



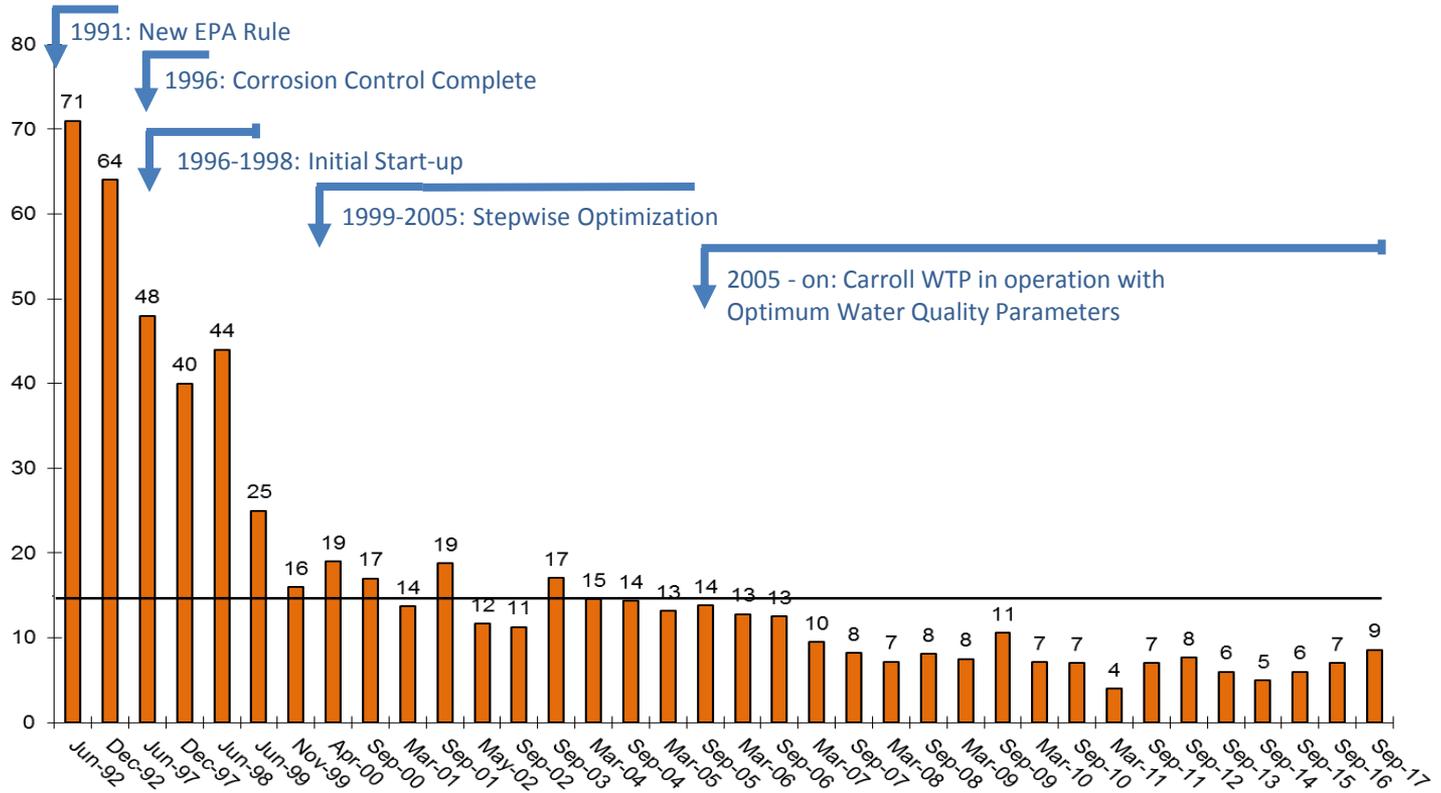


Update on Lead and Copper

July 18, 2018



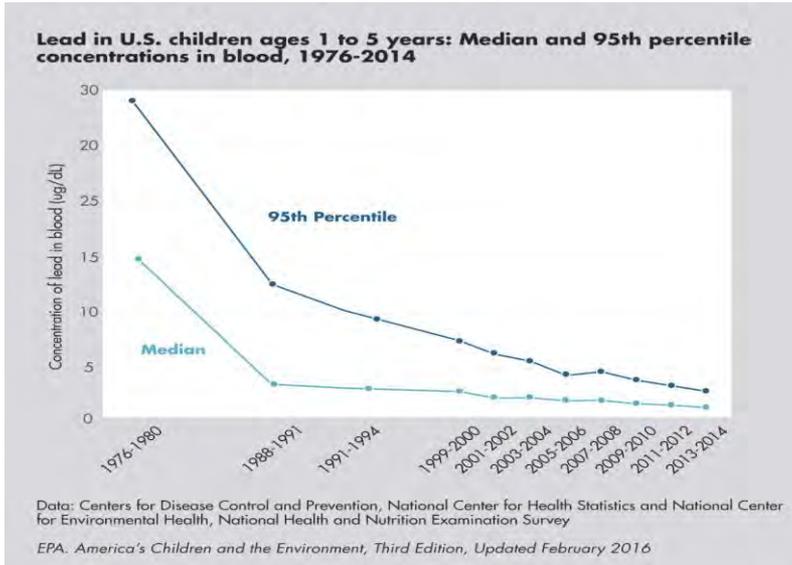
90th Percentile Lead Levels in MWRA Communities: 1992 -2017



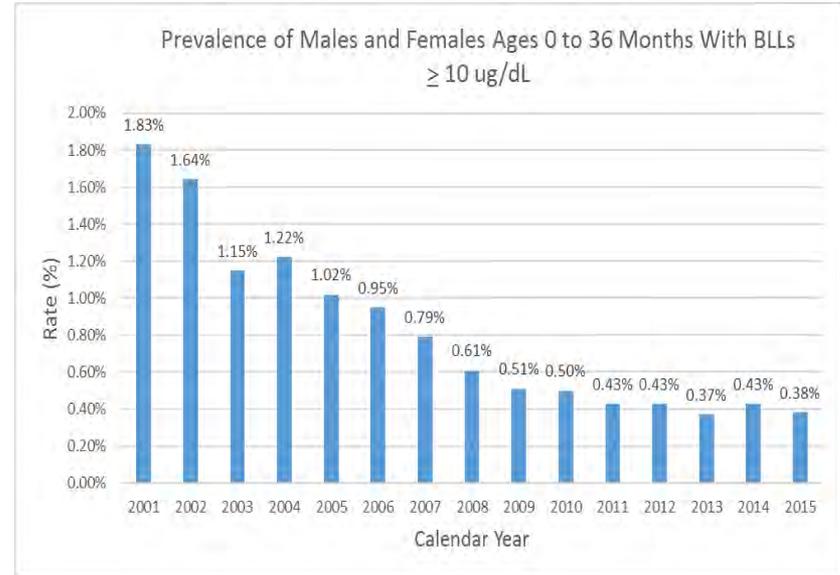


Blood Lead Levels Trends – US and Massachusetts

National BLL Levels: 1976-2014



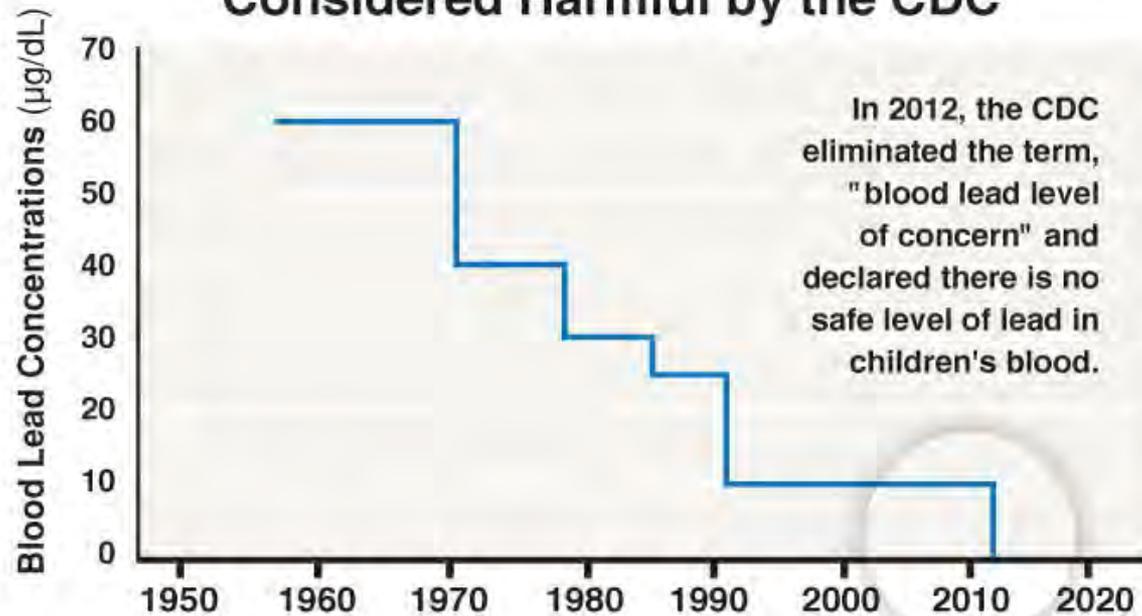
Mass BLL Levels: 2001-2015





CDC Blood Lead Levels of Concern Since 1950

Blood Lead Concentrations Considered Harmful by the CDC





Sampling in Schools and Child Care Facilities

- Free laboratory services to local schools
- 328 Schools in 37 communities
- 4.7% above Action Level

- Work with local health officials regarding child care facilities
- Contacted Medford, Melrose, Quincy and Winthrop

- All 41 licensed child care facilities in Medford contacted, first samples received this week
- In planning stage with Melrose health and water departments



Corrosion Control Treatment Issues

- Concern regarding “one-size-fits-all” approach to corrosion control
- Potential for water quality, environmental and other unintended consequences
- Denver required to add orthophosphate against their own technical recommendation
- Water and wastewater agencies and river advocates have sued the state
- MA DEP ordered Ashland to add phosphate to MWRA water to match local treatment



Lead Loan Program: \$9 Million in Distributions to Date

- Quincy: \$1.5 million in FY17
- Winchester: \$500,000 in FY17
- Newton: \$4.0 million in FY17
- Marlborough: \$1.0 million in FY18
- Revere: \$195,000 in FY18
- Winthrop: \$284,000 in FY18
- Needham: \$1.0 million in FY18
- Winchester: \$500,000 in FY18 (second phase)





Accomplishments on Construction Contracts

- Northern Intermediate High Pipeline
- Wachusett Aqueduct Pumping Station
- Clinton Phosphorus Reduction Facility

July 18, 2018



Northern Intermediate High Pipeline, West Street - 7066



Installation of 36-inch pipe along West Street (in Historic district)

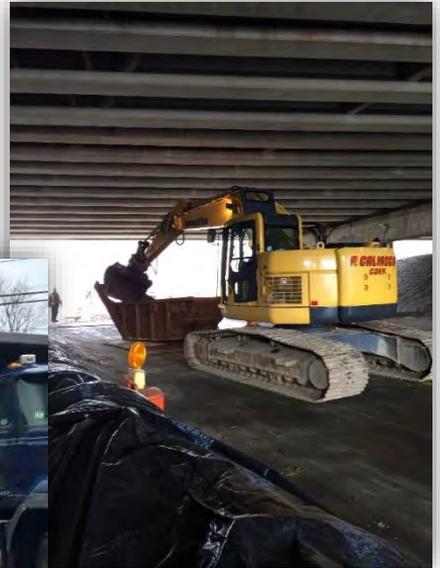


Northern Intermediate High Pipeline - 7066



Installation of 36-inch water pipe at Reading - Woburn town line

Installation of 36-inch water pipe underneath Rt. 93



Sedimentation Controls for dewatering at West & Oak Streets



Northern Intermediate High Pipeline, West Street - 7066



Installation of new 36-inch Butterfly Valve
at West and Oak Streets



Pre-assembly of water piping for installation at
future meter site at Louanis Street



Northern Intermediate High Pipeline, West Street - 7066



Very snowy winter postponed construction until spring



Northern Intermediate High Pipeline - 7471



Temporary By-pass



Thrust Blocks



Northern Intermediate High Pipeline - 7471



Installation of 12-inch Temporary Pipe



Installation of 36-inch Pipe, Oak Street



Northern Intermediate High Pipeline - 7471



Meter 83 Leach Park



Chlorine injection, Woburn



Northern Intermediate High Pipeline - 7471



Drywell for valve vault



Drain line



Northern Intermediate High Pipeline - 7471



Handicap Ramp



Sidewalks and Curbing on Oak Street



Northern Intermediate High Pipeline - 7478



Ledge



Installation Temporary Water Main Bypass on Oak Street



Northern Intermediate High Pipeline - 7478



Installed 48-inch Water Main, North St.



Installed 48-inch Water Main, Oak St. & Myopia St.



Northern Intermediate High Pipeline - 7478



Installation of 24-inch Main, Cottage Street



Install 36-inch Water Main, Summer Ave.



Northern Intermediate High Pipeline - 7478



Install of new Meter 96 in Wakefield



CIPP Liner Installation Stoneham Sewer, Oak Street



Northern Intermediate High Pipeline - 7067



Install TOS Water Main, Cottage Street



Northern Intermediate High Pipeline - 7067



Installation of Water Mains: Montvale Ave. and Wright Street



Northern Intermediate High Pipeline - 7067



Main Street Pre-drill Ledge



Temporary Water Bypass





Wachusett Aqueduct Pumping Station



Foundation and Earth Support





Wachusett Aqueduct Pumping Station



Pump Station Foundation & Rebar



Wachusett Aqueduct Pumping Station



Roof and Masonry Work



Wachusett Aqueduct Pumping Station



Pump Installation



Wachusett Aqueduct Pumping Station



Forebay and Overflow Area



Wachusett Aqueduct Pumping Station



Pump Station Exterior



Clinton Treatment Plant Phosphorus Reduction Facility



Concrete Pour



Clinton Treatment Plant Phosphorus Reduction Facility



Mixing Tank Walls



Clinton Treatment Plant Phosphorus Reduction Facility



Structure from High Street



Clinton Treatment Plant Phosphorus Reduction Facility



DISC Filter – Close up



Clinton Treatment Plant Phosphorus Reduction Facility



DISC Filter Control Panels Mounted



Clinton Treatment Plant Phosphorus Reduction Facility



New Diversion Structure poured



Clinton Treatment Plant Phosphorus Reduction Facility



Disc Filter Media Installed



Clinton Treatment Plant Phosphorus Reduction Facility



Electrical Room



Clinton Treatment Plant Phosphorus Reduction Facility





Clinton Treatment Plant Phosphorus Reduction Facility







***Bellevue 2 Tank and Turkey Hill Steel
Water Tanks Painting
Contract 7634***

July 18, 2018



3.7 Million Gallon Bellevue 2 Water Storage Tank, Boston





Existing Conditions at Bellevue 2



Tank Exterior



Overflow Piping and Vent



Tank Bottom and Foundation



2 Million Gallon Turkey Hill Water Storage Tank, Arlington





Existing Conditions at Turkey Hill



Tank Exterior



Tank Bottom



Tank Foundation



Scope of Work

- Erect scaffolding to temporarily support the relocated antennas
- Prepare existing surfaces using abrasive blast cleaning methods
- Paint all exterior and interior surface
- Structural repairs to pitted areas
- Concrete Repairs to the base of the tanks
- Install the interior anode components of a cathodic protection system



Procurement

- Bids Opened June 27, 2018

BIDDERS	BID AMOUNT
Worldwide Industries Corp.	\$3,962,463.00
Utility Service Co., Inc.	\$4,457,750.00
Amstar of WNY, Inc.	\$4,980,000.00
Atlas Painting and Sheeting Co.	\$5,390,000.00
Allied Painting, Inc.	\$5,405,675.00
<i>Engineer's Estimate</i>	<i>\$6,070,380.00</i>
Southern Road & Bridge, LLC	\$6,988,943.42
Abhe & Svoboda, Inc.	\$7,624,640.00



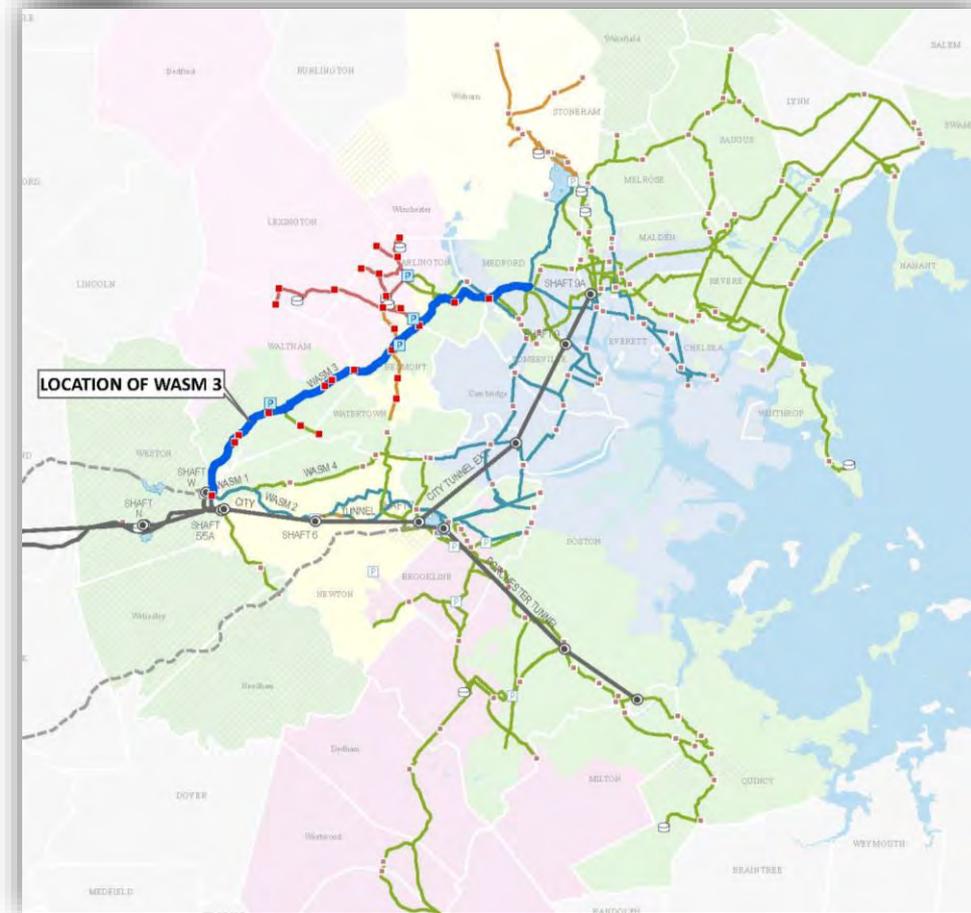


***Weston Aqueduct Supply Main 3:
Design, Construction Administration and
Resident Inspection Services
Contract 6539, Amendment 1***

July 18, 2018



Weston Aqueduct Supply Main 3 - Location



- 10 miles long, from Weston to Medford
- 6.6 miles of 60-inch
- 3.4 miles 56-inch, unlined steel pipe
- Installed in 1926, 1927 and 1933
- Supplies 250,000 customers
- Supplies Waltham, Belmont, Arlington, Lexington, Watertown, Bedford and Winchester
- Key pipeline in the Metro Tunnel Interim Emergency Supply Plan



Original Scope of Services

- Design, Construction Administration, Resident Engineering/Inspection
 - Replace 7.3 miles of 56-in and 60-in pipe with 72-in pipe
 - Rehabilitate 2.7 miles of 56-in and 60-in pipe



Project Team

- Stantec (Prime)
 - Preliminary Design
 - Final Design: Construction Package 3, Waltham
- CDM Smith
 - Geotechnical Design
 - Final Design: Construction Package 2, Belmont
 - Resident Inspection: all contracts
- Green International
 - Survey and Base Mapping
 - Final Design: Construction Package 1, Arlington/Medford
 - Resident Inspection: all contracts
- Mott MacDonald
 - Trenchless Technologies



Project Status

- Notice To Proceed Issued: July 2013
- Contract End Date: October 2026 (13 years 3 months duration)
- Total Contract Amount: \$15,482,620
- Total Spent to Date \approx \$2,000,000

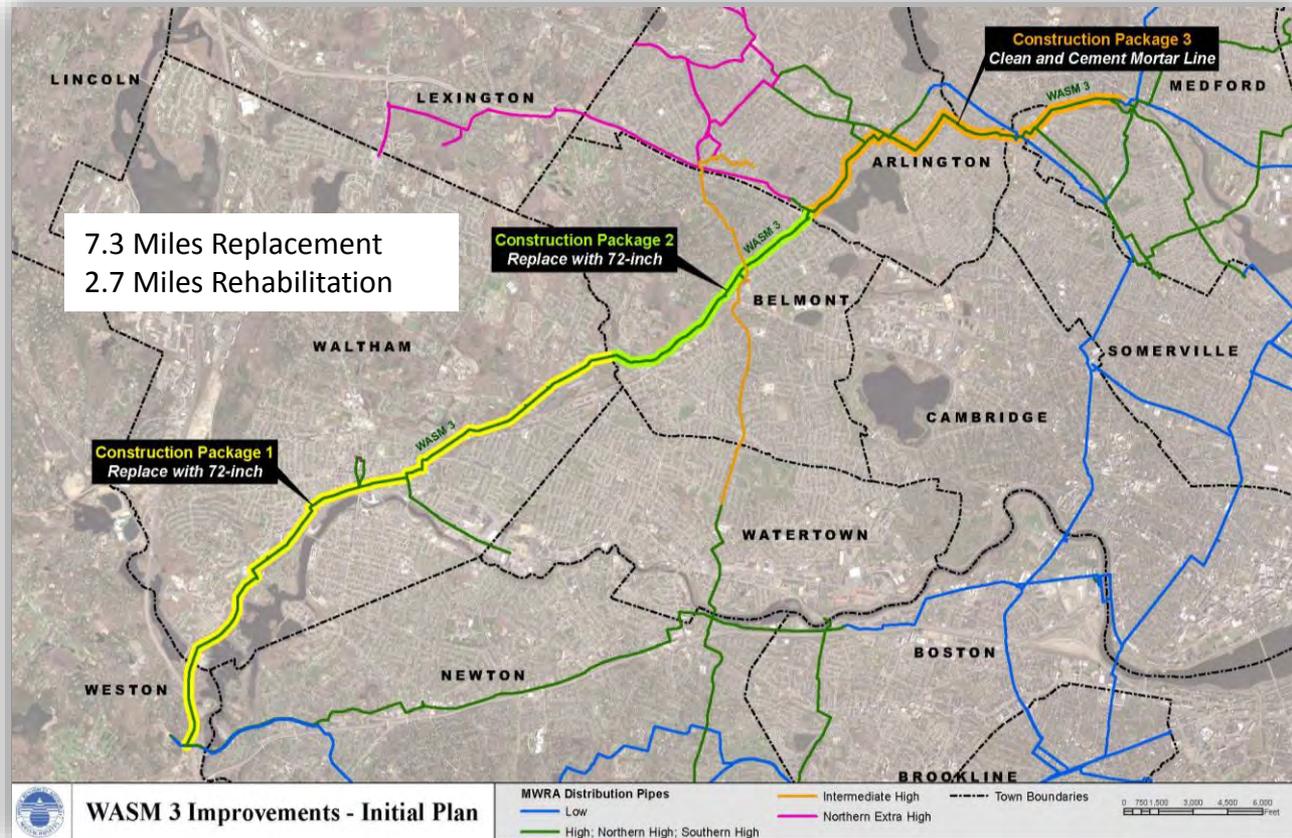


Work Completed to Date

- Evaluation of 72-inch Pipe Replacement Alternatives
- Evaluation of Tunnel Options
- Base Mapping
- Geotechnical Field Testing Program
- Preliminary Design

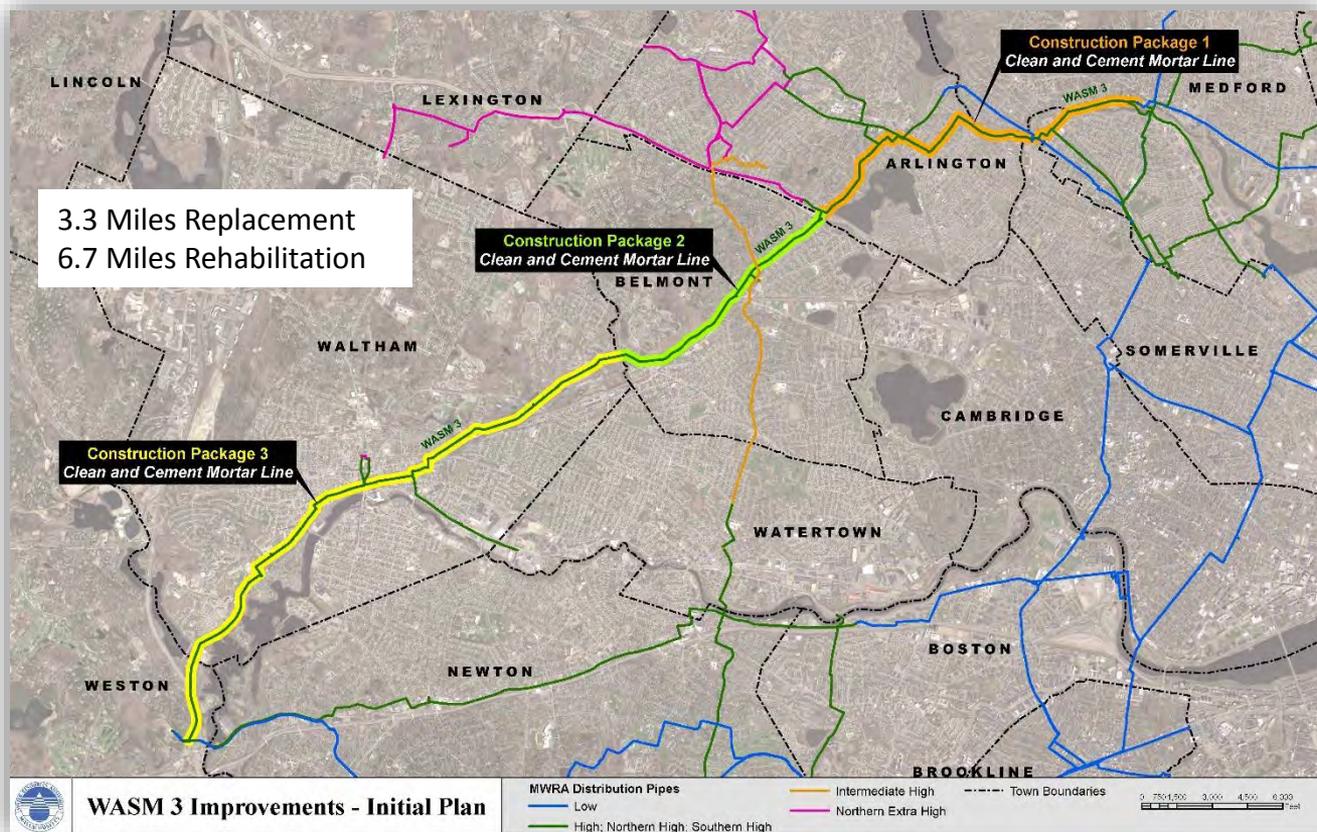


Original Project and Sequence of Work





Proposed Project and Sequence of Work (Amendment 1)





Scope Changes

- Change from primarily pipe replacement to primarily pipe rehabilitation
 - Replace 3.3 miles of pipe at existing diameter instead of 7.3 miles of larger pipe
 - Rehabilitate 6.7 miles of pipe instead of 2.7 miles
- Initiate design activities 3.5 years later than original schedule
- Compress Preliminary Design and overlap with Final Design
- Extend Contract Duration by 8 months



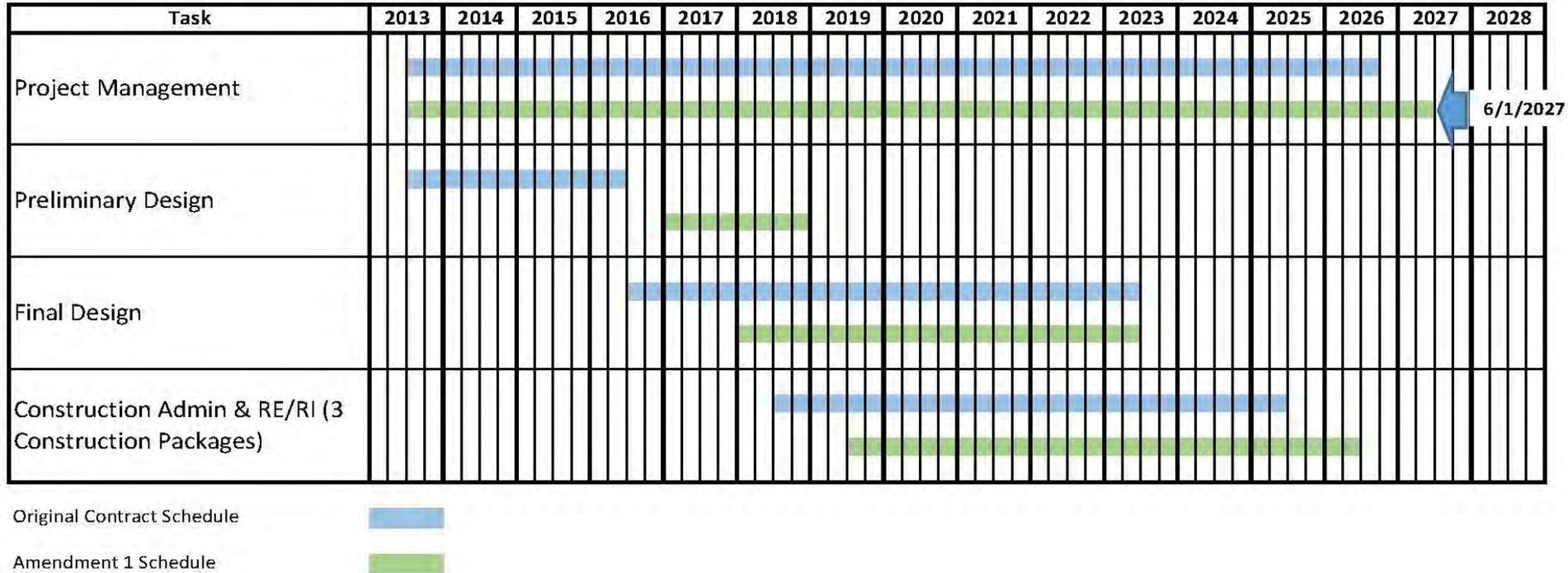
Amendment 1: Cost Changes

Cost reduction due to scope change	(\$674,632)
Cost escalation due to 3.5 year delay in beginning design	\$594,274
Cost of 8 month contract extension period (labor, overhead, profit)	<u>\$110,568</u>
Net Increase in Contract Amount	\$30,210



Project Schedule Changes

Figure 3. WASM 3 Original and Revised Project Schedule Amendment No. 1







***Wachusett Aqueduct Pumping Station Construction
BHD/BEC JV 15, A Joint Venture
Contract 7157, Change Order 39***

July 18, 2018



Construction Update





Construction Update

- Pumps Tested
- SCADA Testing Underway
- Tentative Look Ahead Schedule:
 - Station Reliability Testing Likely Complete by September
 - Substantial Completion Anticipated in December 2018



Change Order 39 – Forebay Rip Rap





Change Order 39 – Air Release Structure

Air Release Structure

- Location based on plant record drawings
- Existing utilities were in conflict
- Redesign consolidated two proposed structures into one
- New location on opposite side of roadway





Change Order 39 – Summary

Air Release Structure	\$148,250
ForeBay Rip Rap	\$360,299
Total	\$508,549



Wachusett Aqueduct Pumping Station





New HEEC 115kV Line MWRA Quarterly Update Meeting

June 27, 2018

Agenda

- * **Project Route Review**
- * **Project Progress**
 - * Permitting
 - * Procurement
 - * Easements
 - * Schedule
 - * Construction in Progress
- * **Project Accounting**
 - * Cost to Date
- * **Project Risk**

Project Route



Project Progress

Permitting

- * Boston Conservation Commission permit – received
- * DEP 401 Water Quality permit - received
- * USACE 404/408 permit – received
- * Chapter 91 license – received
- * CZM Consistency review - received
- * FAA – permit – received

- * All permits received for cable installation.
- * Permit amendments maybe required for clay and rock removal
- * Cable removal permit application process will start in July

Project Progress

Procurement

- * Cable installation and manufacturing
 - * Caldwell Marine - installer, Prysmian - cable manufacturer
- * Land conduit installation
 - * McCourt Construction
- * HDD installation - pending
 - * Preferred contractor chosen
- * Station 132 equipment Mitsubishi
- * Station 385 equipment contract pending

Project Progress

Easements

- * Massport
 - * MOU executed
 - * Easement executed
- * King Terminal
 - * Easement agreement terms have been reached, documents in draft
- * Deer Island
 - * License agreement - pending
 - * No fee

Project Progress

Schedule

- * Marine pre pass – June 27, 2018 – July 5, 2018
- * Clay/Rock removal – September 2018
- * HDD drill – August 2018 – November 2018
- * Conduit Installation – April 2018 – December 2018
- * STA 132 Installation - August 2018 – November 2018
- * STA 385 Installation – January 2019 – April 2019
- * Cable Installation – March 2019 – June 2019
- * Cable Energized – July 2019 – August 2019
- * Cable removal – December 2019 – January 2020

Project Progress

Construction In Progress

- * 3 manholes installed in Conley Terminal
- * Approximately 600 ft of trench excavated
- * Approximately 300 ft pipe installed
- * Pre pass barge mobilized to MA from NY
- * Pre pass surveys completed for eel grass and winter flounder mitigation requirements
- * Pre pass start June 27, 2018

Project Accounting

Cost to Date

Description	Total 2017	Total 2018	Total
Materials	\$1.6M	\$710K	\$2.3M
Contracts	\$1.3M	\$2.6M	\$3.9M
Internal Labor	\$93K	\$106K	\$199K
Allocations	\$49K	\$78K	\$127K
Other (easements)	\$8M	\$1K	\$8M
Total	\$11M	\$3.5M	\$14.5M

Total project budget is \$115.6M

Project Risk

- * **Removal of Clay and Rock** -Volume of rock
- * Permit amendments needed for removal – turnaround of permit amendments with environmental agencies
- * Want to work outside of the TOY restriction and work in summer/fall months, to minimize downtime from weather
- * **HDD bore hole**
 - * Maintaining bore hole – geotechnical data taken, data is point data.
- * **Cable delivery**
 - * Maintain cable delivery date - working with overseas company.

