

Massachusetts Water Resources Authority



Upcoming Projects in Newton

May 23, 2019



- MWRA provides wholesale water and wastewater services to over 2.5 million customers in 61 communities
- On average, MWRA delivers 200 million gallons per day to its water customers
- MWRA collects and treats an average of 350 million gallons of wastewater per day, with a peak capacity of 1.2 billion gallons





Quabbin Reservoir

Storage:	412 billion gallons
Depth:	150 feet
Length:	17.9 miles
Width:	3 miles

Wachusett Reservoir

Storage:	65 billion gallons
Depth:	129 feet
Length:	8.5 miles
Width:	1 mile





A Civil Engineering Marvel

- 102 miles of active transmission mains and tunnels (43 miles on standby)
- 284 miles of distribution mains with over 4,700 valves
- About 85% of the water is delivered by gravity
- 11 pump stations
- 5 years of storage





MWRA Water Transmission System



- 1. Chicopee Valley Aqueduct
- 2. Quabbin Aqueduct
- 3. Cosgrove Tunnel / Wachusett Aqueduct
- 4. MetroWest Tunnel / Hultman Aqueduct
- 5. Metropolitan Tunnels

2007 Improvements Inspection planned Project underway 2003/2013 Improvements Significant Needs



Metropolitan Tunnel System



Current Major Initiative - Long-Term Water System Redundancy

To provide redundancy for Metropolitan Tunnels which deliver water to 60% of the system

- \$1.54 billion
- Project duration 2018 2039
- Staff are currently developing the first contract for Preliminary Design/ Geotech/MEPA Review





- Newton is one of 22 communities that receives both its water and sewer services from MWRA
- Newton uses an average of 8.3 million gallons of water per day, accounting for 4.8% of total system usage





- Water is supplied to three different zones:
- North of the Mass Pike, water comes from the MetroWest Tunnel through Weston Aqueduct Supply Main 4
- South of the Mass Pike, water comes from the City Tunnel, up through the Commonwealth Avenue Pump Station
- In the higher elevation near Brookline, the Newton Street Pump Station sends water up through Section 100 to Newton's Oak Hill Tank





Over the next few years, MWRA will work on several projects that will help continue to provide safe, secure, and reliable water and wastewater services to the City of Newton

- Commonwealth Avenue Pump Station Improvements, MWRA Contract 7524
- The Charles River Valley Sewer Rehabilitation Sections 191 and 192, MWRA Contract 7643
- Rehabilitation of Sections 23, 24 and 47 Water Mains, MWRA Contract 6392
- Intermediate High Pipelines Improvement Project, MWRA Contract 6955









Commonwealth Avenue Pumping Station Improvements





Contractor: WES Construction Corp.



- City Tunnel, Shaft 6, and the pumping station provide water to 85% of the City of Newton
- This project provides a redundant water supply to the pumping station in the event that the City Tunnel needs to be taken out service
- The alternate supply will be established by connecting the pumping station to two existing MWRA water pipe lines located in Carriage Road, via a new 24-inch water main
- The project also includes pump, mechanical and instrumentation equipment upgrades to the station's two existing buildings
- Project duration 18 months (Feb. 2019 Sept. 2020)
- Cost \$6.8 million

Commonwealth Avenue Pump Station Improvements Project Map



Commonwealth Avenue Pump Station Improvements Construction Sequencing





- Work on Commonwealth Ave 9:00 AM to 3:00 PM Monday thru Friday
- Equipment and Machinery will not be allowed to operate before to 7:00 AM
- No work on Commonwealth Ave December 1st to March 15th
- The Contractor will not be allowed to work in Commonwealth Ave or Carriage Rd. the Friday before through the Tuesday after the Boston Marathon
- No construction outside of the pumping station will be allowed on Rosh Hashanah and Yom Kippur



Comm. Ave Lane Closure – Late Fall 2019.

- West bound between 9:00 AM-3:00 PM M-F
- Contractor will setup detour starting at 9:00 AM and have road reopened by 3:00 PM
- Westbound traffic detoured up Valentine St to either Carriage Rd. or Ellis Rd

Carriage Road Closure - Various Time-frames

- Carriage Rd. will be closed (local access only) from Valentine St. to Ellis Rd. Traffic will be detoured to Ellis Rd. Local traffic west of the excavation will have access via Ellis Rd. Local access east of the excavation will have access via Valentine St
- Will occur for test pits in June. Road will be repaved & reopened.
- Will occur for connection to 48-inch line (WASM 1) late fall/early winter 2019.
- Will occur for connection to 60-inch line (WASM 2) winter/spring 2020.





Road Detour – Various Times in 2019/2020







Charles River Valley Sewer Rehabilitation Sections 191 and 192





Charles River Valley Sewer Rehabilitation Sections 191 and 192





- 42"x48" Brick Sewer Built in 1892
- Flows range up to 12.3 mgd
- Requires rehabilitation due to crown cracks
- Plan to rehabilitate with Cured-In-Place Pipe (CIPP)
- Construction to begin in Fall/Winter, 2019
- Six month duration
- Estimated construction cost of \$2.5 million



Charles River Valley Sewer Rehabilitation: CIPP Liner Process





Charles River Valley Sewer Rehabilitation Typical CIPP Project Setup :







MWRA Water Main Rehabilitation of Sections 23, 24 and 47

Newton & Boston



Rehabilitation of Sections 23, 24 and 47 Water Mains Contract 6392

<u>Before</u>





MWRA Work \$14.5M + Newton work \$2.7M = Total Cost Estimate: \$17.2M

Pipeline	Age (years)	Diameter (inches)	Length	40 Watertown	WATERTOWN
City of Newton	140	20	2,400	Li al	Cong and the
MWRA Section 23	122	36	8,100	103 Watertownm 104	81 Watertown 90
MWRA Section 24	122	20	9,391	Newton 90	BROOM
MWRA Section 47	101	20	8,200	Section 24	Section 47
	20-inc M	eplace City of New h water main app 2,400 feet paralle WRA 36-inch wate	vton's roximately I to r main	NE MAVERILA	RD RD City Lume Ext RD S7 Chestnut Hill
	Legend Pipe Replacement Limits Pipe Cleaning & Lining Limits To Be Rehabilitated in Future Contract			City Tunnel COMMONWI AVE	EALTH BEACON ST Reservoir Section 74 23 Boston



- Rehabilitation of 25,700 feet of 100+ Year Old Water Mains in Newton and Boston
- Replacement of 2,400 feet of Newton 20-inch diameter water mains
- Design is completed
- Construction Schedule: 30 months
- National Grid needs to relocate gas mains in advance of this work





Intermediate High Pipelines Improvement Project

Intermediate High Pipelines Improvement Project



Intermediate High Pipeline Improvements Project Map

183 Lexington M. Artington Arlington Heights Tank Walnut Hill Tank Arlington Covered Reservoir LEVINGTON M12 Arington Arington Balmont Section 60 Rehabilitation CP-1 Spring St-CP-2 Pump Station BELMONT Bernach ARLINGTON Admited -___ CP-3 Rehabilitation of 66 Sections 23, 24 & 47 Belmont Beimont Pump Station **Under Separate** Project Section 59 WALTHAM HO. Rehabilitation CAMBRIDGE 202 Walthan Watertown WATERTOWN 148 Waltham Section 25 Replacement Waletown Watertown M M Section 24 Rehabilitation 103 at en ov BOSTON Section 47 Rehabilitation Rehabilitation of 105 Newton Sections 23, 24 & 47 **Jnder Separate Project** Chy Tunnel Erts NEWTON Section 75 Extension Comm Ave Pump Station City Tunnel SHAFT 6 NEWYOR SHAETT dbury Aqueduct Chestnut Hill Emergency Pump Station 98. 0 750 1,500 3,000 Feet Btookline



- Pipeline Extension to interconnect two MWRA pressure zones
- Provides Redundancy in the MWRA system
- Overall project includes rehabilitation and/or replacement of MWRA pipelines in Brighton, Watertown, Belmont and Arlington
- Proposing 3,600 feet of new pipe between Commonwealth Avenue and Centre St. to Ward St. & Waverley Ave
- Currently Preliminary Design including Field Investigations
- 18 Borings proposed for new pipe route along Centre St. and Ward St. Schedule:
 - Preliminary Design 2019 to 2020 including Borings Summer 2019
 - Final Design 2020 to 2022
 - Construction 2022 to 2024

Section 75 Pipeline Extension - Soil Boring Program Centre Street & Ward Street, Newton







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