

# Hopedale, MA Water Storage Tank Project Narrative

## Background

The Capital Improvement Plan completed in 2011 highlighted the need for another storage tank in Hopedale's water distribution system. A study was completed in 2021 to evaluate the town's existing storage capacity and deficiencies. Currently, there is one water storage tank in the Hopedale water distribution system that provides fire flow, equalization, and emergency storage. The existing tank, the William Street Standpipe, is a 0.846 MG welded steel tank, constructed in about 1968. Figure 1 below shows the existing and proposed water storage tank locations.

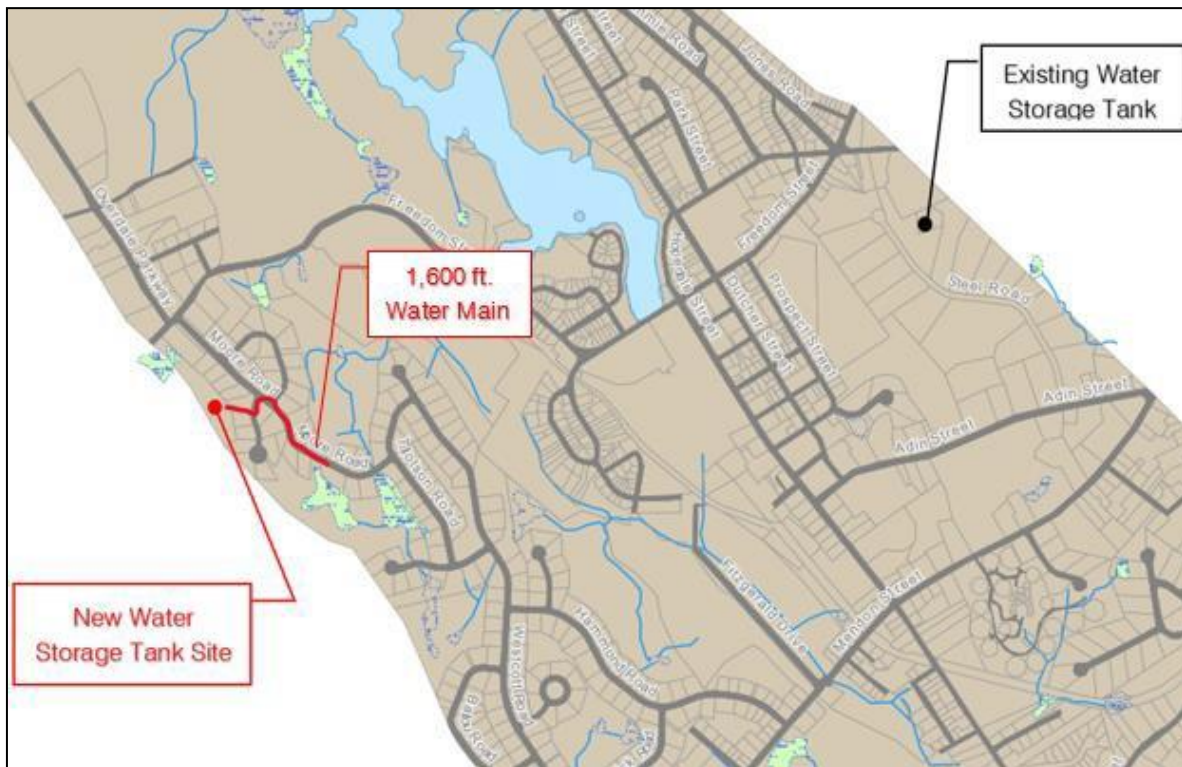


Figure 1: Project area.

The 2021 Tank Evaluation Report found the William Street Standpipe has a deficiency in volume of water that can be stored while still providing 20 psi to the highest point in the water system. Approximately 0.36 MG are stored above the level which could provide 20 psi to the highest point in the system. The 2021 evaluation determined that the estimated required storage is about 0.74 MG, therefore, the existing deficit is approximately 0.38 MG.

A second tank would not only provide the required storage, making up for the previously calculated deficit, but would provide additional redundancy in storage above 20 psi. A second tank also provides additional equalization storage, or the natural fluctuation of water

level in the tank, which is especially important for smaller systems to help maintain stable water pressures, especially during high demand periods. The added storage is greatly needed to offset the high demand periods due to one the Town's well being deactivated due to elevated levels of PFAS which the Town is also in progress of a PFAS treatment removal addition to the existing treatment plant.

*Design:*

The site for the new water storage tank was chosen primarily based on the ground elevation. The higher the site ground elevation, the shorter the tank needs to be. The 2021 Tank Evaluation Report compared 14 tank sites for elevation and ownership. The chosen site was already owned by the Town and had a relatively high ground elevation making a standpipe type tank the ideal choice.

The 2021 Tank Evaluation Report also compared tank options with regard to the site elevation and available space for construction. It explained the different materials that could be used to construct a water storage tank of various heights: welded steel, concrete, and glass fused-to-steel (GFS). A lifecycle cost analysis was recently completed for these three types of tanks. Figures 2 and 3 below show a GFS and concrete standpipe water storage tank, respectively.



Figure 2: Weston & Sampson GFS standpipe tank project.



Figure 3: Weston & Sampson prestressed concrete standpipe tank project.

### Project Scope

The proposed standpipe water storage tank scope of work will include the necessary excavation, foundation, and site work, construction of the new tank and appurtenances, and miscellaneous electrical and instrumentation work, as will be shown and called out in the contract drawings. Bringing electricity to the site is required to power an in-tank mechanical mixer and lighting (also to be provided under this project). Instrumentation and communication equipment will be included to allow the necessary tank information, such as water level, to be visible in the Town's SCADA. Part time resident representative engineering services are proposed for during tank construction.

The water main project scope of work will include all necessary excavation and appurtenances. Gate valves will be installed as necessary to isolate the tank or sections of water main. Fire hydrants will be installed as necessary along the proposed water main route. Full time resident representative engineering services are proposed for during water main construction.

The project scope also includes engineering design, bidding, construction administration, and resident representative services.

*Deliverables:*

Two separate construction contracts are proposed: one for the tank and one for the water main work. The deliverables for each contract will include two complete bid packages with the following components:

- Details
- Plans with surveyed base map
- Specification Package

The construction of the proposed water storage tank and water main will provide the town of Hopedale with a fully functioning, communicating tank that can be operated similarly to the existing storage tank. Engineering services will facilitate coordination with the contractors, between the two contracts.

Project Management and Engineering Services

Upon award of each contract, the contractors will submit shop drawings for approval prior to ordering the materials and equipment to be installed. The engineer will review and comment on the shop drawings prior to approval to help ensure quality control and design function.

A preconstruction meeting will be held prior to the start of construction. At this meeting, the engineer will review pertinent project management information with the contractor(s) and the Town will provide input, as necessary. Topics will include health and safety, acceptable work hours, and chain of communication, among other items. Typically decisions are made at this time, such as how often pay requests will be submitted by the contractors.

The resident representative will provide oversight during construction of the projects to confirm project status and quantities for pay requests. The engineer will review the contractor's pay request in a timely manner and communicate directly with the contractor if revisions are necessary, prior to submittal to the Town for processing. The required federal funding reporting forms will be prepared based on received pay requests from the contractor and engineering services invoices.

Milestone Schedule

The dates below are tentative and subject to change based on unanticipated delays.



## Environmental/Public Health Impact

Design of the tank considers water quality and what measures can be taken to support the EPA's FY2022 – FY2026 Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities. The proposed tank will provide additional emergency storage and redundant fire flow storage or storage above the level required to provide 20 psi everywhere in the system, which may allow for a greater rate of turn-over in the existing tank. An in-tank mechanical mixer has been included in the contract documents to improve water quality within the distribution system by preventing stagnation of water in the new storage tank. This equipment utilizes low horsepower to minimize operational electricity usage. Attached with the application packet is the NEPA review and CATEX forms which show the tank has a very low environmental impact.

