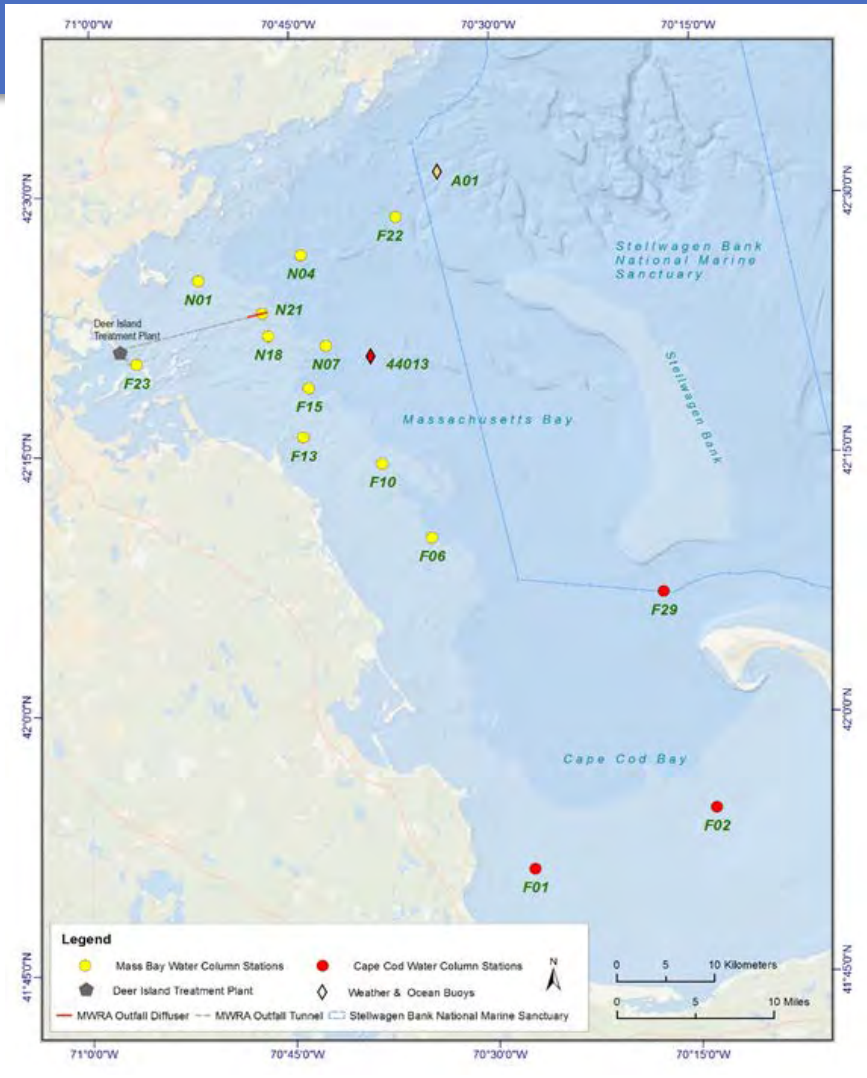

WATER RESOURCES AUTHORITY
MASSACHUSETTS

MWRA's Outfall Monitoring Overview 2019 Results

October 14, 2020

MWRA Ambient Monitoring

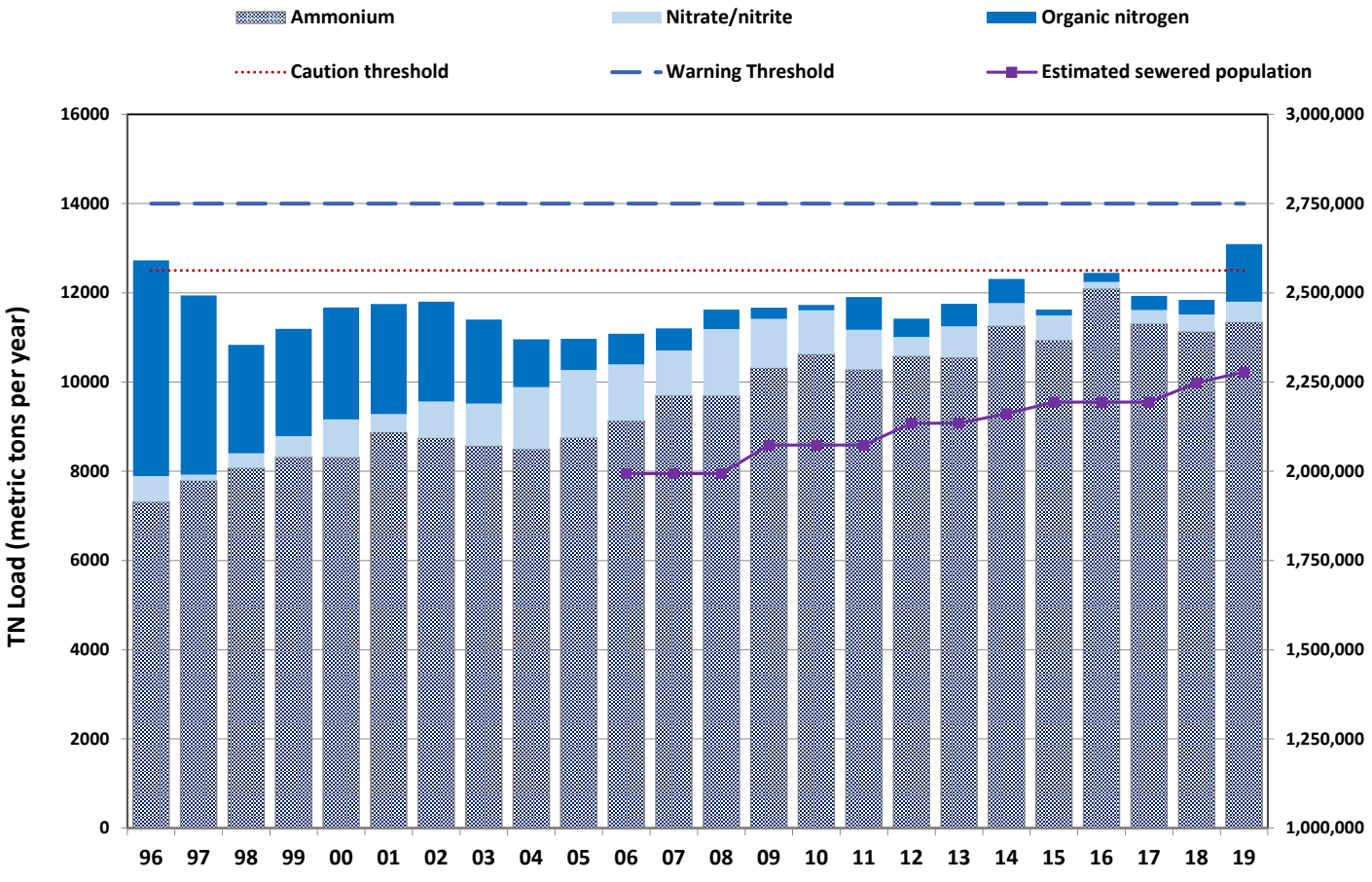
- Construction of Outfall caused concerns
- Comprehensive monitoring required (1992-present)
- Focuses on effluent, receiving water, sediments, and fish and shellfish
- Monitoring reduced over time as issues have been addressed
- Annual report required



Outfall Monitoring Overview 2019 Highlights

- Effluent quality excellent (Platinum 13 award!)
- Contingency Plan exceedance for effluent nitrogen load
- Outfall Monitoring
  - Environmental quality good year-round;
  - Red tide event in Mass. Bay. (not caused by outfall)
- Discussions with regulators, Outfall Monitoring Science Advisory Panel (OMSAP) and public led to some reductions in monitoring

Effluent Nitrogen Load, 1996-2019

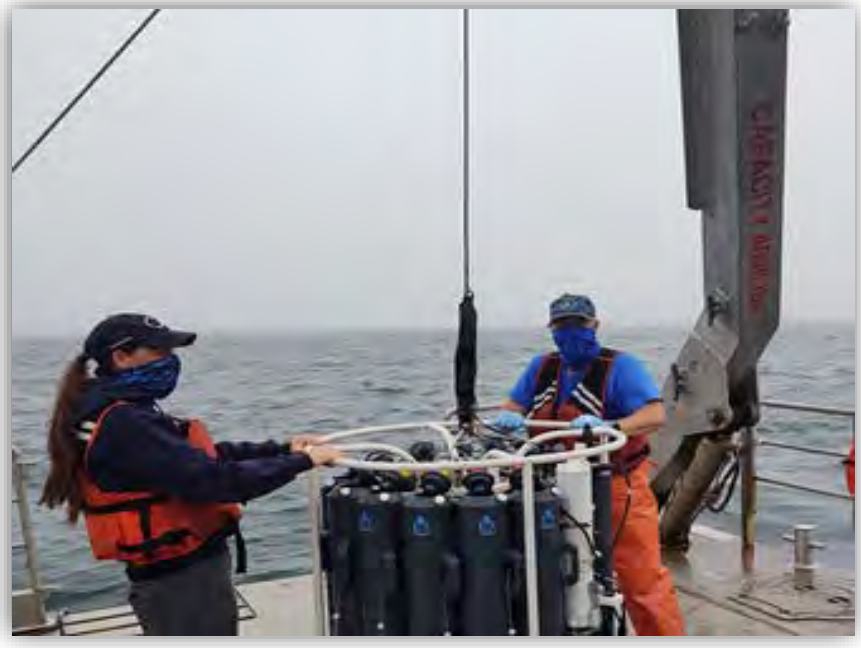


2019 Nitrogen Exceedance

- Trending higher with time
  - reflect increases in sewered population
- 2019 first exceedance of threshold
- Caution threshold arbitrarily set at 90% of estimated 2020 load
- Doubling current nitrogen loads would have minimal environmental impacts
- Field monitoring confirms effluent nitrogen not causing degradation
- 2020 nitrogen loads slightly lower

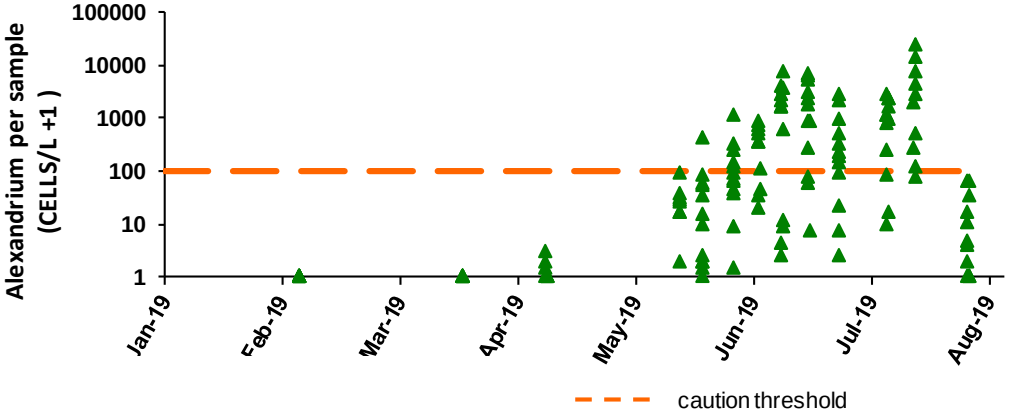
Environmental monitoring 2019 results

- No evidence of adverse outfall impact
- Dissolved oxygen levels normal in Mass. Bay
- Unrelated to Outfall:
  - Low DO event in Cape Cod Bay
  - Red tide bloom in Mass Bay



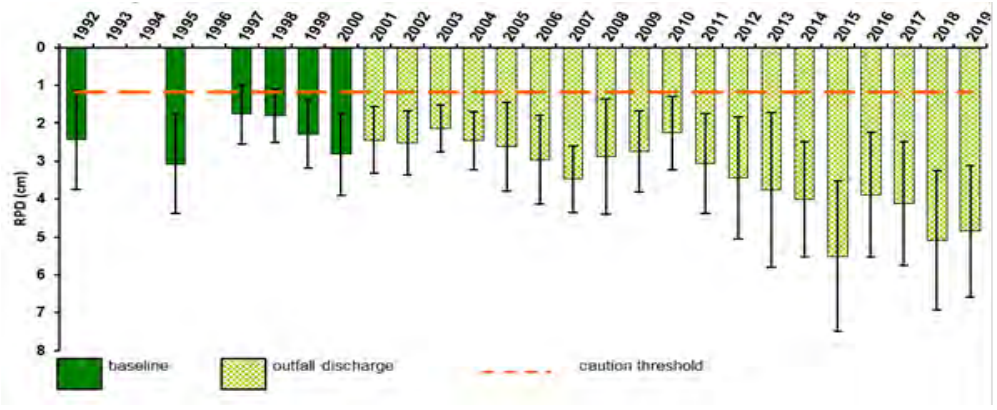
Collecting water samples in Massachusetts Bay using COVID-19 safety protocols, July 2019

Red Tide, 2019



- *Alexandrium* responsible for 2019 red tide
- Shellfish bed closures from NH border to Plymouth
- Contingency Plan threshold exceedance
- Bloom likely transported into Bay from northern waters
- High regional nutrients and strong coastal river flows may explain intensity and persistence into mid-July

Ambient Monitoring Revisions



- OMSAP met in 2019
- Recognized emerging contaminants are broad regional issues (not just MWRA issues)
- Expecting suggestions on emerging contaminants (e.g. PFAS) in coming months
- OMSAP agreed some questions fully answered. Can reduce or eliminate some monitoring
- MWRA proposed monitoring reductions to regulators in June 2020

Video From Outfall Diffuser July 2020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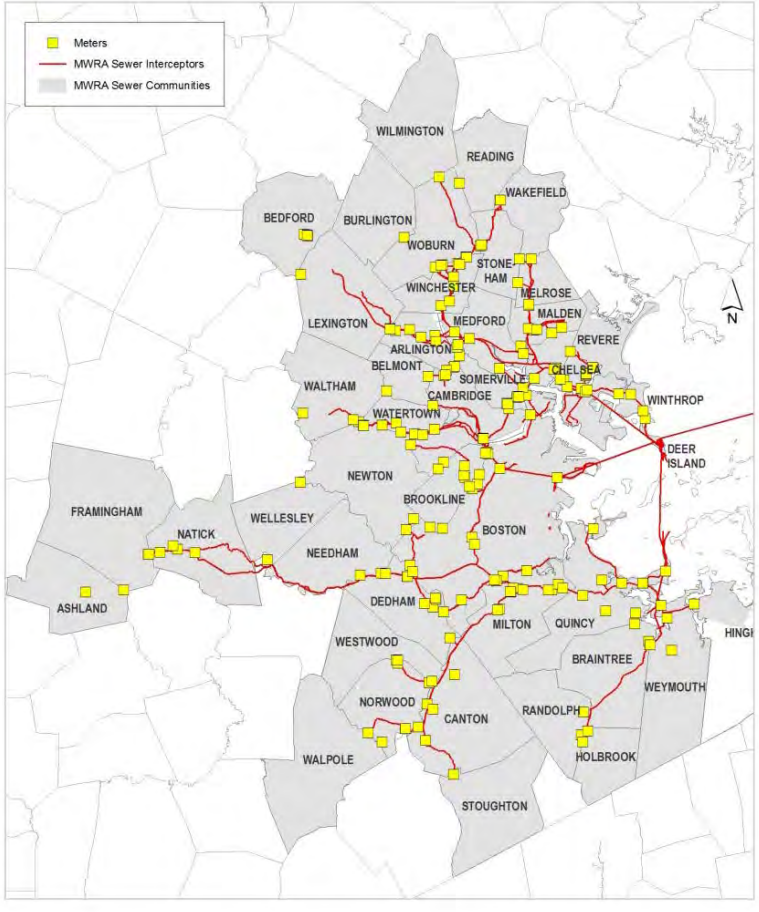
Wastewater Metering System Upgrade
Award of Contract 7191

October 14, 2020

Background

- Wastewater meters are a key element of MWRA cost allocation methodology for the regional sewer system
- Last full metering system upgrade was in 2004
- Currently 212 total meters, including 189 Revenue Meters

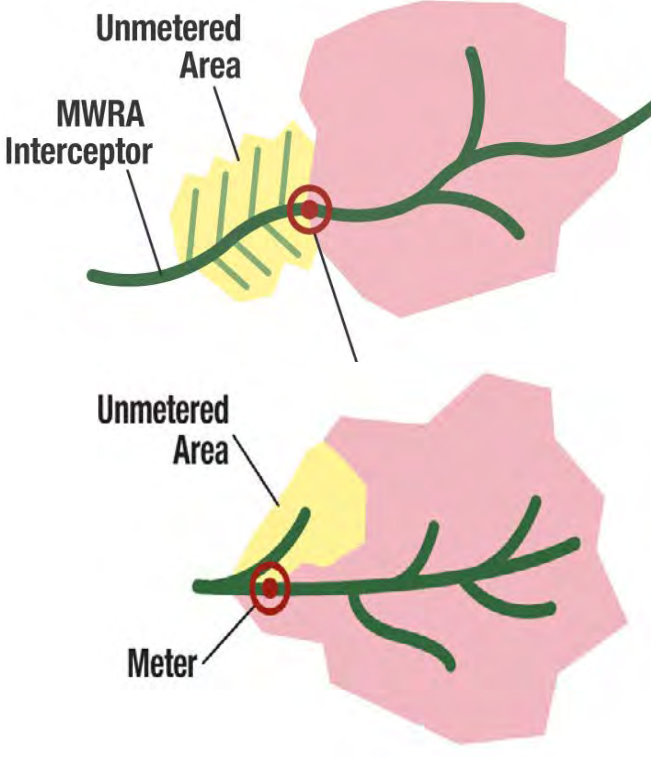


Wastewater Metering System Design

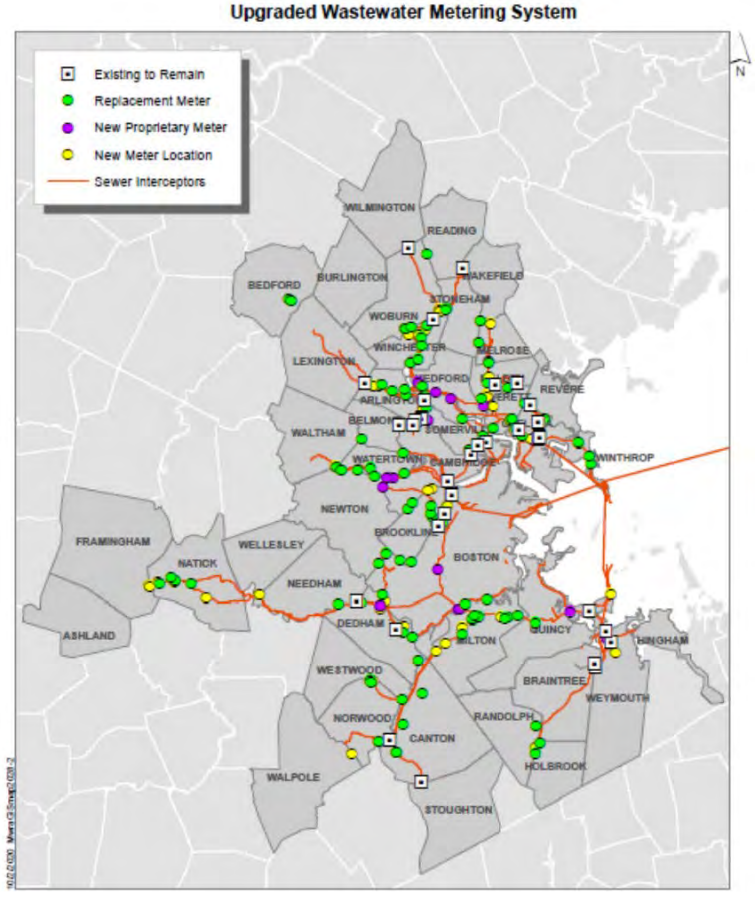
- Sewer system not designed to be metered
- Goal to meter at least 85% of community flows
- Methodology to estimate unmetered flow

Metering Strategies

1. Direct Metering
2. Subtraction Metering
3. Estimate



Map of Proposed New and Relocated Meters



- 174 Total Meters
- 21 Large Diameter – ISCO Laser
- 153 Non-proprietary
  - 91 Submerged
  - 62 Non-Contact

- Wastewater Billing during Installation
  - CY21 flows based on 3 year averages
  - Return to Metered Billing by Jan. 2022
  - Recommendation after consultation with Advisory Board

Cost and Schedule

Recommendation of Award to ADS LLC

- Bid Price
  - $3,286,114
- Engineer's Estimate
  - $3,508,074

Schedule

- Notice to Proceed November 2020
- Installation during Calendar Year 2021
- New meter data for billing by January 2022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Operation and Maintenance of the Fore River Pelletizing Plant, Contract S345

October 14, 2020

MWRA Pellet Plant - Quincy, MA

- **Located in Fore River Shipyard**
- **Designed, Constructed & Owned by MWRA**
  - **Total cost - $133 million**
- **FY21 Budget** - $14,465,681

- **Contract Operation and Maintenance**
  - Contract 1: 1991 – 2001 — Competitive Bid – NEFCo
  - Contract 2: 2001 – 2015 — Competitive Bid – NEFCo
    - Amendment 1 — Negotiated 5-Year Extension (through end 2020)
    - Amendment 2 — Loss of remote silos

Pellet Plant – Regulatory Challenges Cause Change in Path

Intent: competitively bid 15-year O&M contract

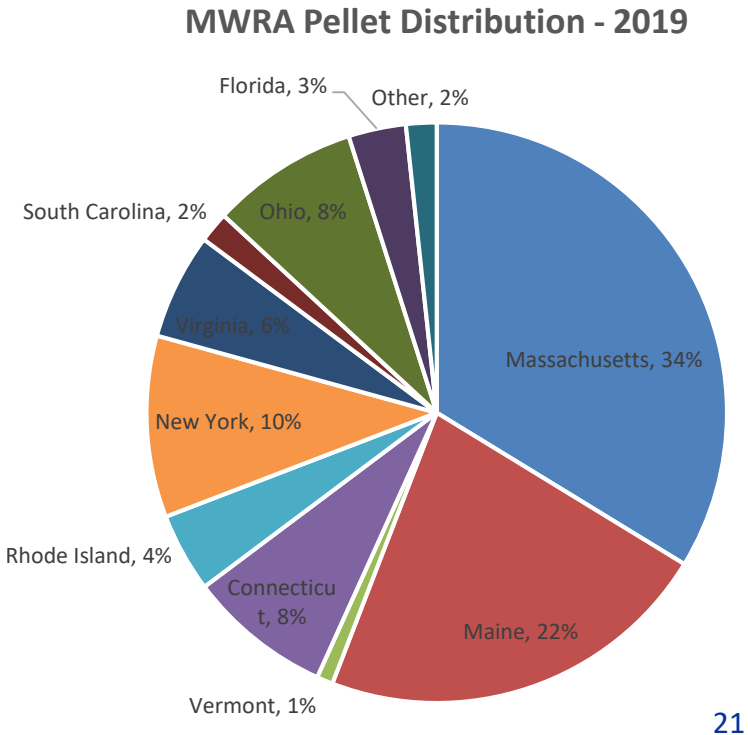
Per- and polyfluorinated substances (PFAS): emerging contaminants

- Drinking water limits:
  - EPA: 70 parts per trillion health advisory
  - MassDEP: 20 parts per trillion total for 6 PFAS compounds
- Not regulated in biosolids – but gathering data
  - MaDEP – including data gathering in permit requirements
  - Maine DEP – 2019 moratorium for 3 months
    - Suggested “screening concentrations”
- Has already impacted Marketing and Disposal Contracts for industry

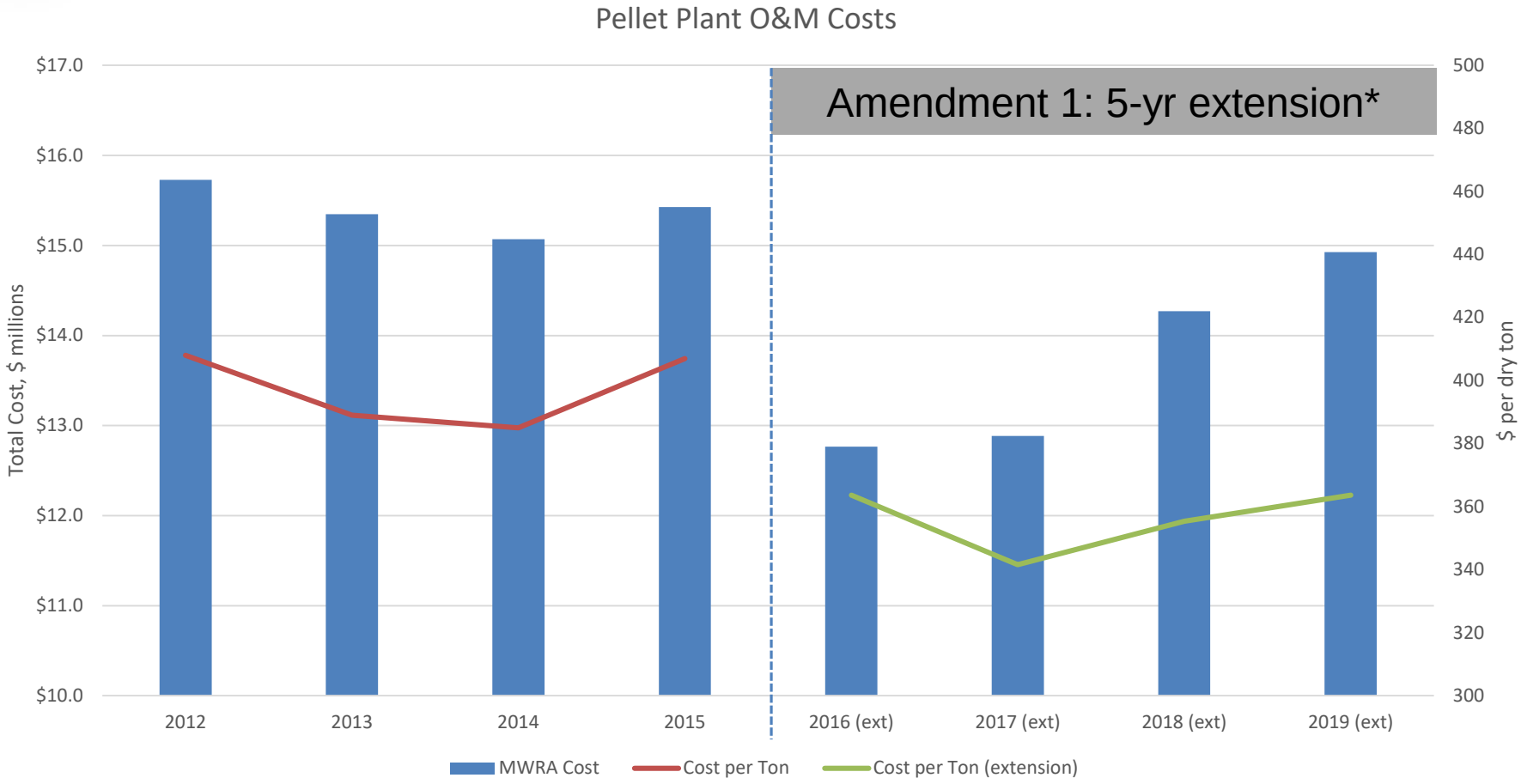
- **Short Term Extension Recommended Due to Uncertainty**

Pellet Plant – Existing Contract with NEFCo

- Convert liquid digested sludge from Deer Island into Fertilizer Pellets
- Responsible for Marketing and Disposal
  - Land Application
  - Fertilizer Blenders
  - Alternate Fuels
  - Bay State Fertilizer Program
- Maintain Facility and Equipment
  - Return fully operable plant at the end of contract



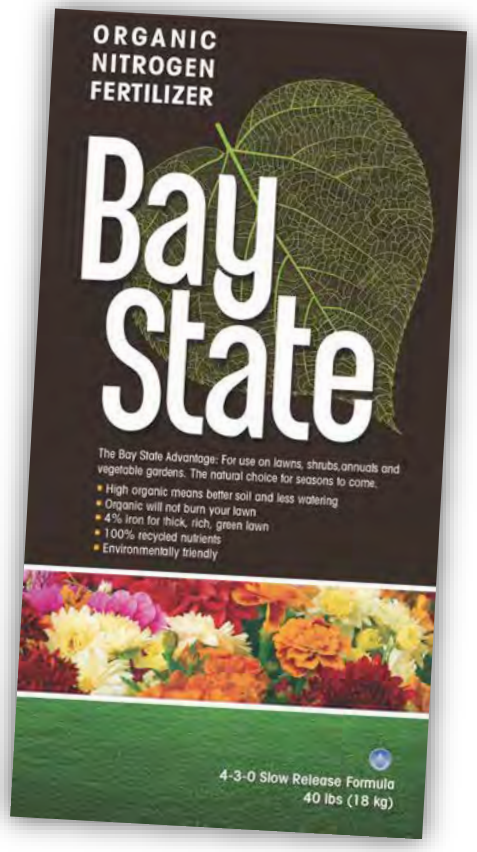
Pellet Plant – Existing Contract with NEFCo



*Increase in total dollars from 2016-2019 due to increased sludge quantities processed by plant. Price per ton remains low.

Proposed Amendment 3

- Proposed 2 year extension with optional 3rd Year
- Increase base tonnage from 92.5 dry ton per day to 94
  - Saving $160,000 annually
- Other NEFCo concessions totaling $410,736 in savings
- Marketing and Disposal increases - $844,722
- Net Overall increase – 2.9% annually over 2019 or $433,986
  - Assumes 110 dry tons per day

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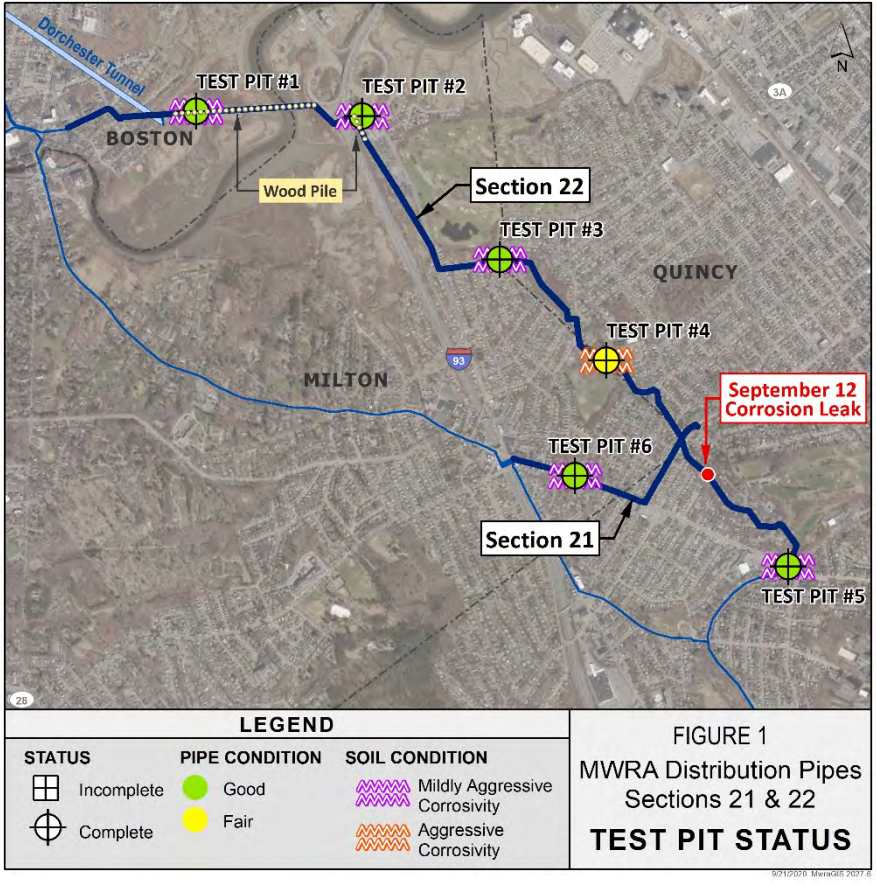
Section 22 Rehabilitation Alternatives Analysis and Environmental Permitting

Contract 7155
Quarterly Update

October 14, 2020

Test Pit Status



Test Pit # 1 – Section 22 in Neponset River (ACEC)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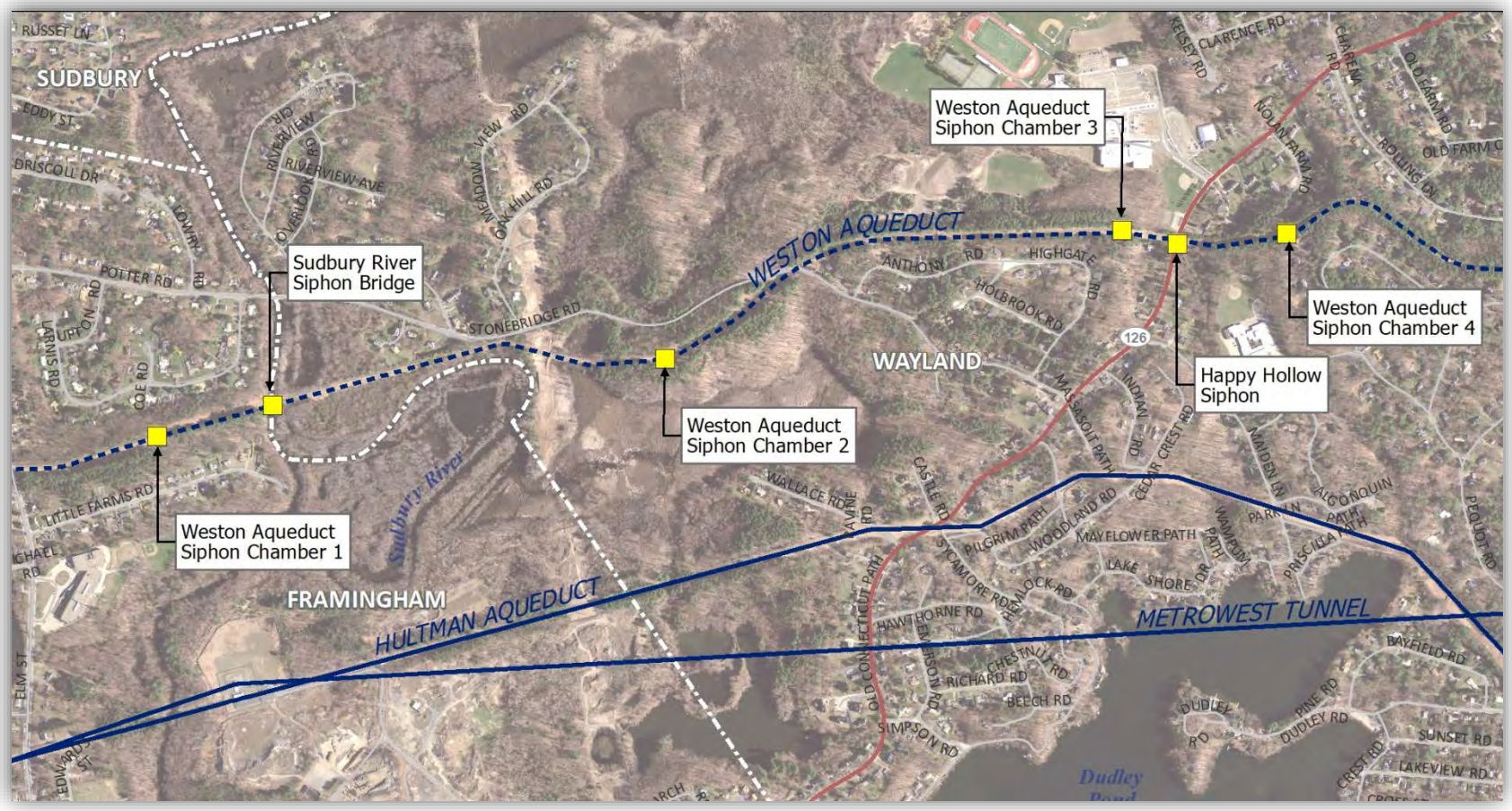
Weston Aqueduct Stop Plank Gates Project
Contract 7369

October 14, 2020

Project Map – Weston Aqueduct



Existing Conditions – Stop Plank Gates

Rack and Pinion Lifting System

Siphon Chamber

Summary of Work

- Chambers 3 and 4 – two gates and guides in each chamber require replacement
- Replace all air blow off valves (two 16-inch valves at three locations for six total)
- Replace air valve on Sudbury River Pipe Bridge

Weston Aqueduct Stop Plank Gates – Contract 7369

Contractor	Bid	Terms
WES Construction Corp	$2,294,000	270 calendar days

Engineer's Estimate = $2,181,000 (within 5%)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Commonwealth Avenue Pumping Station
Contract 7524, Change Order 8

October 14, 2020

Commonwealth Avenue Pumping Station

Contractor: WES Construction
Bid Amount: $6,849,500
NTP: February 28, 2019
Completion: March 29, 2021

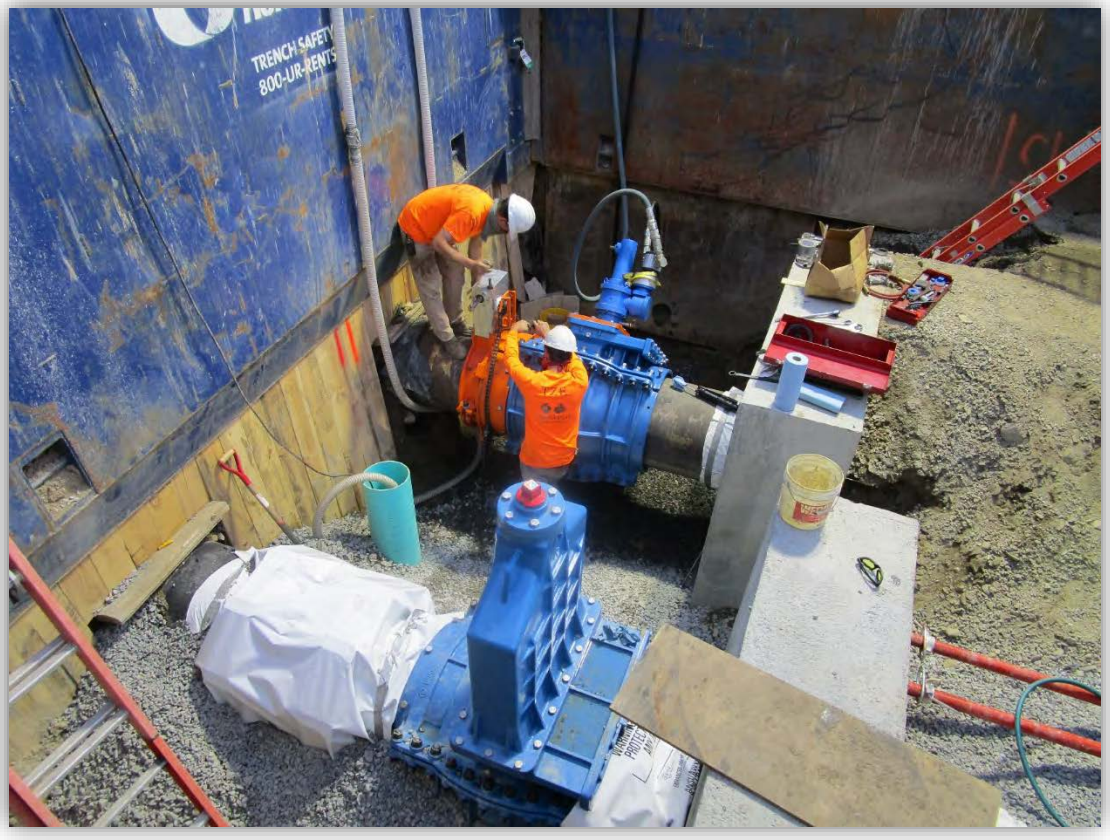
One of the Metropolitan Tunnel Interim Improvement Projects

- Provides redundancy for City of Newton if City Tunnel taken out of service
- Alternate low service supply from WASMS 1 and 2
- New low service pumps

Commonwealth Avenue Pumping Station

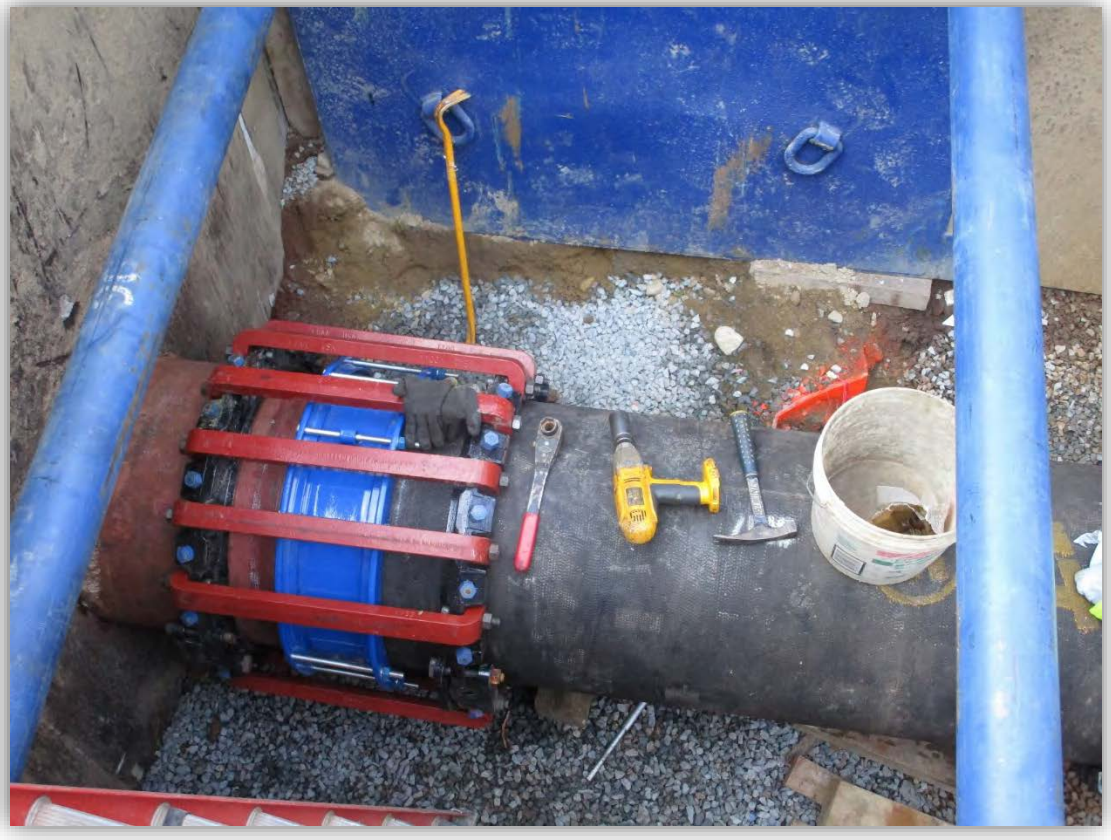
Installing Cutter Head on 24” Insertion Valve

Milling Top of Existing 24” Water Main for Insertion Valve Installation



Shaft 6 Tie-in Thrust Block Reinforcement

Shaft 6 Tie-in Coupling and Restraint



New 60-inch Pipe for WASM 2 Connection on Carriage Lane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