GREENE DRINKING WATER IMPROVEMENTS

Laberge Group
ENGINEERING
ARCHITECTURE
SURVEYING
PLANNING

Village of Greene
February 22, 2024

Meeting Purpose

- Discuss drinking water system needs and improvement costs.
- Discuss the benefits of proactively planning for infrastructure improvements, seeking funding to reduce user costs, and making repairs after beneficial funding is secured.

Types of Capital Planning

1. REACTIVE – Put off dealing with projects until conditions require prompt action (line break or condition that would trigger enforcement).
2. PROACTIVE – Evaluate infrastructure needs periodically and develop a capital improvement plan to guide budget decisions and project implementation.

Types of Capital Planning

REACTIVE capital planning is most costly.

- Project timing cannot be planned and most often requires "throwing money at the problem".
- Grant funding is difficult if not impossible to obtain on short notice.

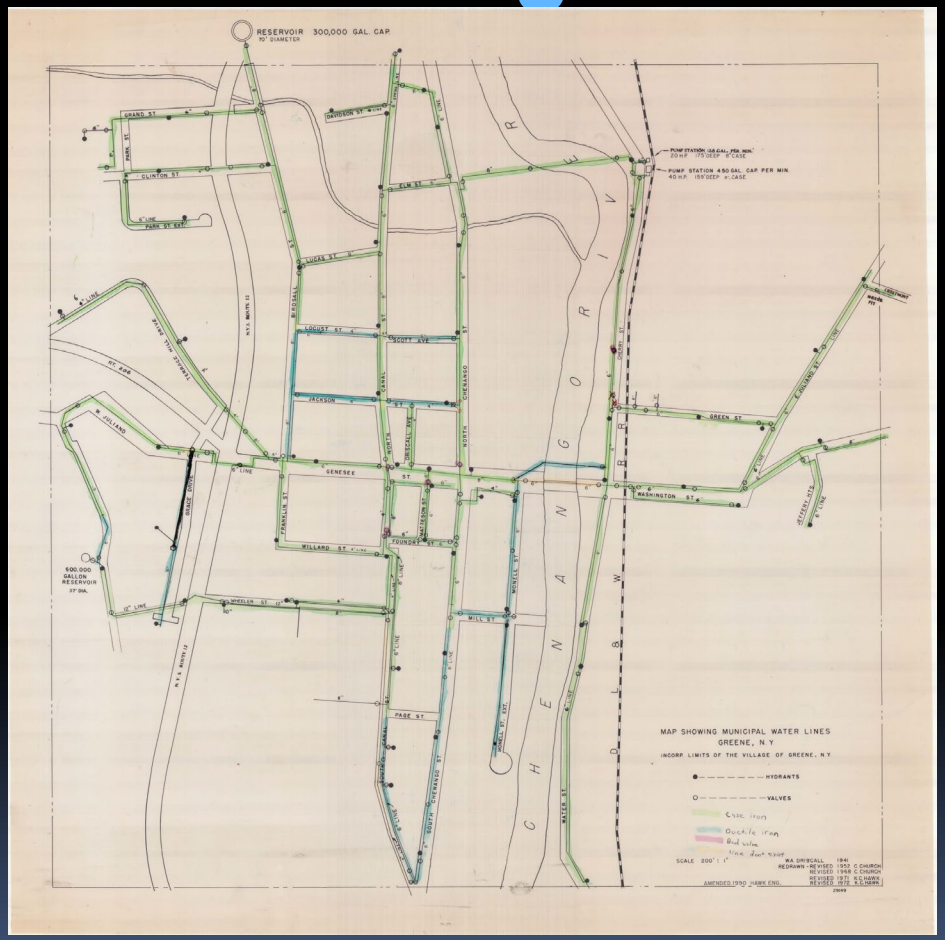
Types of Capital Planning

PROACTIVE is least costly.

- Projects can be well thought and out to prioritize investments and secure grant funding needed to reduce user costs.
- Proactive capital planning demonstrates project readiness which helps obtain grant funding.
- Proactive infrastructure improvements reduce long term user costs.

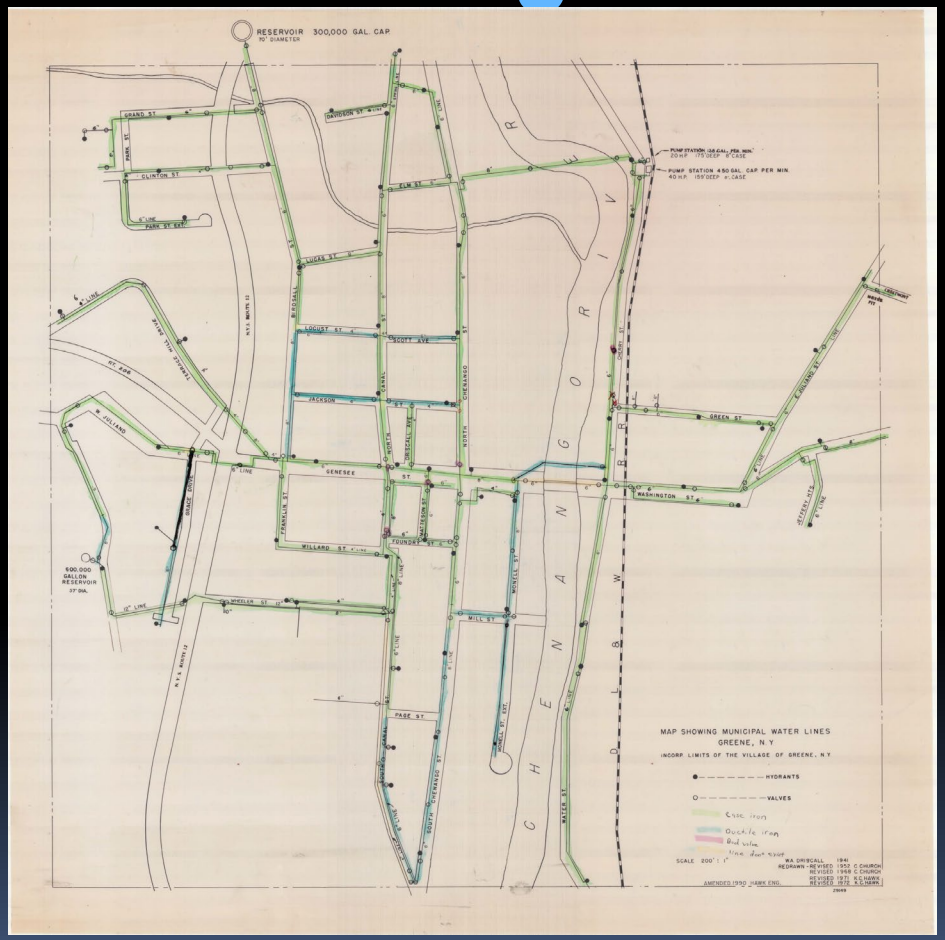
Proactive Infrastructure Planning

- In 2020 the Village retained Laberge Group to evaluate its drinking water system, develop a plan to improve it, and help secure grants.



Proactive Infrastructure Planning

- Our review identified system needs and priority projects.
- Priority projects were selected based upon the condition and importance to the overall system.



Supply & Treatment Findings

- Three wells supply the system. Sand is being drawn into Well 3.
- Disinfection building improvements are needed to eliminate exhaust systems that complicates keeping the building above freezing during winter months.

Supply & Treatment Findings

- An automatic standby generator is needed for two of the wells.
- An automated pump control system is needed to activate and deactivate pumps according to demand.

Supply & Treatment Recommendations

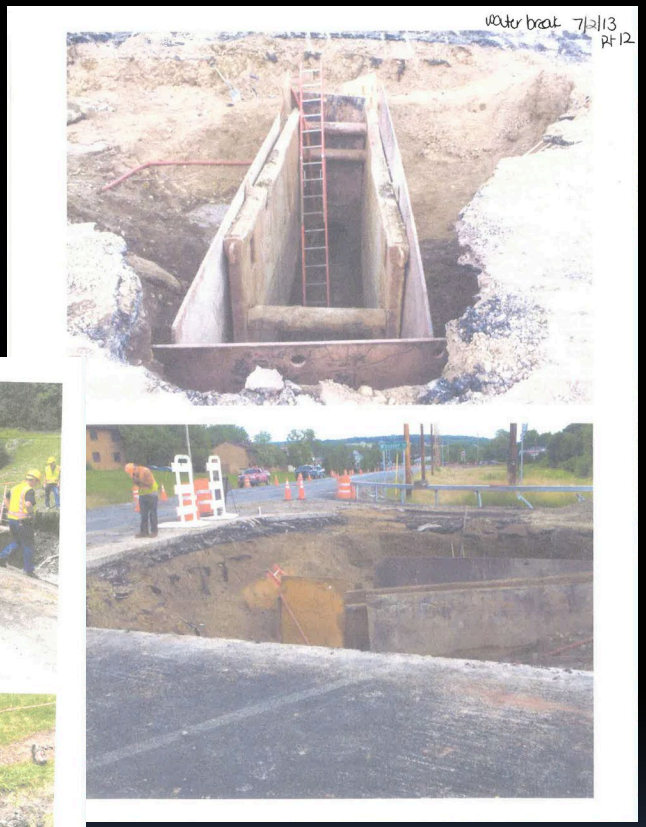
- Repair the well to keep sand out of the water system.
- Replace the existing gas chlorination system with a sodium hypochlorite system.
- Install an automatic standby generator and automated pump controls.

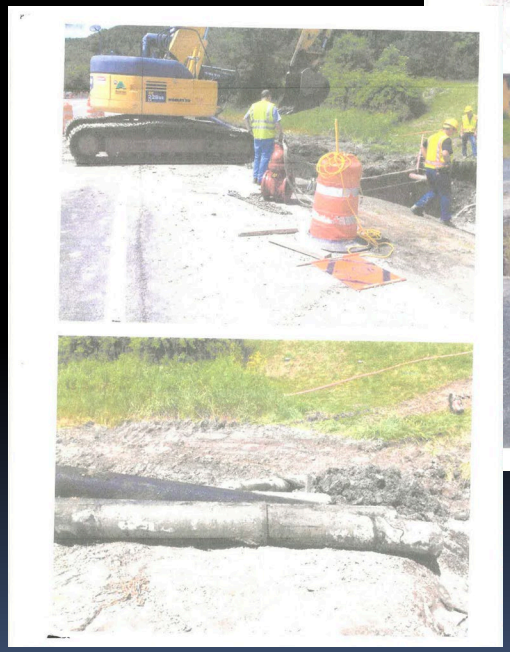
Water Main Findings

- Watermains range in size from 4 to 12-inches in diameter, with varying age and condition.
- About 80% of the 51,000 feet of Village main is undersized cast iron pipe (CIP) that is over 100 years old.
- CIP is prone to tuberculation which leads to pressure and water quality issues.

Water Main Findings

- Piping over 100 years old is prone to failure and results in costly repairs and service interruptions.





Water Main Findings

- Tuberculation is a bacterial-based oxygen-driven form of corrosion (rust) that forms in unlined iron pipes.
- The rust reduces pipe capacity leading to pressure and water quality issues.

Water Main Findings

- Contemporary ductile iron pipe (DIP) was installed in the late 1970s though the mid-1980s. Most is in a serviceable condition.
- DIP exists on South Canal Street and South Chenango Street in the vicinity of the High School, and on Grace Drive.
- DIP along Grace Drive is of concern because of corrosive soils that have caused bolts to fail that hold together valves.

Water Main Findings

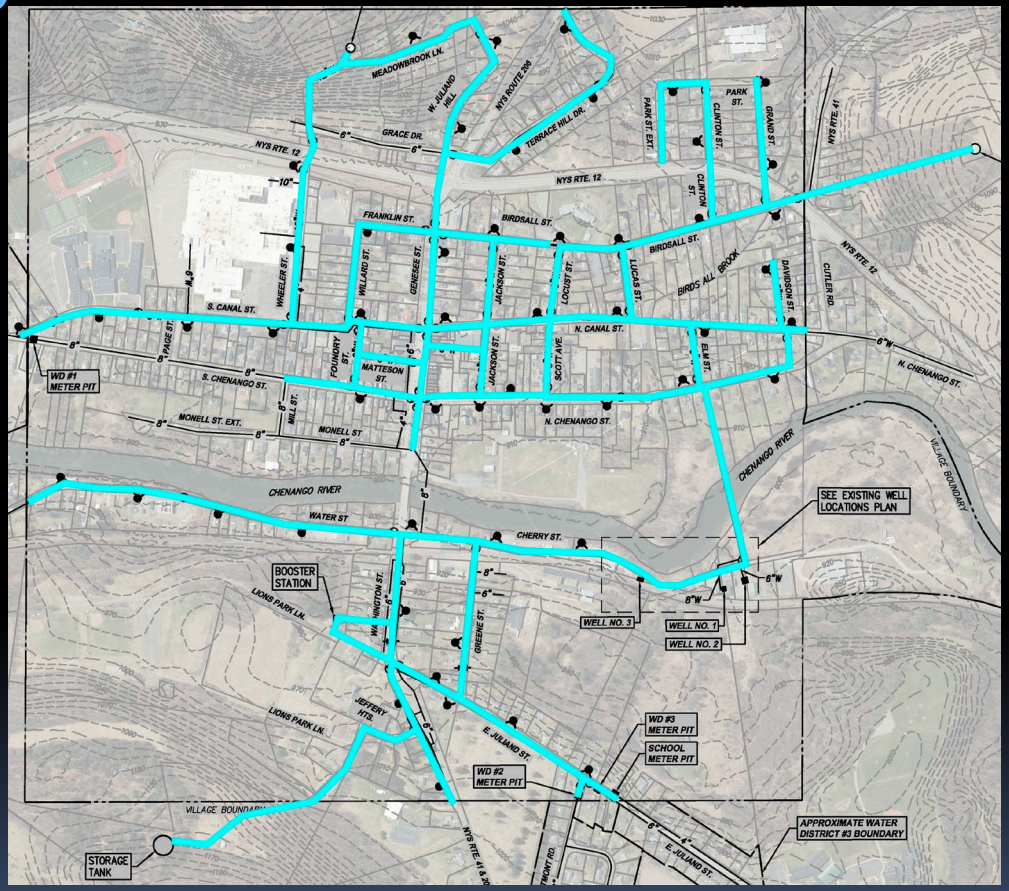
- Drinking water needs to be 10-feet from sewer to help avoid contamination.
- Record plans show less than 10-feet in many locations.
- The inset photograph shows an extreme example of a water main passing through a sewer manhole.

Water Main Recommendations

- Prioritize main replacement based on condition and system importance.

Water Main Findings

- With 80% of the water main undersized and aged, extensive replacements are required.



Storage Tank & Pressure Findings

- Storage tanks are prone to freezing and water quality issues during low usage.
- Low service pressures exist in the Village's upper service areas.
- Tank storage volume is not available to meet fire flow requirements in the Village's upper service areas.

Storage & Pressure Recommendations

- Install mixers inside of tanks to avoid freezing and improve water quality.
- Install a booster pump to increase normal operating pressures in the low pressure zone.
- Add a storage tank in the upper service area to provide fire flow volume.

Meter System Findings

- Old water meters may be inaccurate and are labor intensive to read.
- Water meters do not exist in some areas of the Village.
- One of the master meters to Districts 2 and 3 may not be needed.

Meter System Recommendations

- Install radio meters that can be read remotely.
- Place meters where they don't exist such as on Park Street Extension.
- Consider eliminating one of the two master meters to Water Districts 2 and 3.

Water Service Lateral Findings

- Most service laterals between the main and house are copper and galvanized steel.
- Lead services may exist that should be replaced.

Water Service Lateral Recommendations

- Replace lead services that are encountered during main replacements.
- Check for lead services during a meter replacement project.
- Plan for lead service replacement if they still exist.

River Crossing Findings

- Village water mains cross the Chenango River in two locations.
- The crossing between Cherry Street and N. Chenango is cast iron pipe installed in 1908.

River Crossing Recommendations

- Replace the northern crossing to maintain two redundant connections between the water wells and the Village system.

Proactive Infrastructure Planning

- The opinion of cost for priority infrastructure improvements is $19,720,000.
- The Village was awarded a $9 million grant and a 38-year loan at 2.125% interest from the USDA.
- The Village may qualify for more grants but future funds should not be counted on.

Proactive Infrastructure Planning

Option 1 – Do Something Now (Proactive)

- Implement improvements with the $9 million USDA grant and low interest loan while pursuing additional grants, and working to reduce project costs where possible.

Current Estimated Project Cost	$20 Million
USDA Grant Funding Award	$8.955 Million
Total Units (EDU's)	1,048.50
Annual Financing Cost Per Unit	$405.50
Current Annual Water Operation and Maintenance Cost	$141.00 Per Unit
Projected Annual Cost	$546.50 Per Unit*
* Does not include grants that might be obtained	

Proactive Infrastructure Planning

Option 2 – Do Something Later (Reactive)

- Defer projects for 10 years and make repairs with market rate financing for 30 years. Assume 2% annual inflation and 5% interest. Assume inflation and water main breaks will not increase current operation and maintenance cost.

2034 Estimated Project Cost	$26.9 Million
Estimated Units / EDUs (Assume ~2% growth/yr)	1,278 Total Units
Annual Financing Cost	$1,335.00 Per Unit
Assumed Operation and Maintenance Cost*	$141 Per unit*
Projected Future Water Rent*	$1,335.50 Per Unit*
* Assumes current rates will somehow be maintained without increase for inflation and more frequent water main breaks	

Proactive Vs Reactive Summary

Option 1 – Do Something Now With Grant Commitments

2024 Estimated Project Cost	$20 Million
USDA Grant Funding Award	$8.955 Million
Total Units / EDU's	1,048.50 Total Units
Annual Financing Cost Without USDA Grant	$405.50 Per Unit

Option 2 – Do Something Later – Assumed Without Grants

2034 Estimated Project Cost	$26.9 Million
Estimated Units / EDUs (Assume ~2% growth/yr)	1,278 Total Units
Annual Market Rate Financing Cost	$1,335.00 Per Unit

Can The Village Seek More Grants?

YES – But additional grant awards cannot be relied upon.

- The $9 million USDA grant award is one of the largest ever received in New York. If not used funds will be transferred to another community.
- Additional funding may be available in the future through a variety of programs. Applications are enhanced with "shovel ready" projects.

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