

Engineering Amesbury: The Evolution of our Water Supply and Waste Water Systems

A Self-Guided Tour

Welcome!

Welcome to this self-guided tour of two of Amesbury's essential engineering systems – the water treatment plant and the wastewater treatment facility. The tour has been developed from the Amesbury Carriage Museum's interest in documenting the way Amesbury has evolved into a modern community. The water supply and wastewater treatment systems are so firmly established as part of our daily life that it is hard to imagine a time before they existed. And this is why the history of these systems is so important.

This tour document provides some basic information about existing features that are part of our water and wastewater infrastructure. The story is not complete – as our research and investigations continue, we hope to add more information to this history and develop new insights to Amesbury's industrial history and engineering heritage.

The tour was originally created in 2018 with support from Rob Desmarais, director of the Amesbury Department of Public Works, and the crews at both the water treatment plant and the wastewater treatment facility. The project was developed by ACM Executive Director John Mayer and the ACM's Industrial Survey Team –in particular with help from volunteers Mike Harrold and Tom Murphy.

Important Notes While Touring

Be respectful of private residences. Do not enter private property, block driveways or wander into private yards.

Use caution. Be mindful of traffic and use caution while exploring city neighborhoods. Drivers often exceed the speed limit and are not expecting to encounter people exploring the area.

Help us do more. Please share your thoughts and help us develop more programs that will build an interest in the history of our community.

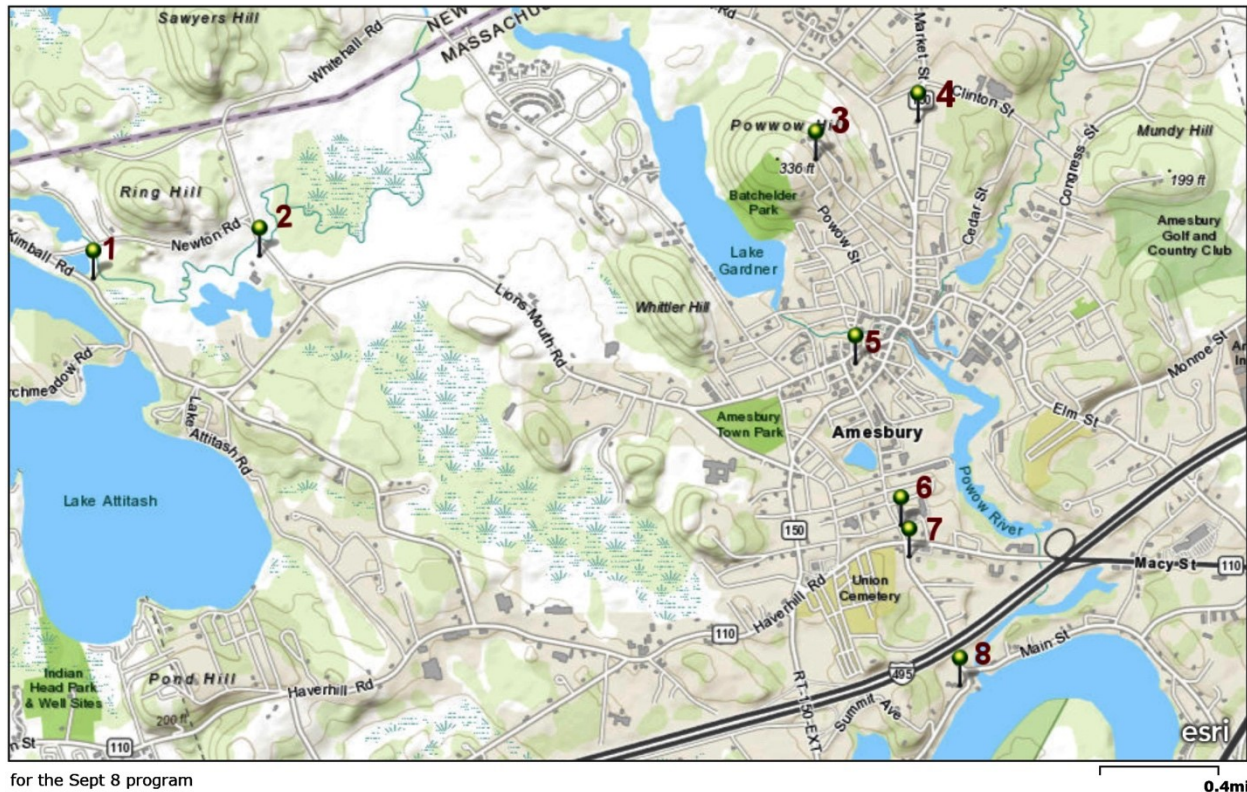
Enjoy the tour!

About this Guide

This guide is a draft and will be revised, expanded and edited. In advance – thank you for any suggestions for edits and corrections – and for your understanding.

The goal of this tour is to highlight locations of existing features where aspects of the water and wastewater systems can be seen today.

Amesbury Massachusetts – Existing Water & Wastewater Sites



Site 1 – Kimball Road	Archbrook Culvert
Site 2 – 12 Newton Road	Amesbury Water Treatment Facility
Site 3 – Prospect Street	Powow Hill Water Storage Tanks
Site 4 – 154 Market Street	Market Street Pumping Station
Site 5 – 62 Friend Street	Amesbury City Hall
Site 6 – 230 Main Street	Captain's Well
Site 7 – 250 Main Street	Main Street Pumping Station
Site 8 – 19 Merrimac Street	Amesbury Wastewater Treatment Facility

A Self-Guided Tour of Engineering Sites in Amesbury

1. Archbrook Culvert

ca. 1740

Kimball Road



Stone work at the Archbrook Culvert (photo by Steve Klomps, 2017)

The Archbrook Culvert is the main outlet of Lake Attitash and Meadowbrook, and allows water to flow directly into the Powow River under Kimball Rd.

The 5' x 2' culvert is 120 feet in length and made of granite lintel beams on fieldstones. It was created in 1740 to drain an area for hay harvesting and worked on at various times and in the 1980's.

From the *History of Amesbury* by Joseph Merrill, published in 1880 –

“1740 - The great event of this year was tunneling the pond ridge. This singular geological formation in the shape of sharp ridges extends in one continuous and nearly unbroken line from the Ferry hill far into Newton, N.H., has always been to the student of nature a great curiosity.

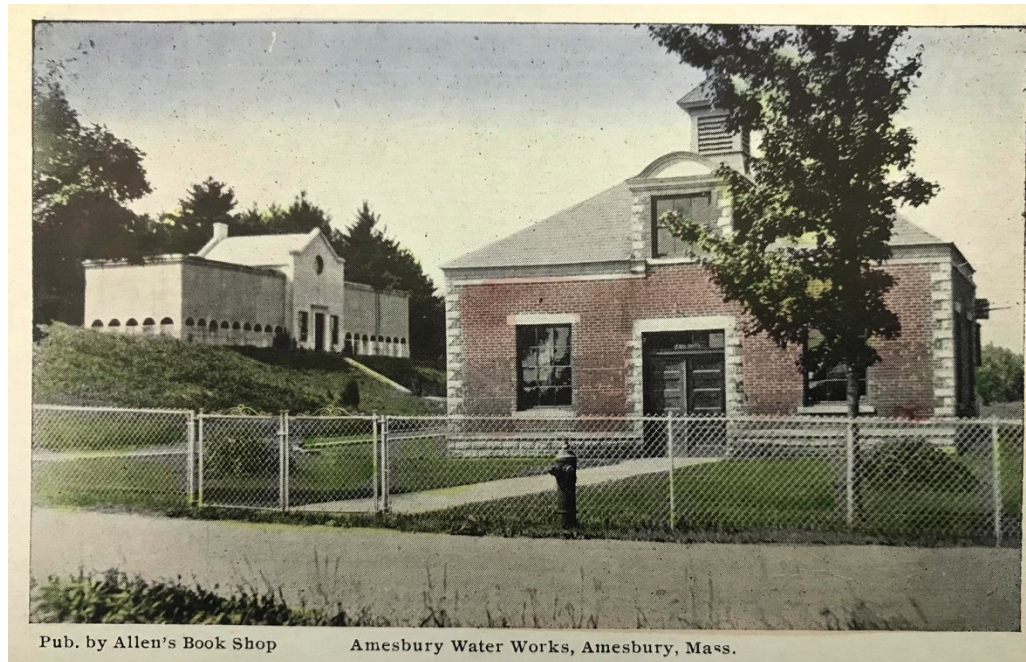
Orlando Bagley, Esq., and Capt. Caleb Pillsbury obtained leave of the town, on the 19th of May, to commence and complete this work, which at once greatly improved the large tract of meadow in the vicinity ... Tradition says that two men - Mr. Ring and Mr. Nutter - performed the labor on the tunnel for "a barrel of rum," and from the best information we have been able to get, there seems but little doubt that such was the fact.”

2. Ring's Corner Water Treatment Plant

1910 with later additions

City of Amesbury, Water Department

12 Newton Road



ca. 1930 postcard – Amesbury Water Works showing sand filtration building and pump house (Amesbury Public Library – Local History Collection)

Amesbury purchased the Powow Hill Water Company in 1905. Then, in 1910, the town purchased the land on Newton Road and began to use the Powow River as the source of water. A pump house (seen on the right of the view above) was constructed to draw water from the Powow River and pump it to reservoirs on Powow Hill. This basic system is in place today. A series of driven wells serve to back up the water supply from the river.

Over the years, additions have been made to ensure the water supply is clean and safe for consumption. In 1926 a sand filtration building was constructed – this building still stands (the white building seen above). Later – the sand filtration beds were moved below ground. Today water is processed with chemical additions to remove solids, filtering through charcoal, and more.

On site today is the new Water Treatment Facility that was constructed in 1985 and then upgraded in 2004. Water is processed through a series of steps in the building, is moved to a settling basin and then pumped to Powow Hill for distribution to consumers.

Some 2017 statistics in Amesbury:

- the average daily consumption of water per person was 48 gallons.
- the water plant processed 464,989,131 gallons of finished water for the city.

3. Powow Hill Reservoirs

built in 2000 and 2010

City of Amesbury, Water Department

Powow Hill



Powow Hill Reservoirs – a two million and a one million gallon storage tank. (Google Earth image)

The height of Powow Hill (336 ft. above sea level) makes it an excellent location for water tanks and storage reservoirs. Once water is pumped into these storage tanks, gravity provides the pressure to move the water from the storage tanks through the network of the pipes and into homes and businesses.

In 1884, a 1.8 million gallon open-reservoir was built on Powow Hill to provide water at high pressure for fire hydrants in the city. Between 1900 and 1905, two additional open-reservoirs were constructed, each with 1 million gallon capacity, one at Rowell & Prospect Street and the other on Powow Street.

In 1936, an enclosed or covered storage tank replaced the open reservoirs. The closed tank kept the water as clean as possible. A gatehouse for this reservoir still stands on Powow Hill. In 2000, the covered tank was replaced by a free standing, 2 million gallon water tank. In 2010, a 1 million gallon tank was added. Today – these are the tanks that hold the city's water supply.

4. Market Street Pumping Station

1884

Powow Hill Water Company

154 Market Street



View of the Market Street Pumping Station (on left) (Google earth image, 2018)

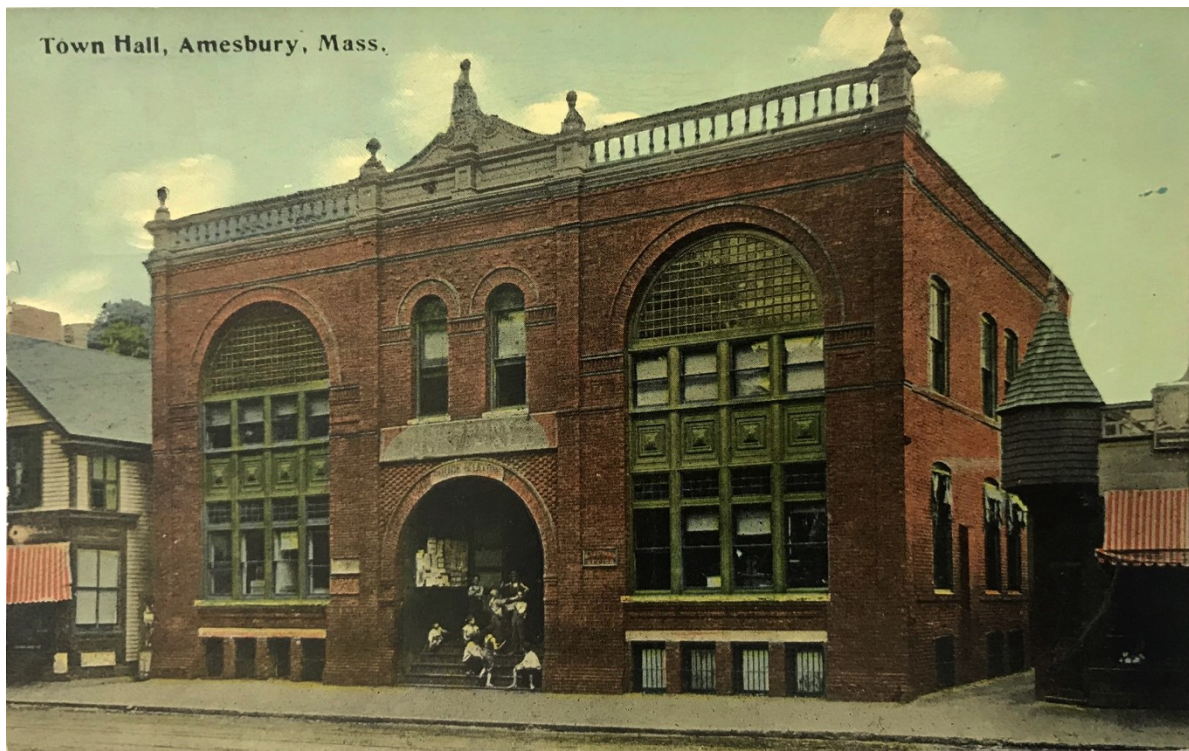
Built in 1884 – this pumping station drew water from driven wells to supply a 1.8 million gallon reservoir at the top of Powow Hill. Initially this reservoir was used as a supply for fire hydrants. Additional reservoirs were added to Powow Hill, and probably around 1905, they were connected into a unified system of supply.

Like the Main Street station – the pumps in this building were steam powered and made by the Worthington Company of New York.

5. Amesbury City Hall

1888

62 Friend Street



ca. 1900 postcard – Town Hall, Amesbury, Mass (Amesbury Public Library – Local History Collection)

Amesbury Town Hall was built in 1888. The building served both as an armory and headquarters for Company B of the Massachusetts Voluntary Militia and as the municipal offices for the town.

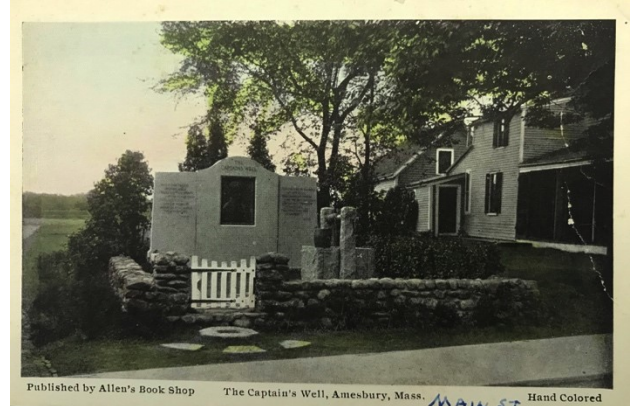
The site had been the location of the Kelly (or Merrimac) Opera House, built in 1872. The opera house was destroyed in a fire on October 3, 1886.

6. Captain's Well

Dug ca. 1796 with 1930 monument
230 Main Street



ca. 1900 – Postcard view of the Captain's Well
(both Amesbury Public Library – Local History Collection)



ca. 1930 – postcard view of the Captain's well

The Captain's Well is a commemorative sculpture that marks the location of a well dug by Valentine Bagley II (1774 – 1839) around 1796. In 1890, John Greenleaf Whittier wrote the poem *The Captain's Well* to memorialize the experiences of Bagley. In 1930, the artist Leonard Craske (1880 – 1950) designed the existing monument. Craske also designed other important works including the *Doughboy* (nearby) and the *Gloucester Fisherman*.

In July of 1792, Captain Valentine Bagley was shipwrecked on the coast of Arabia and survived the extreme conditions of life on the desert with very little food or water. On his return to Amesbury he pledged to provide a well with abundant water available so no one in the community would suffer from thirst.

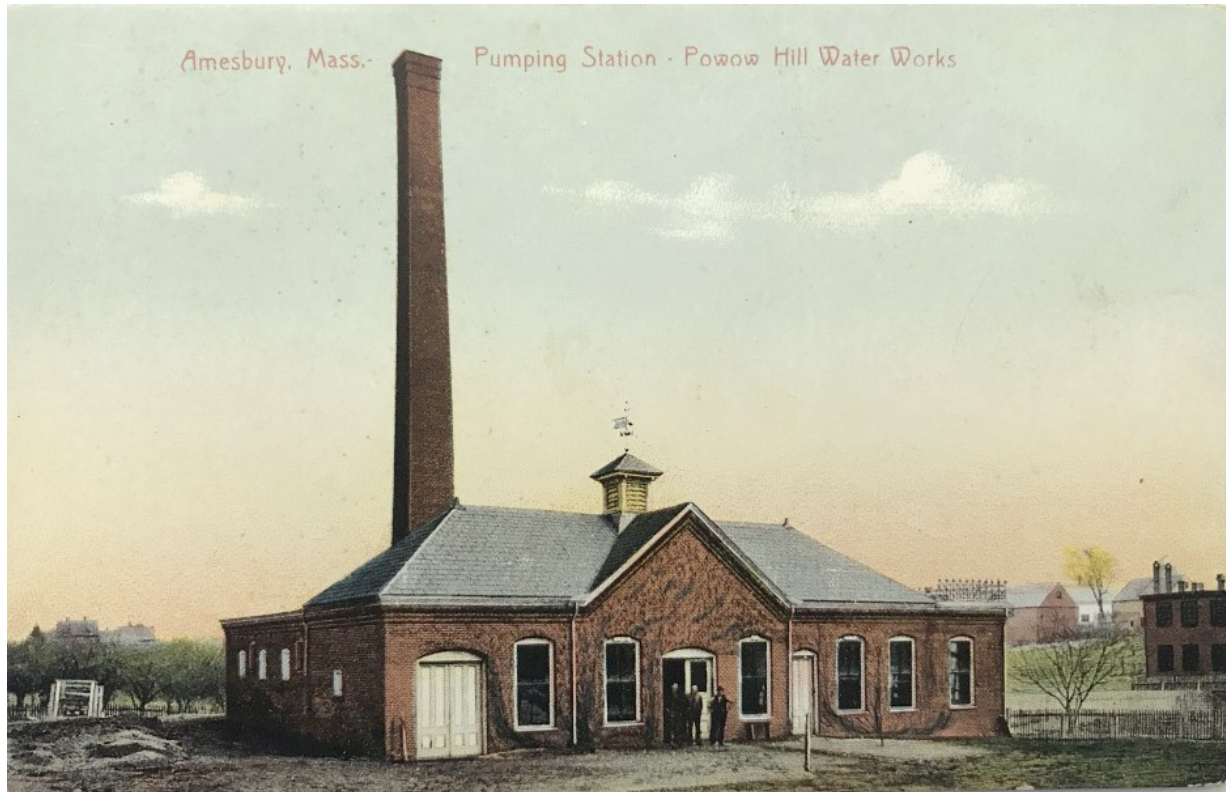
Before Amesbury had a water system – just as in other towns and in rural areas today – residents relied on private or public wells for their water. These very simple systems draw water from below ground aquifers. With increasing density brought on by the growth of urban and industrial centers, clean water could not be assured. By the mid-1800s, people began to realize new sources of water were essential for their health and safety. In 1883, a privately owned company – the Powow Hill Water Company - was formed to provide water to residents.

7. Main Street Pumping Station

ca. 1886

Powow Hill water Co.

250 Main Street



ca. 1900 Postcard – Main Street Pumping Station – Powow Hill Water Company
(Amesbury Public Library – Local History Collection)

Still standing but now privately owned, this building housed a steam-powered pumping engine that drew water from driven (or tubular) wells on the property.

This pumping station is one of the remaining structures built by the Powow Hill Water Company. This was the second pumping station. On site was a small settling reservoir and a series of driven wells. The building housed a duplex pumping engine made by the Worthington Pump Works of New York City. This type of pump was a typical feature of 19th century water works.

When Amesbury developed the Newton Road water works in the 1910, this station became obsolete and was decommissioned in 1911.

8. Waste Water Treatment Facility

1976

City of Amesbury, Wastewater Treatment Dept.

19 Merrimac Street



View of the Wastewater Treatment Facility (Google earth view)

Built in 1976 and then expanded in 1985, the Water Pollution Abatement Facility treats raw sewerage before it is pumped into the Merrimack River.

In the 19th century, sewage and surface water flowed through a network of pipes to nearby rivers and streams. In 1901, the town commissioned an engineering study with a goal to develop a comprehensive plan for collecting wastewater and carrying it to the Merrimack River. In 1912, construction began on the new system of sewage and drainage pipes. It took several years to complete the new system.

The system separated rain and surface water from wastewater. Surface water continued to flow through existing pipes – wastewater was collected in a new system that carried the waste to a new pipe located along the west side of the Powow River, which then emptied into the Merrimack River.

This system served as the basis for sewerage in Amesbury until 1973 – when the Clean Water Act led to the building of the Wastewater Treatment Facility on Merrimack Road.

Known as the Water Pollution Abatement Facility, this plant thoroughly treats raw sewage and wastewater so no contaminants are emptied into the Merrimack River.

Chronology – Water Supply and Waste Water Treatment in Amesbury

- 1740 – tunnel at Pond Ridge is dug – (now known as the Archbrook Culvert)
- 1796 – Captain's Well dug by Valentine Bagley II
- 1798 - Amesbury Ferry Aqueduct established (small system serving only a few houses)
- 1812 – first textile mill in Amesbury
- 1869 – Massachusetts State Board of Health established
- 1870s – textile mills add hydrants for fire prevention
- 1882 – editorial promoting the need and benefit of a municipal water system
- 1883 – the privately owned Powow Hill Water Company is established
- 1886 – towns of Amesbury and portions of Salisbury merge
- 1887 – Lawrence Experimental Station established for research in purification of water and sewage
- 1888 – Amesbury Health Department established (begins to survey condition of yards, privies and houses)
- 1901 – Amesbury commissions Sewer Report and plan from engineering firm of McClintock & Woodfall
- 1905 – Amesbury purchases Powow Hill Water Co. and establishes the Amesbury Water Department
- 1910 – Rings Corner / Newtown Road property purchased and pump house constructed
- 1912 – Sewer Commission established and sewer system construction begins
- 1926 – sand filtration begins at Newton Road
- 1936 – new storage reservoir constructed on Powow Hill
- 1972 - Federal Water Pollution Control Act
- 1975 – Waste Water treatment plant
- 1985 – Water treatment plant expands
- 2000 – new 2 million gallon storage tank on Powow Hill
- 2010 – new 1 million gallon storage tank on Powow Hill
- 2012 – Water works upgrade

For Further Reading

Visit the Amesbury Carriage Museum website – www.amesburycarriagemuseum.com - for historical information and research presentations.

From the US Environmental Protection Agency

Primer for Wastewater Systems

<https://www3.epa.gov/npdes/pubs/primer.pdf>

Drinking Water Systems

<https://www.epa.gov/dwreginfo/information-about-public-water-systems>

Other Places of Interest

1. Metropolitan Waterworks Museum

2450 Beacon Street

Boston, MA 02467

617-277-0065

<https://waterworksmuseum.org/>

The Metropolitan Waterworks Museum uses its architecturally magnificent building, mammoth steam pumping engines, and the adjacent historic Chestnut Hill Reservoir to interpret unique stories of one of the country's earliest metropolitan water systems.

2. Public Health Museum

365 East Street

Tewksbury, MA 01876

978-851-7321 EXT. 2606

phmuseum@gmail.com

<https://publichealthmuseum.org/>

The Public Health Museum in Massachusetts is the first museum in the United States dedicated to honoring the achievements of those pioneers in public health who worked to secure the health and well-being of our local communities.

Become a member of the Amesbury Carriage Museum today!

Our mission is to *champion the history of Amesbury's industry and worklife.*

Our vision is *a community inspired by Amesbury history!*

For more information please visit our website – www.amesburycarriagemuseum.com

or contact the Amesbury Carriage Museum, P.O. Box 252, Amesbury, MA 01913

– tel. 978.834.5058 or info@amesburycarriagemuseum.com