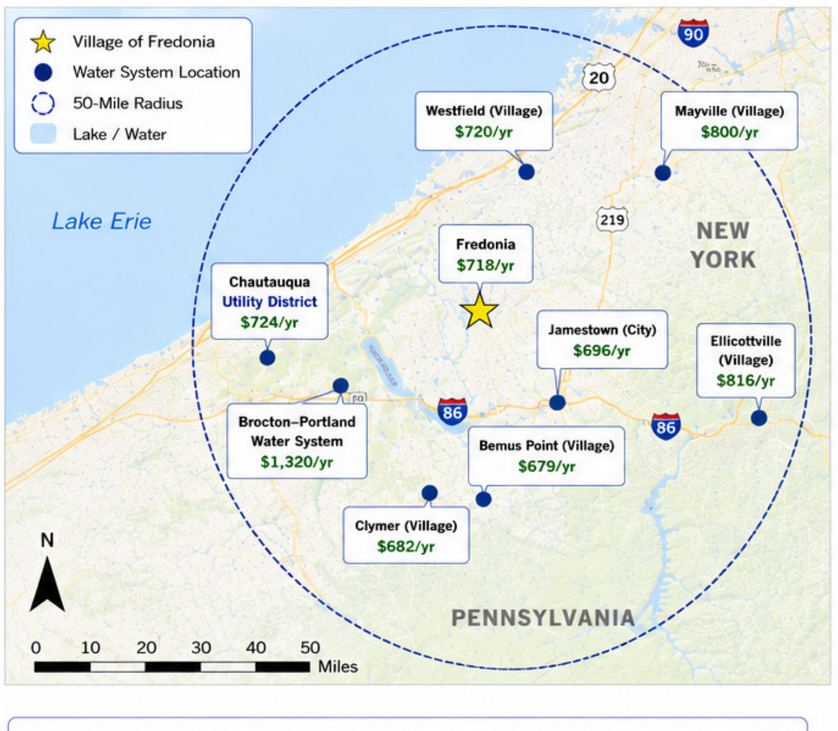


Municipal Water Rates Within 50 Miles of the Village of Fredonia, NY

Representative Annual Residential Water Cost

Equivalent to 8,000 Gallons per Month (96,000 Gallons per Year)

(Water Charges Only – Sewer Charges Not Included)



Water System	Representative Annual Residential Water Cost (Equivalent to 8,000 gallons/month)	Average Annual Cost Over 30 Years (Assumes 3% Annual Escalation)	Notes / Basis	Source
New York State – Urban Utilities (Normalized)	**$406**	**$732**	NYS DPS Urban Utilities Survey (>10,000 population); normalized to an equivalent residential use of 8,000 gallons/month.	1
New York State – Rural Utilities (Normalized)	**$271**	**$489**	NYS DPS Rural Utilities Survey (<10,000 population); normalized to an equivalent residential use of 8,000 gallons/month.	2
Village of Fredonia	**$718**	**$1,296**	$7.60 per 1,000 gallons (Local Law No. 7 of 2025, effective Sept. 2025).	3
Chautauqua Utility District	**$724**	**$1,307**	$143 annual meter fee + $0.65 per 100 gallons	4
Brocton–Portland Water System	**$1,320**	**$2,383**	$65 base (first 4,000 gal) + $9.80 per 1,000 gal over 4,000	5
Jamestown (City)	**$696**	**$1,257**	$8.70 per 1,000 gallons	6
Westfield (Village)	**$720**	**$1,301**	$7.50 per 1,000 gallons (Minimum charge $22.50 for 0–3,000 gal)	7
Mayville (Village)	**$800**	**$1,445**	$8.35 per 1,000 gallons	8
Bemus Point (Village)	**$679**	**$1,226**	$7.07 per 1,000 gallons (Minimum charge $21.20 for 0–3,000 gal)	9
Clymer (Village)	**$682**	**$1,232**	$7.10 per 1,000 gallons	10
Ellicottville (Village)	**$816**	**$1,474**	$8.50 per 1,000 gallons	11

ⓘ Representative annual residential water costs are based on an equivalent residential water use of 8,000 gallons per month (96,000 gallons per year). Benchmark values for New York State have been normalized to this same level of water use to facilitate comparison among utilities. Sewer charges are not included.

Average Annual Cost Over 30 Years assumes annual water rate increases of 3% and is calculated as the arithmetic average annual cost over a 30-year period.

$$\text{Average Annual Cost} = \text{Initial Annual Cost} \times \left(\frac{1.03^{30} - 1}{0.03}\right) \div 30$$
$$= \text{Initial Annual Cost} \times 1.803$$
Example: $718 × 1.803 = $1,296 per year

ⓘ Rates are subject to change. Customers should contact their local water system for current rates and billing information.

Sources

1. New York State Department of Public Service. 2023 Water & Wastewater Rate Survey – Urban Utilities (>10,000 Population). Values normalized to an equivalent residential water use of 8,000 gallons per month for comparison.
2. New York State Department of Public Service. 2023 Water & Wastewater Rate Survey – Rural Utilities (<10,000 Population). Values normalized to an equivalent residential water use of 8,000 gallons per month for comparison.
3. Village of Fredonia. Local Law No. 7 of 2025 – Water Rates.
4. Chautauqua Utility District. Current Rates & Fees (effective 1/1/2026). https://www.cudchq.com/current_rates.php
5. Brocton–Portland Water System. Water Rates (approved 6/1/2024). https://www.brocton.org/brocton-portlandwatergroup
6. City of Jamestown. Water Rates (effective 5/1/2024). https://www.jamestownny.gov/DocumentCenter/View/2347/Water-Rates-2024
7. Village of Westfield. Water Rates (Local Law). https://www.westfield-ny.gov/DocumentCenter/View/2065/Local-Law-3-2022-Water-Rates
8. Village of Mayville. Water Rates (Resolution 35-2024). https://www.villageofmayville.com/DocumentCenter/View/1267/Water-Rates-2024
9. Village of Bemus Point. Schedule of Water Rates. https://www.villagepb.com/vertical/sites/%7B0D0E7B5E-3-6AD6-4A14-A6F6-0296A1E9E1E84%7D/uploads/Water_Rates_2024.pdf
10. Village of Clymer. Water Rates (Resolution 2024-06). https://www.villageofclymer.org/DocumentCenter/View/87/Water-Rates-2024
11. Village of Ellicottville. Water Rates (Local Law 1-2024). https://www.ellicottvilleny.com/DocumentCenter/View/234/Local-Law-1-2024-Water-Rates

Key Findings on Socioeconomic Trends and Other Factors Impacting Water Affordability

Water Affordability Needs Assessment: Report to Congress, 2024

Local Income Distribution. Results from multiple studies showed that water affordability challenges increase as income distribution becomes more unequal (Teodoro, 2019; Patterson et al., 2023). The *LIHWAP Water Utility Affordability Survey Report* found that the percentage of the population under 150% of the Federal poverty guidelines was not a significant predictor of drinking water and wastewater rates. This report indicated that rates are set at the level needed to support the utilities' operational costs, and these rates may be unaffordable for low-income households (OCS, 2024a). Furthermore, Patterson and Doyle (2021) argued that widespread poverty is a major contributor to utility financial capability challenges.

Utility Size[7]. Results from multiple studies showed that affordability improves significantly as utility size increases (Teodoro, 2019; Patterson et al., 2023). Another study showed that larger utility service populations are associated with lower bills (El-Khattabi et al., 2023). Similarly, the *2023 California Drinking Water Needs Assessment* found that small community water systems included in the assessment charged an average of $71.31 for 6 CCF (equivalent to 4,488 gallons), while medium and large community water systems included in the assessment charged an average of $45.28 and $41.14, respectively, for 6 CCF in 2021 (Abhold et al., 2023).

Utility Ownership. El-Khattabi et al. (2023) showed that municipally owned utilities often have lower water bills than for-profit utilities. The study also found that higher rates are charged by utilities that use purchased water as a main source (El-Khattabi et al., 2023).

Water Source

Fredonia Reservoir

- **Source of untreated water for Fredonia**
- **In-Service Date: 1938**
- **Total Watershed approximately 5.7 square miles**
- **Impounds approximately 290M gallons**
- **Village owns and manages surrounding property**
- **Daily use supply approximately 1.3MGD**

Reservoir Evaluation

Existing Conditions

Class C High Hazard Dam

Dam condition does not meet NYCRR Part 673 requirements

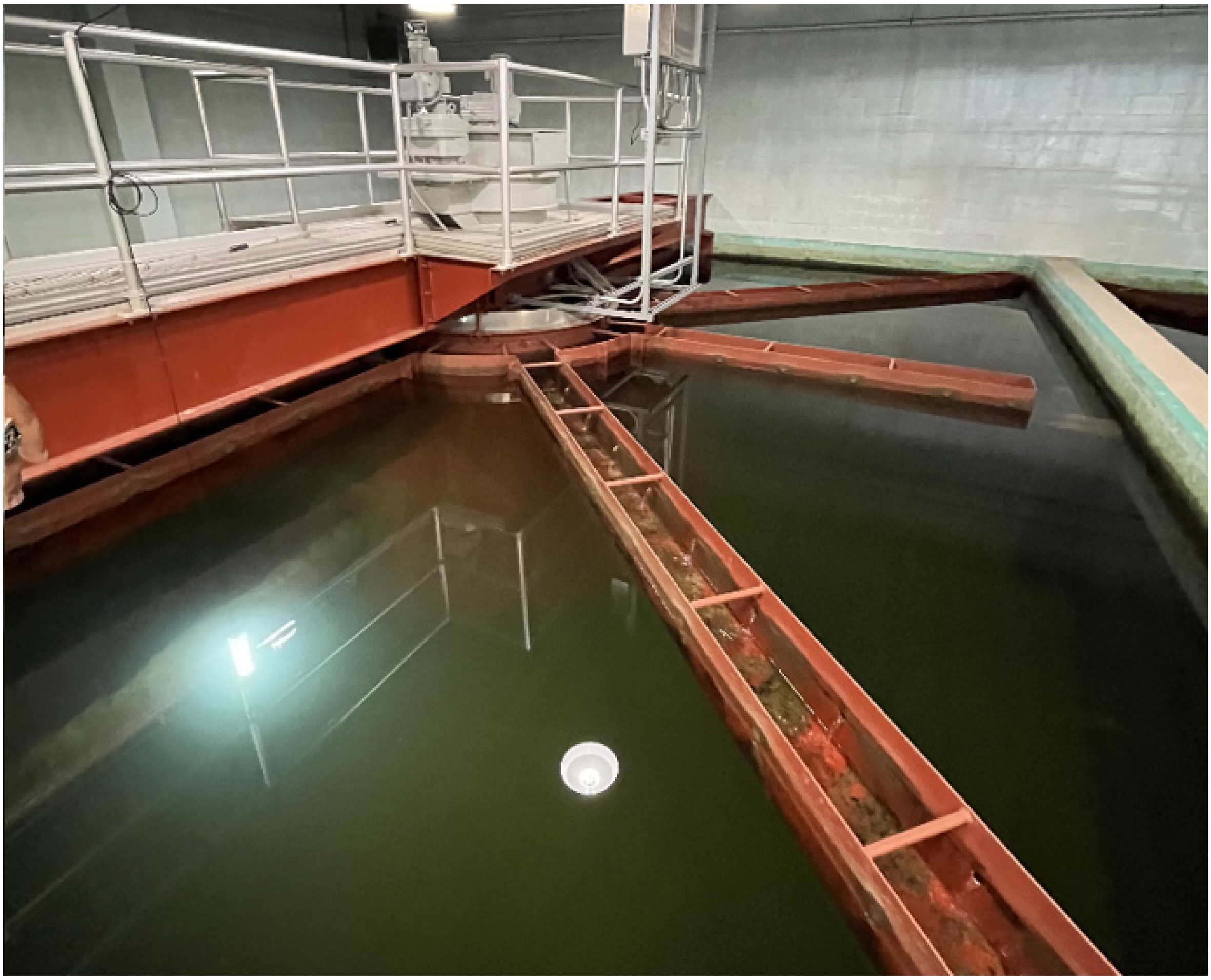
- Drawdown rate and volume
- Spillway capacity
- Dam Stability

Results Summary

Multiple options to address dam

- Improvement
- Permanent drawdown
- Decommissioning

WTP Evaluation



Existing Conditions

- Avg. demand 1.32 MGD
- Rated capacity 2.5 MGD

Results Summary

Major needs:

- Additional clarification capacity
- Chemical storage & feed improvements
- Piping & process control improvements
- Site improvements (incl. slope stabilization)

Existing Major Challenges

Water Treatment Plant

- Insufficient clarification capacity
- Chemical storage/feed & process control inadequacies
- Building systems deficiencies (STR/ARCH/HVAC/ELE)
- Site improvements (incl. slope stabilization) necessary

Source Water, Dam, Spillway

- Reservoir historically sensitive to drought
- NYSDEC has determined dam/spillway are in “unsound” condition and need improvement

Distribution System

- Additional finished water storage capacity needed
- Pump stations (Webster Rd., Vineyard Dr.) need improvement

How have water disruptions impacted you or your business?

Station #6

Funding Plan

Project Process

UNDERSTAND Regulatory Community

GOALS Community Project

INVESTIGATE

ALTERNATIVES Propose and Compare

RECOMMEND Investments and Grant Strategy

IMPLEMENT

CONSTRUCT

VIEW

- Holistic View of Community
- Know Regulatory Requirements
- Place in Context
- Understand Funding Landscape

SCOPING

- Existing Conditions
- Pending Regulatory Compliance
- Community Priorities
- Social Benefits
- Technical Outcomes

PLANNING

- Preliminary Engineering Report
- Stakeholder Engagement
- Regulatory Engagement
- Income Survey
- Environment

EVALUATION

- Rank Goals
- Establish Criteria
- Create Performance Ranges
- Benefit to Cost Analysis
- Lifecycle Costs

ADVANCE

- Selected Alternative
- Design
- Grants
- Financing
- Program Compliance

FORMALIZE

- Environmental
- Bond Financing
- Secure Grants
- Close Financing

BUILD

- Bidding
- Construction Oversight
- Construction Administration
- Substantial Completion
- Inspection
- Operation

Project Schedule

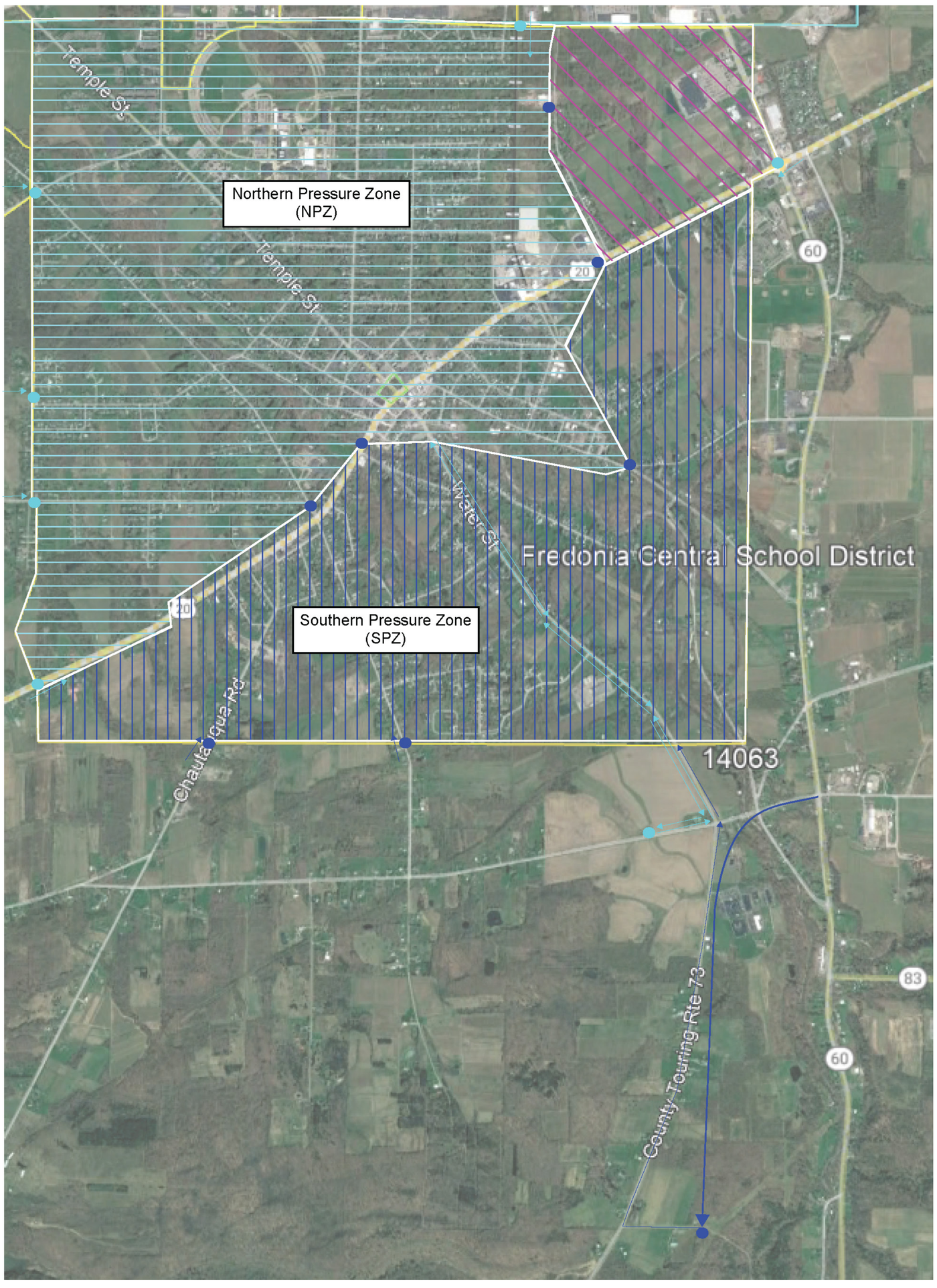
	2026				2027				2028				2029			
Phase Description	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Kickoff Meeting																
Data Collection																
Planning, Grant Writing																
Permitting																
Preliminary Design																
Final Design																
Construction Documents																
Regulatory Review																
Construction Procurement																
Construction																
Project Closeout																

Financing Plan

Estimated Phase 1 Project Cost: $17,500,000

Funding Agency	Program	Description	Award / Application
NEW YORK STATE | Environmental Facilities Corporation	Drinking Water State Revolving Fund (DWSRF)	No interest long term loan Loan Period 30 years Loan Distribution to 4,090 Equivalent Dwelling Units	Long-Term $12,500,000 0% Interest
NEW YORK STATE | Environmental Facilities Corporation	Water Infrastructure Improvement Act (WIIA)	Award of 60% of total net eligible costs up to $5 M for water quality and protection public health	$5,000,000
NEW YORK STATE OF OPPORTUNITY. | Department of State	Local Government Efficiency Grant (LGE)	Based on partnership with Town of Pomfret, City of Dunkirk, North Chautauqua County Water District, SUNY Fredonia, and Village of Fredonia	$1,250,000
NEW YORK STATE OF OPPORTUNITY. | Empire State Development	Regional Council Capital Funds	Drive regional and local development to retain jobs, increase business and economic activity	Request $1,000,000 planned for July 2026
NEW YORK STATE OF OPPORTUNITY. | Homes and Community Renewal	Community Development Block Grant (CDBG)*	Up to $2 M with secured co-funding, requires income survey	Request $2,000,000 planned for July 2027
UNITED STATES SENATE / UNITED STATES CONGRESS	Congressionally Directed Spending	Congressman Langworthy, Senator Schumer, Senator Gillibrand	Request $5,000,000 February 2026 and 2027

Project Scope



1. Construct improvements to interconnect Village and NCCWD systems, and divide Village system into two pressure zones

- Water St. water main improvements/changes
- Construct PRV vaults
- Construct interconnection structures
- Interconnect with new Town storage tank (anticipated on Fredonia-Stockton Road)

2. Reconfigure Webster Rd. piping and valving

3. Implement structural/HVAC/electrical repairs & improvements at Vineyard Dr. PS

4. Decommission Webster Rd. PS. and WTP

Leave a note of support for grant funding below!

Station #7

Communication Plan

What do you want to know more of about the project?