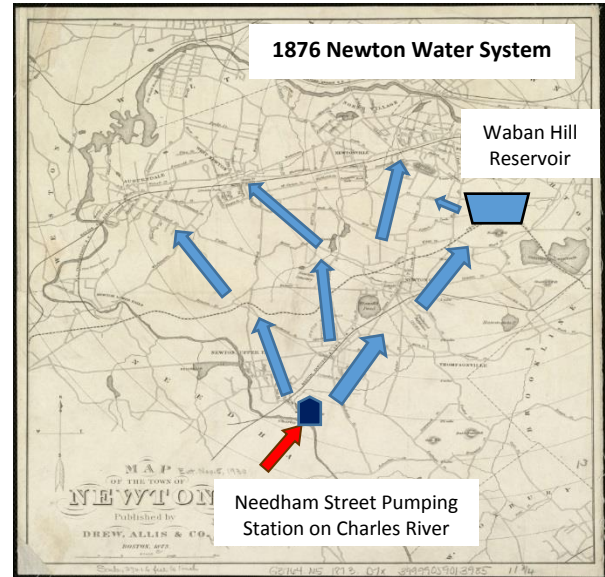
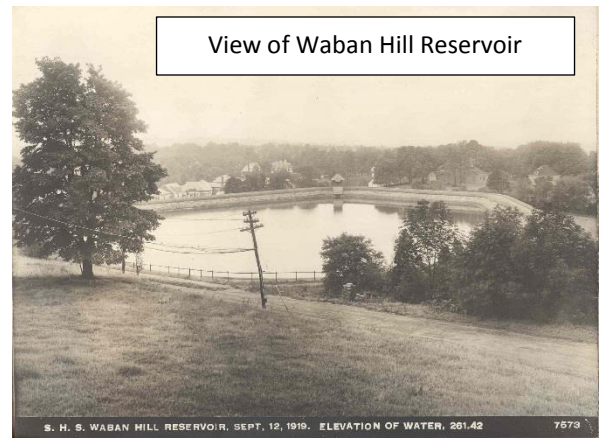
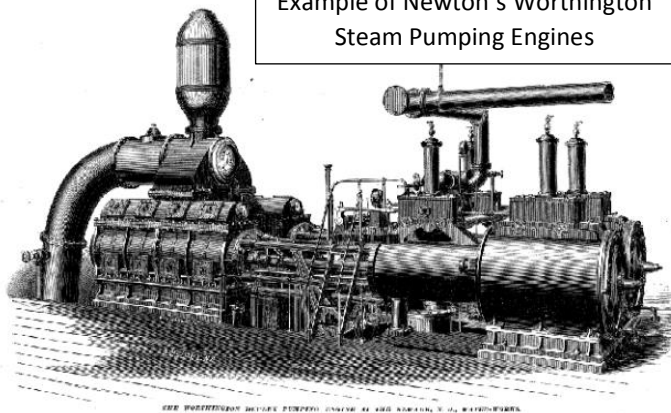


The beginnings – Newton builds its water system in 1876

After incorporating as a City in 1873, Newton began building a water supply to supply all villages from a source adjacent to the Charles River at Needham Street. The water would be collected from infiltration galleries adjacent to the river in Needham and pumped by coal fired steam engines across the city. To allow for pumping shutdowns and fire protection, an open water storage reservoir was built on Waban Hill near the village of Chestnut Hill.



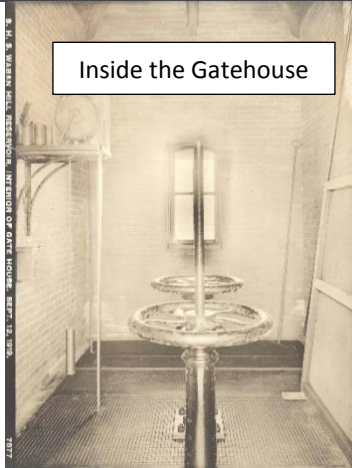
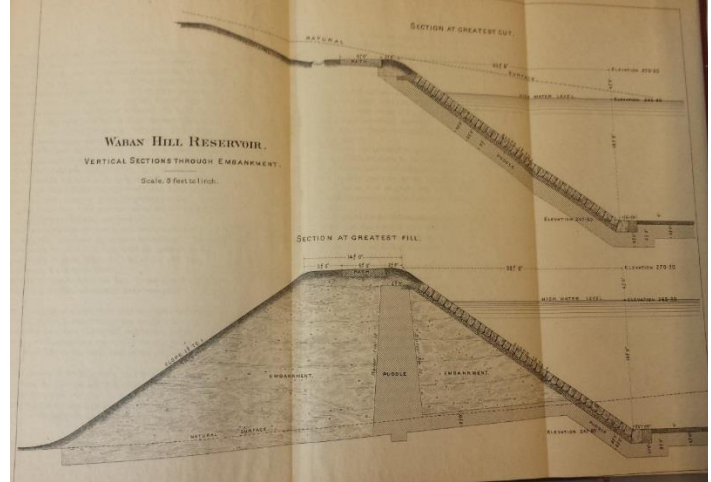
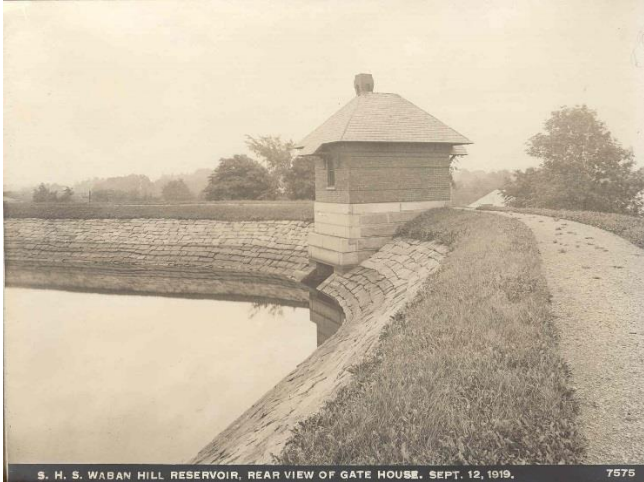
Example of Newton's Worthington Steam Pumping Engines



Engineers and Designers of the Newton Water Works and Waban Hill Reservoir

The engineering design of the 1876 system, including the Waban Hill Reservoir, was done by Moses Lowe and Frederick Schaff. The architect of the pumping station was Charles E. Parker. The Waban Hill Reservoir was designed to be 15 million gallons capacity and the full elevation was approximately 290' above sea level. The 5 sided diamond shape of the reservoir was dictated by the topography of Waban

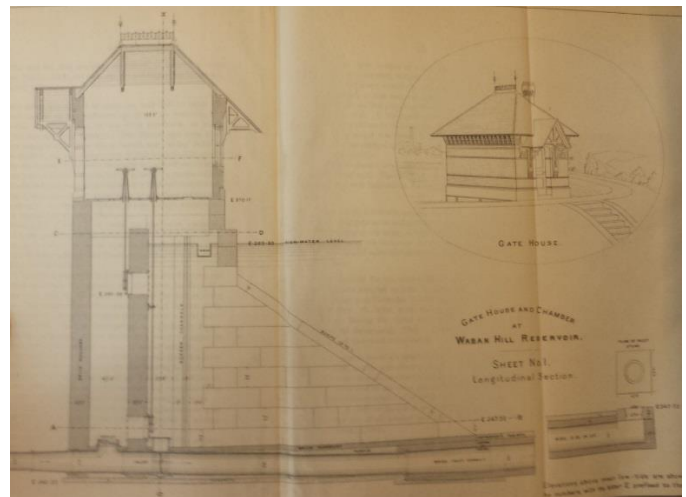
Hill. The reservoir was created by carving into the hill on the east side and using the excavated materials to build earthen berms with a watertight core wall along the north, west and south sides. The water side of the berm was lined with riprap to keep wave action from eroding the berm.



A gatehouse was added to house the inlet piping and sluice gates through which water flowed in and out. Note the original roof design which matched the pumping station design. The current flat roof was from a later rehabilitation.

The retirement of Waban Hill Reservoir from active water supply use by Newton

Starting from 1876, Newton began pumping and distributing water from its Charles River source. The elevation of Waban Hill Reservoir had been selected to be able to supply all villages without

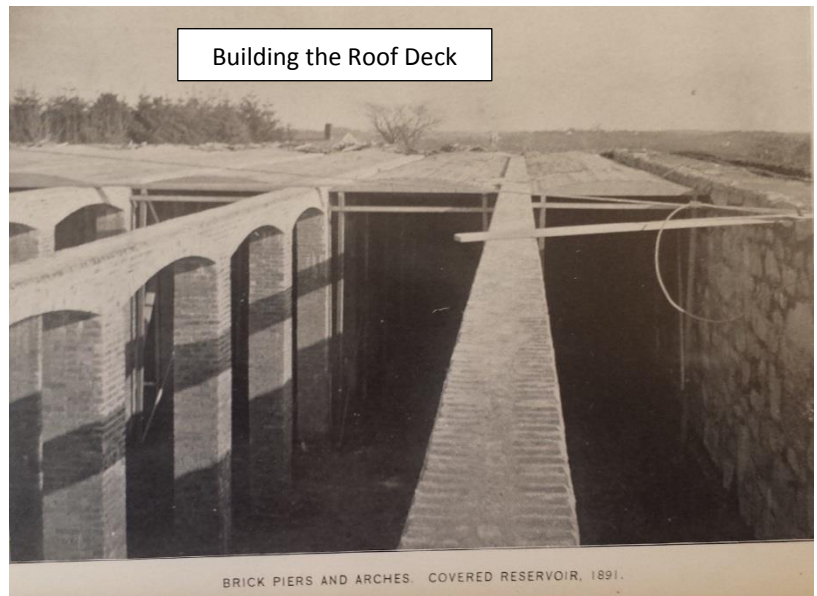
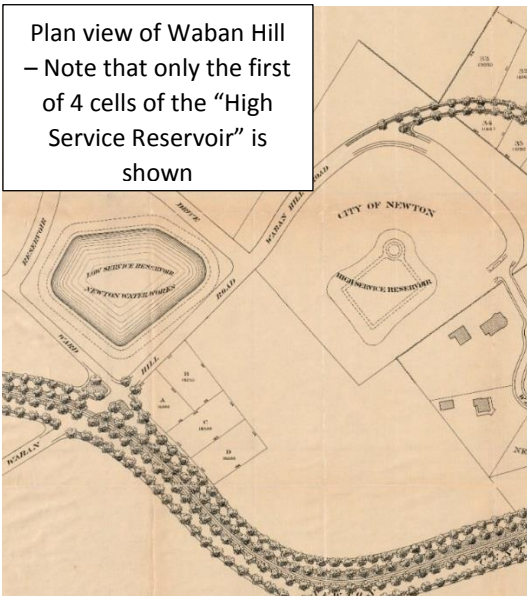


re-pumping but was soon found to be lacking in reaching some further high areas.

The other problem, especially during summer warm weather, was the water quality. In the style of the day, the Waban Hill reservoir was constructed as an open top reservoir, similar to those built earlier by Boston. The problem was that, even then, the Charles River water quality was different from the ponds and lakes used by others. It had a substantial amount of natural nutrients from its origins in the swampy upper Charles River area. The result was that this nutrient rich water, when stored in presence of sunlight at the open reservoir, would grow copious amounts of algae. That had a seriously deleterious effect, especially on consumer aesthetics such as taste and smell. A change was needed.

Newton's 1891 replacement reservoir

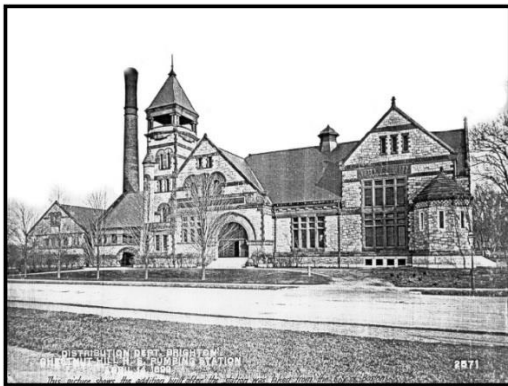
Newton decided to cure both the pressure and water quality problems at once by building a higher covered reservoir further up Waban Hill. This was referred to as the "High Service Reservoir" or the "Covered Reservoir" and once it was completed in 1891, it took over every day duties from the Waban Hill Reservoir. A central distribution chamber was built, then eventually all 4 cells were added to complete the 10 million gallon covered reservoir. Water quality and pressure problems were solved.



Fate of the Waban Hill Reservoir – 1900 Sale to the Metropolitan Water District

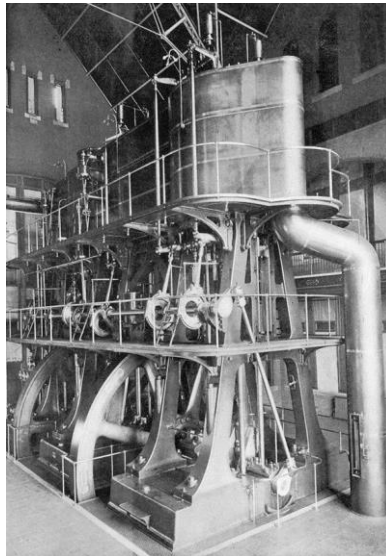
Metropolitan Water District was created in 1895 to serve Boston and about 20 other communities. Since it assumed control of Boston's sources and aqueducts, it was already well entrenched in the Chestnut Hill area with its aqueducts ending in the vicinity of the 1870 Chestnut Hill Reservoir and its 1887 pumping station delivering water southward. In 1898, Metropolitan Water District needed to extend service northward across the Charles River to Arlington, Belmont and Watertown as new customers. The MWD's Chestnut Hill Pumping Station could serve this role but a reservoir was needed in that direction and the logical choice was Waban Hill Reservoir. This worked for MWD since the reservoir was already at an appropriate elevation and since MWD water had much less nutrients with minimal expected operating problems.

Newton sold the reservoir to the MWD in 1900 for \$60,000 to be part of this system expansion. MWD quickly built pipes around the Chestnut Hill Reservoir up to Ward Street in Newton where they connected to the Waban Hill Gatehouse and then continued on to a Charles River crossing and connections to the three new communities. Thus, the Waban Hill Reservoir went back into everyday water service from 1900 until the 1930's when MWD built a more direct supply route for the area. From that point on, Waban Hill Reservoir was kept as an emergency backup, especially for Newton who, in 1921, built a small emergency pump station on the Woodlawn Drive side of the MWD reservoir to feed its "Covered Reservoir".



The High Service Pumping Station at Chestnut Hill. From the Metropolitan District Commission Photograph Collection.

MWD's Chestnut Hill Pumping Station (now home of the Metropolitan Waterworks Museum)



30 Million gallon per day "Allis Engine" that fed Waban Hill Res.



Waban Hill Reservoir elevation chart recorder

Disposition of the Waban Hill Reservoir by MWRA

The Metropolitan Water District eventually became the Massachusetts Water Resources Authority. The MWRA water system had built extensive tunnels to modernize its water system, which, when completed in the 1970's, meant that many older facilities like the Chestnut Hill Pumping Station could

be taken out of service. This did not end reliance on the older facilities for emergency use and that was the case with Waban Hill Reservoir. The MWRA kept the Waban Hill Reservoir as part of an emergency plan to respond to a failure of a tunnel which could impact the whole metropolitan area.

In recent years, MWRA made some internal piping improvements to support emergency operations, which made retention of the Waban Hill Reservoir unnecessary. MWRA then began the disposition process to allow Newton to open this attractive site for more direct public usage.



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Visit the Metropolitan Waterworks Museum, Historic Newton at Jackson Homestead, or consult additional research reports at:

www.HistoricNewton.org