Project Photos:

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Belchertown, MA
Project Title: Enhancing Water Supply Reliability: Resilient Water Storage and Water Conservation - Design and Implementation
Award Year (FY): FY21
Grant Award: $ 699,706.25
Match: $ 1,821,889.83
Match Source: Town Funds
One or Two Year Project: Two Year Project
Municipal Department Leading Project: Town Administrator and Belchertown Water District
Project Website URL:
https://www.belchertown.org/conservation/climate_change__vulnerability_and_resilience.php

Community Overview:

Belchertown is a town in Hampshire County, Massachusetts. Belchertown is a part of the Springfield, Massachusetts Metropolitan Area with a population of approximately 14,650. The town has a total area of 55.4 square miles, of which 52.7 square miles is land and 2.6 square miles is water. Belchertown lies along the western banks of the western branch of the Quabbin Reservoir, with the lands around that water being part of the Quabbin Reservation. The town is hilly north of the town center, the hills forming part of the former Swift River Valley, with most of the rest of the town being relatively slowly sloping plains, spotted with plenty of meadow lands. Along the Swift River, which forms the eastern border of the Town, lies the Herman Covey – Swift River Wildlife Management Area. Several other brooks and ponds dot the Town's landscape, with some marshy lands lying along the Broad Brook.

Extreme weather and natural and climate-related hazards are an increasing concern for the communities of Massachusetts, and there is a clear need to involve municipalities, corporations, organizations, and the State in increasing resilience at all levels. Recent storm events affecting the region have highlighted many of the vulnerabilities that towns and cities face. Hurricane Irene and Superstorm Sandy brought intense flooding to many municipalities and threatened (or destroyed) infrastructure across the state. Extreme temperatures at both ends of the spectrum have pushed the limits of communities' preparedness to protect both infrastructure and people.

Project Description and Goals:

The project goal was to replace the existing Park Street water storage tank. The existing 100,000-gallon multicolumn water storage tank was 100 plus years old, undersized, structurally deficient and could not withstand a design wind speed of 95 mph and 1-inch of ice loading. The replacement tank is a larger 250,000-gallon water storage tank designed and permitted to enhance resilience and water system reliability. Additionally, the parking lot and site was refurbished to include green infrastructure (pervious pavers and rain garden).

Project Photos:

Aerial View – Aerial View of Existing Park Street Water Storage Tank

The construction included the following major elements:

Site improvements, piping modifications, demolition of the existing water storage tank and moving of the cellular services to a temporary stanchion, and the erection of the new water storage tank. Green infrastructure including a rain garden, pervious pavers, and pervious surface beneath the tank.

The Tank was brought before the Planning & Zoning Commission as well as the Historic Preservation Committee to review the Tank options available, the Color of the Tank that will be provided and review aspects of the overall project including fencing, Cellular antennas and the Tank's use for the Town's Fire Department for radio signals.

The Planning and Zoning Commission reviewed the application which included a variance for the new larger tank which included green infrastructure elements including an updated rain garden, pervious pavers to reduce the impervious area around the tank and upgraded piping, valves fittings and services. The Tank was also brought before the Historic District By Law Commission to review Tank type given the area is within the Town's historic district. Types of Tank were discussed and renderings were provided for the Committee and the public to review. After viewing the options available, the site improvements and the colors that could be used, the Multicolumn elevated tank similar to the existing tank in a white color and with fencing around the cellular equipment was selected by the Committee and the Planning and Zoning Commission for approvale and installation.

Results and Deliverables:

The completed construction of the Park Street Water Storage Tank Replacement Project provides enhanced resiliency and water system reliability to the Belchertown Water District. In addition, site improvements and the installation of green infrastructure including pervious pavers and a rain garden were completed.

A copy of the record drawings and project manual have been submitted as part of the MVP Progress Reporting for this grant. The record drawings and project manual have also been provided to the Town.

Project Photos:

Lessons Learned:

The Park Street site was very confined, with a cemetery to the Northeast and the "Old Town Hall" and Church to the Northwest and West. The limited space of the site left little room for construction when the existing tank was in place. The Town of Belchertown had a second tank that was able to support the system during the construction process and the unexpected lengthening of construction time due to the COVID-19 pandemic. This allowed the existing tank to be eliminated from the site and enhanced the space available for construction.

Partners and Other Support:

The following partners were involved throughout the construction and completion of the project.

- Kevin Williams - Superintendent of Belchertown Water District
- Gary Brougham – Town Administrator
- JL Construction Corporation – General Contractor
- Pittsburg Tank and Tower Group – Water Tank Contractor

Fuss & O'Neill – Engineering Consultant Team

- Kevin M. Flood, PE, Project Manager
- Doug Brisee, PE, Engineering Design
- Walter Dylag, EIT, Engineering Design
- Erik Mas, PE, Green Infrastructure Engineering Design

Project Photos:

Tank Demolition of the Existing 100,000-gallon tank

Project Photos:

Rain Garden

Pervious Pavers

Project Photos:

Completed Storage Tank