

TOWN OF TUSTEN,

SULLIVAN COUNTY, NEW YORK

NARROWSBURG WATER SYSTEM IMPROVEMENTS PROJECT MAP, PLAN, & REPORT

PREPARED FOR:

TOWN OF TUSTEN, NY

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PREPARED BY:



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JULY 13, 2020



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- Figure 1** **Narrowsburg Water District Map**
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Figure 3 **Proposed Water System Improvements Map**

1.0 INTRODUCTION

This Map, Plan, and Report (MPR) has been prepared as required by, and in accordance with New York State Town Law 202b, and is intended to assist Town officials and residents in evaluating the public benefit of a project that will make improvements to the water system serving the Narrowsburg Water District. Completion of an MPR is required whenever a town resolves to undertake a project to improve, reconstruct, or expand existing facilities and appurtenances on behalf of a water district.

The water district was created in 1925. Upgrades and expansions to the district have occurred at intervals since then. However, many of the existing water district components are aging and in need of repair or replacement. A comprehensive project of improvements to water district facilities is recommended to ensure the continued supply of potable water to district users.

Funding for this improvement project has not yet been secured. The Town intends to apply for funding through the New York State Environmental Facilities Corporation (NYSEFC) Drinking Water State Revolving Fund (DWSRF). Additionally, the Town will submit a grant application to the NYS Water Grant program authorized through the Water Infrastructure Improvement Act (WIIA). Additional funding sources may be explored, depending upon the level of success of the above-mentioned funding applications and the availability of other relevant funding sources.

1.1 Project Background

The Town of Tusten, located in Sullivan County, New York, owns and operates a public water system that delivers potable water to approximately 500 Town residents in the Hamlet of Narrowsburg.

The Town of Tusten is located in western Sullivan County. The Town of Tusten shares borders with the Towns of Cochection, Bethel, and Highland. The Town covers an area of approximately 48.8 square miles.

The Town of Tusten encompasses several hamlets, including the Hamlet of Narrowsburg, within which the subject public water system is located. The Hamlet is on the western side of the Town. Narrowsburg's western border is the Delaware River, and is also the border between the States of New York and Pennsylvania. The Hamlet is located near the intersection of NYS Routes 52 and 97.

The Narrowsburg Water District is located within the Hamlet of Narrowsburg. A map showing the Hamlet and the current limits of the water district is included as **Figure 1**. All existing water district components are located within the current district boundaries. No changes to the boundaries of the water district are proposed as a part of this project.

The water system is regulated by the New York State Department of Health (NYSDOH) and the Delaware River Basin Commission (DRBC). Groundwater withdrawal by the system's wells is conducted under DRBC Docket No. D-1992-081 CP-3. The Docket regulates the volume of groundwater that may be drawn on a monthly basis. The current groundwater withdrawal allocation is 4.24 million gallons per month.

1.2 Reasons for the Project

The Narrowsburg water system is in need of improvements. Components of the system are aging, undersized, or outdated. The system is in need of improved operability and control. Other issues exist in the system that would also necessitate improvements. The needs of the existing water system are described below in detail.

- 1) The water storage tank has been in use for over 70 years and is in need of major repairs or replacement. In-tank mixing equipment should be added to prevent stratification and preserve the quality of water stored in the tank. Water level sensors should be incorporated into the tank to improve the ability of water operators to effectively and efficiently control the system.
- 2) Water pressure is a concern within the system, particularly for users along NYS Route 97 on the south-eastern portion of the district. Water pressure in this portion of the district has been measured to be below the recommended minimum level set forth in pertinent water system standards (i.e. Ten States Standards).
- 3) The well houses are in good condition but are in need of improvements. None of the well houses currently have permanent emergency power generators, which would insure continued water system operation during a power outage. Gaseous chlorine is currently used to disinfect the water before it is introduced into the system. However, there is currently no equipment installed at any of the well houses that would sense a chlorine gas leak and alert water operators of the issue before they entered the well houses. Additionally, it is recommended that equipment be installed that would allow the wells to be operated automatically based on the water level of the storage tank, to increase the efficiency of system operations.
- 4) The water district's system of distribution water mains is made up of approximately 38,900 feet of pipe of varying age, size, and material. Some water mains are dead end lines, which may impact water pressure and water quality along those lines. Some water mains are buried abnormally deep (up to 25 feet below grade) which causes repairs and maintenance of those lines to be extremely difficult and costly. Some water mains are undersized for current levels of use and design standards. Additionally, some sections of water main are aging (some as old as 95 years), making water main breaks and leaks increasingly likely.

- 5) Many of the system's fire hydrants and water valves are aging and have limited or no operability. Additionally, there are too few water valves in portions of the district to allow easy and efficient repair or maintenance work to be performed with minimal interruption of service to water system users.
- 6) Water loss is a major concern in the district. The difference in the amount of water produced by the wells and the total amount recorded by the water meters of district users is significant. A concerted effort to locate and eliminate sources of water loss could improve the efficiency of the water system and decrease operation costs considerably.

To address these conditions, the Town is proposing a comprehensive water system improvement project with an estimated capital project cost of **\$7.5 million**.

2.0 DISTRICT BOUNDARY DESCRIPTION

The Town of Tusten owns, operates, and maintains the Narrowsburg Water District. **Figure 1** shows the boundary of the water district, as well as the boundary of the Hamlet of Narrowsburg. The water district currently covers an area of approximately 444.5 acres. The district currently includes approximately 410 property parcels, and has approximately 340 active service accounts.

There will be no immediate expansion of the existing district boundary resulting from this project and all properties currently included in the district will remain within the district.

3.0 DESCRIPTION OF EXISTING WATER SYSTEM

The Narrowsburg Water District is a public water system that supplies potable water to Town residents within the Hamlet of Narrowsburg. The system may be viewed as being made up of three major components: supply, storage, and distribution.

The system is supplied by ground water pumped from wells. The system currently includes three wells, two of which are currently in regular operation. The wells are located on Delaware Drive, Second Street, and NYS Route 97. The three wells vary in age, depth, and pump capacity. The active wells utilize gaseous chlorine to disinfect the ground water before it enters the system.

Water storage is provided by a wax-lined steel tank located between Hilltop Lane and Bridge Street. The volume of the tank is approximately 200,000 gallons. The tank was constructed in the 1940s, and is over 70 years old.

From the wells and water storage tank, water is distributed throughout the water district by a system of water mains. The existing water main network is made up of pipes of varying age,

size, and material. Water mains currently exist on most of the streets within the district. From the water mains, water flows through approximately 340 service connections to be used by water system customers.



*Map of Existing Narrowsburg Distribution System (See Also **Figure 2**)*

4.0 GENERAL PLAN OF IMPROVEMENTS

The following is a summary of the proposed project improvements. These improvements were considered to meet the needs of the system, address system issues, replace aging infrastructure, and allow the system to continue providing water to all system users. The current proposed layout of these improvements and additions is shown on **Figure 3 – Proposed System Improvements Map**.

Improvements will occur within the current district limits, and most will occur within previously disturbed areas (i.e. within existing roadways, within existing well-house buildings, etc.).

The following is a list of proposed water system improvements under consideration as a part of this project:

1. Replacement of Existing Water Storage Tank: Includes installation of a new 250,000-gallon glass-lined steel water storage tank, including new level sensors and control systems to improve the system's operation. It is anticipated that the new water storage tank will be installed on the same property as the existing tank, although the Town may consider relocating the tank to a more advantageous location, if such a site is located during design of the project.
2. Installation of a New Booster Pump Station: Involves construction of a new booster pump station on NYS Route 97, on the site of well house #3.
3. Well #1 Improvements: Includes upgrades and improvements to the existing well house (including chemical feed, chlorine gas detection, instrumentation, flow measuring equipment, and building improvements), and installation of a new emergency power generator at well house #1.
4. Well #3 Improvements: Includes upgrades and improvements to the existing well house (including chemical feed, chlorine gas detection, instrumentation, flow measuring equipment, and building improvements), and installation of a new emergency power generator at well house #3.
5. Installation of New Permanent Automatic Flushing Stations: Includes installation of up to 4 new permanent auto-flushing stations throughout the distribution system.
6. Replacement of Existing Hydrants: Involves replacement of up to 55 existing fire hydrants.
7. Replacement of Existing Water Valves: Involves replacement of up to 47 existing water valves.
8. Replacement of Deep-Buried Water Mains: Involves replacement of up to 2,400 feet of existing mains that are buried far enough below grade to be prohibitive to repairs.
9. Well #2 Improvements: Includes upgrades and improvements to the existing well house (including chemical feed, chlorine gas detection, instrumentation, flow measuring equipment, and building improvements), and installation of a new emergency power generator at well house #2.
10. Installation of Additional New Fire Hydrants: Includes installation of up to 4 new fire hydrants.
11. Installation of Additional New Water Valves: Includes installation of up to 27 new water valves.
12. Replacement of Existing Water Mains of 4" Diameter or Smaller: Involves replacement of up to 12,445 feet of undersized distribution water main.
13. Installation of New Water Mains to Eliminate Dead Ends: Involves installation of up to 6,800 feet of new water main to eliminate dead ends in the system, and help to better serve portions of the district.
14. Replacement of All Other Existing Water Mains: Involves replacement of up to 24,055 feet of aging distribution water main.

See **Figure 3** for a map showing the location of all considered improvements. The final project scope may be altered depending upon the final project budget and the level of funding assistance to Town receives for this project.

5.0 PROPOSED DISTRICT OPERATIONS

The Town of Tusten Water and Sewer Department oversees day to day operations, maintenance, and administration for the Narrowsburg Water District (as well as the Narrowsburg Sewer District and Wastewater Treatment Facility). The department is managed by the superintendent, with support provided by three additional water and sewer operators and by the water and sewer clerk.

It is anticipated that no additional personnel will be required to operate or maintain the system once the improvements are complete. The ease of system operation is expected to increase as a result of the project improvements. As such, the department staffing is anticipated to remain at its current level.

6.0 STATEMENT OF REGULATORY REVIEW AND APPROVALS REQUIRED PRIOR TO CONSTRUCTION

It is anticipated that regulatory review of the engineering report, and subsequent design documents, will be conducted by the NYS Department of Health and the NYS Environmental Facilities Corporation. Review and approval by these agencies will be necessary before construction of this project may begin.

Plans will also be submitted to the Delaware River Basin Commission (DRBC), a regional water resource management consortium made up of four states. The DRBC coordinates with state and local governments on water and wastewater projects throughout the Delaware River region. Coordination with the U.S. Army Corps of Engineers may also be required, depending on final project scope.

Because this action will require the discretionary approval of multiple governmental and quasi-governmental agencies, New York State requires the completion of State Environmental Quality Review (SEQR), coordinated with all involved and potentially involved agencies. The SEQR process is scheduled to be initiated at the July 14th meeting of the Tusten Town Board, at which time the Board is expected to declare their intent to serve as lead agency for the review process. The project is expected to be defined as an Unlisted Action.

7.0 MAXIMUM AMOUNT TO BE EXPENDED

At this point, the maximum amount of capital the Town plans to expend due to this project is \$7.5 Million. The actual project budget will be dependent upon the level of funding assistance the Town receives for this project.

8.0 COST OF HOOK-UP FEES CHARGED BY THE DISTRICT

The Town intends to continue using its current policy regarding water system hook-up fees. As provided for in the Town Law, §264-4 – *Fees*, the Town reserves the right to modify this policy in the future.

9.0 EXPLANATION OF CURRENT WATER RATE ASSESMENT

The water system user rates for the Narrowsburg Water District are currently computed by a mixture of water usage and demand units assigned to each account. Demand units are assigned based on the use of the property associated with the account. User rates are determined quarterly. The minimum rate is \$35.60 for the first 9,125 gallons used per quarter. The next 82,125 gallons are billed at a rate of \$3.90 per thousand gallons. Any water usage thereafter is billed at \$3.15 per thousand gallons. Any water use charges are then multiplied by the number of demand units associated with the water account. Additional charges and fees may be applied for additional water department services.

Current water rates are applied towards paying for the operation and maintenance costs of the district. The district does not currently have any capital costs or debt repayment. A capital charge is not currently applied to user rates.

9.1 Operations and Maintenance (O & M)

The planned improvements primarily entail the replacement of existing equipment. New electrical, control, and sensory equipment is proposed for installation at the new water storage tank, new booster pump station, and three existing well houses. The booster pumps will require energy to run, and the pump station building will require lighting. New mixing equipment is also proposed for the new water storage tank. Additional O & M costs associated with this project are primarily the result of increased energy usage required to power this equipment.

It should be noted that the proposed project should increase the efficiency of the operation of the system. Additionally, throughout the completion of the proposed project, it is likely that leaks

and other potential sources of water loss may be found and corrected. In the long term, the project may result in a net decrease to O & M costs if water loss is significantly reduced.

9.2 Debt Service

The Town currently has not debt to repay. In the past, a capital charge had been applied to water rates, but that charge has been discontinued by the Town. The Town will likely elect to reinstitute a capital charge to the owners of all real property within the water district.

Another method might be to base the capital charge on each property's currently assessed demand units, with a separate methodology for properties not currently associated with an active water account.

Alternately, the current usage-based charge might be increased to a level that would allow sufficient funds to be levied for the payment of annual financing costs. This is the most unreliable option, because if water usage were to be too low during a given period, it might not be possible to collect sufficient funds for debt service repayment.

As described in the Town Law, §264-4 – Fees, “Water District rates and assessments shall be determined and set as needed by the Tusten Town Board.”

10.0 COST TO AN AVERAGE WATER DISTRICT PROPERTY

The estimated rate impact to an average water system user is projected to be as follows:

2020 Water Rates		
	Total Annual Water District Costs:	Average Annual User Cost
Annual O&M Cost:	\$195,580.00	\$210.80
Annual Debt Service:	\$0.00	\$0.00
Total:	\$195,580.00	\$210.80

Estimated Future Water Rates		
	Total Annual Water District Costs:	Average User Cost
Annual O&M Cost:	\$195,580.00	\$210.80
Annual Debt Service:	\$200,200.00	\$489.49
Total:	\$395,780.86	\$700.29

The above costs and rate impacts are based on the current number of properties within the district, 2020 Sewer Rates, a \$7.5 million project budget, and subsidized financing from

NYSEFC (assumed 2% interest rate) with a 60% WIIA grant (maximum of \$3 million). If an alternate funding scenario is awarded, or the final project budget is different, the costs and rates listed above will vary.

The current median annual water rate for single-family residential water accounts within the district is \$142.40. Assuming the above-described future rates, the median annual water rate for single-family residential water accounts will be \$631.89. Relative to the water district's current estimated median household income (MHI) of \$46,000 per year, the new annual water rate for residential properties would be approximately 1.4% of the MHI.

Water use is currently billed quarterly. Based on the above-described rates, the quarterly water bill for a typical single-family residential water account would likely be approximately \$157.97.

11.0 METHOD OF FINANCE

At this time, the Town does not have any significant capital fund to use for this project and has not yet received any funding offers. As such, the Town is seeking funding through NYSEFC's DWSRF program, which may provide interest-free financing or financing at a subsidized interest rate for water system infrastructure improvement projects. Both short- and long-term financing may be available through DWSRF.

Additionally, grant financing will be sought through NYSEFC's water grant program under the Water Infrastructure Improvement Act (WIIA). Other sources of funding may also be available, and may be pursued, depending upon program requirements and project eligibility.

12.0 STATEMENT AS TO BENEFIT ASSESSMENT

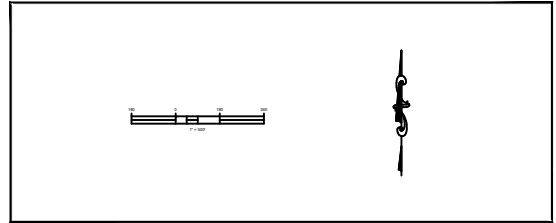
At this time, it is anticipated that the costs associated with the debt service from the bond that is planned to be secured to finance the above-described water system improvements, and any associated increases in O & M costs, will be charged on a benefit basis. That is to say, each holder of real property within the water district that will or may benefit from the project will be levied a share of those costs, in accordance with the current Town Code and/or water use agreements.

FIGURES



- Figure 1** Town of Tusten Water District Map
- Figure 2** Existing Water System Component Inventory Map
- Figure 3** Proposed Water System Improvements Map

FIGURE 1

Town of Tusten Water District Map



LEGEND:

	NARROWSBURG WATER DISTRICT BOUNDARY
	HAMLET OF NARROWSBURG BOUNDARY

DATE: 7/10/20
 DRAWN BY: JG
 SCALE: AS SHOWN
 REVIEWED BY: DRO
 PROJECT NO.:
 FILE:

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REVISIONS

NO.	DATE	DESCRIPTION

TOWN OF TUSTEN
 NARROWSBURG WATER
 DISTRICT IMPROVEMENTS
 SULLIVAN COUNTY, NEW YORK

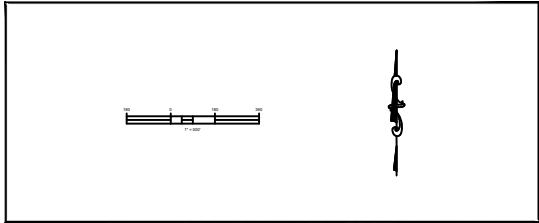
NARROWSBURG WATER
 DISTRICT MAP

SHEET:
FIG-1

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FIGURE 2

Existing Water System Component Inventory Map



LEGEND:

<u>EXISTING WATER LINES:</u>	
	PLASTIC
	1-1/2" PLASTIC
	2" PLASTIC
	3" PLASTIC
	4" PLASTIC
	4"
	6"
	8"
	OUT OF SERVICE
<u>EXISTING WATER SYSTEM STRUCTURES:</u>	
	WATER VALVE
	HYDRANT
	WELLS
	WATER STORAGE TANK



DATE: 7/10/20
 DRAWN BY: JG
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REVISIONS	
NO.	DESCRIPTION

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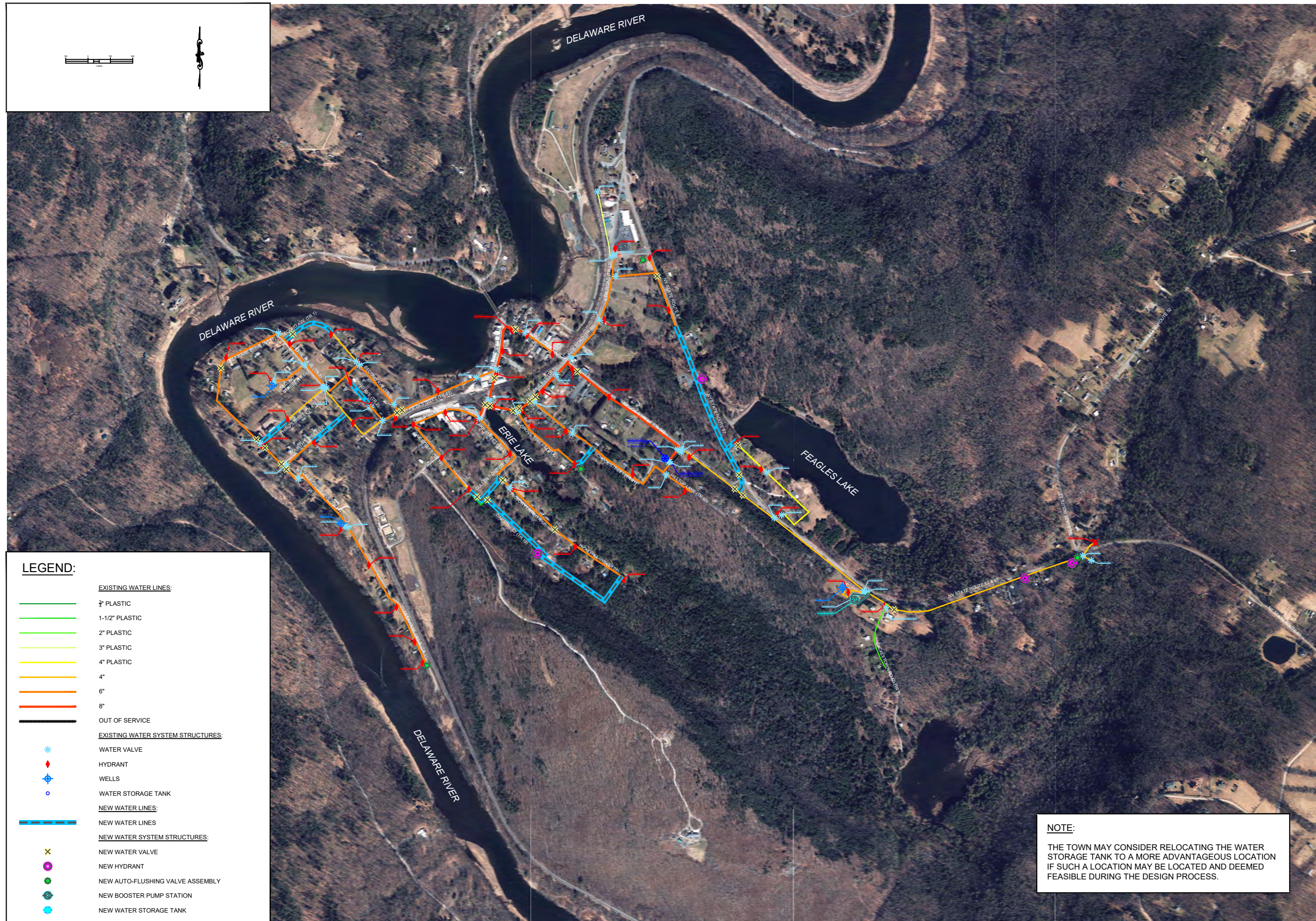
EXISTING WATER SYSTEM
 COMPONENT INVENTORY MAP

SHEET:
FIG-2

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FIGURE 3

Proposed Water System Improvements Map



LEGEND:

- EXISTING WATER LINES:
- 1-1/2" PLASTIC
 - 2" PLASTIC
 - 3" PLASTIC
 - 4" PLASTIC
 - 6"
 - 8"
 - OUT OF SERVICE
- EXISTING WATER SYSTEM STRUCTURES:
- * WATER VALVE
 - ♦ HYDRANT
 - + WELLS
 - o WATER STORAGE TANK
- NEW WATER LINES:
- NEW WATER LINES
- NEW WATER SYSTEM STRUCTURES:
- x NEW WATER VALVE
 - o NEW HYDRANT
 - + NEW AUTO-FLUSHING VALVE ASSEMBLY
 - + NEW BOOSTER PUMP STATION
 - o NEW WATER STORAGE TANK

NOTE:
 THE TOWN MAY CONSIDER RELOCATING THE WATER STORAGE TANK TO A MORE ADVANTAGEOUS LOCATION IF SUCH A LOCATION MAY BE LOCATED AND DEEMED FEASIBLE DURING THE DESIGN PROCESS.

DATE: 7/10/20
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 REVIEWED BY: DRO
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REVISIONS	
NO.	DESCRIPTION

TOWN OF TUSTEN
 NARROWSBURG WATER
 DISTRICT IMPROVEMENTS
 SULLIVAN COUNTY, NEW YORK

PROPOSED WATER SYSTEM
 IMPROVEMENTS MAP

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