



**Tighe&Bond**



# PFAS MITIGATION

**Memorial Beach and Bigelow Road Proposed Water Treatment Plants**  
**May 2, 2024**

Tom Cutler, Webster Water Department  
Danielle Teixeira, PE, Tighe & Bond

# PRESENTATION OUTLINE

PFAS

Regulatory Limits

Webster's Water Quality

Plan for Treatment

Project Funding and Appropriations

# EMERGING CONTAMINANT: PFAS

## What is the problem?

- Emerging Contaminant: Per and Polyfluoroalkyl Substances (PFAS)
- PFAS are a group of manmade chemicals that have been widely used in industry and consumer products since the 1940s.
- PFAS exposure can cause harmful health effects to humans (cancer, thyroid disease, decreased fertility, high cholesterol, obesity)



<https://riversideca.gov/press/understanding-pfas>

# CURRENT MASSACHUSETTS AND EPA LIMITS FOR PFAS

**Current MassDEP  
Maximum**

**Contaminant Level is  
20 parts per trillion  
(ppt) for PFAS6**

**PFAS6 = the sum of concentrations of:**

- Perfluorooctanoic Acid (PFOA)
- Perfluorooctane Sulfonic Acid (PFOS)
- Perfluorononanoic Acid (PFNA)
- Pefluorohexane Sulfonic Acid (PFHxS)
- Perfluoroheptanoic Acid (PFHpA)
- Perfluorodecanoic Acid (PFDA)

**EPA Final National  
Primary Drinking  
Water Regulation  
(NPDWR)-Published  
April 10, 2024**

Compound	MCLG	MCL
PFOA	0	4 ppt
PFOS	0	4 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (GenX)	10 ppt	10 ppt
Mixtures containing 2 or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) *Hazard Index	1 (unitless) *Hazard Index

\*Based on fraction of health-based value for each compound (PFNA:10ppt, PFHxS:9ppt, PFBS 2000 ppt, GenX:10ppt)

- MassDEP will update their MCLs based on EPAs final MCLs



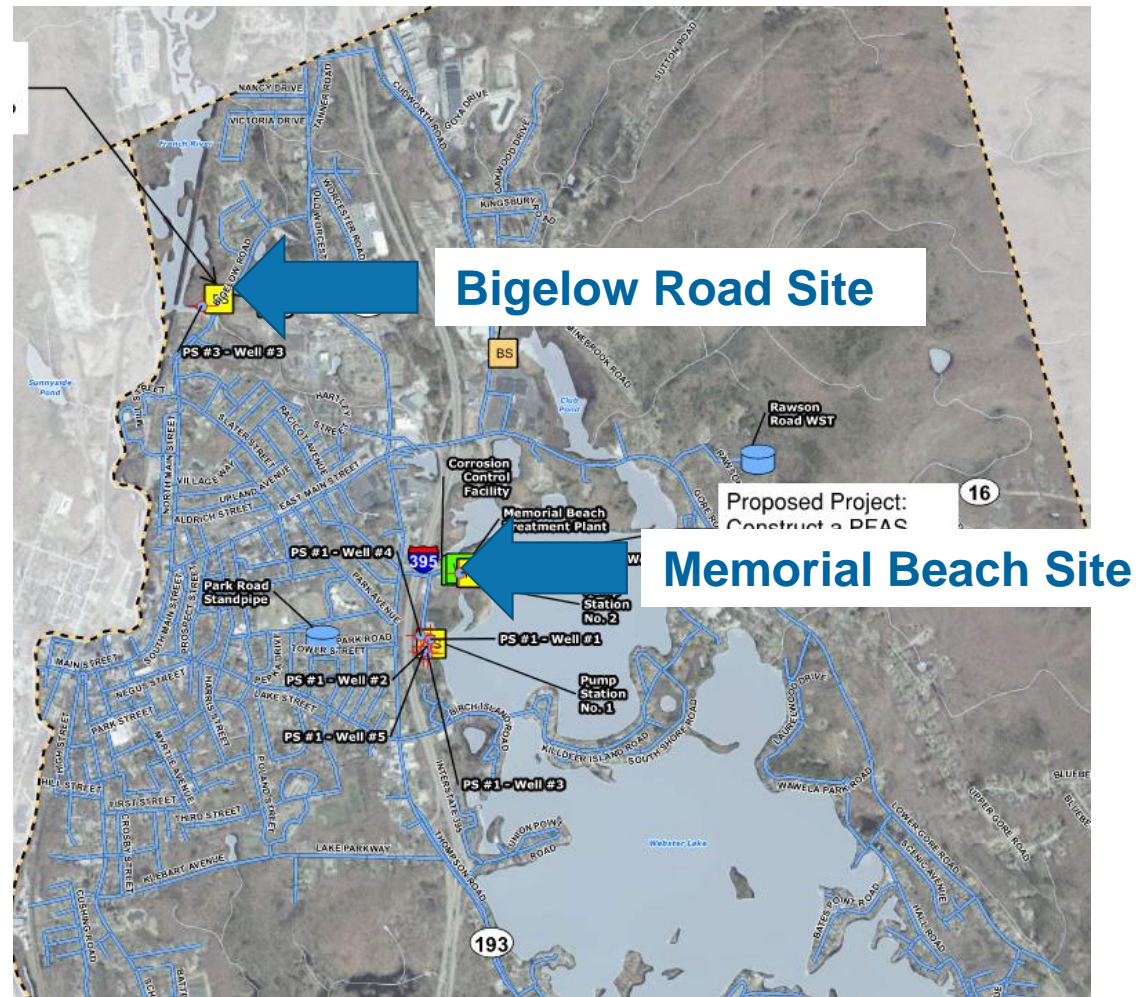
# WEBSTER WATER SYSTEM AND SOURCES

## Memorial Beach Wells (~2.75 MGD)

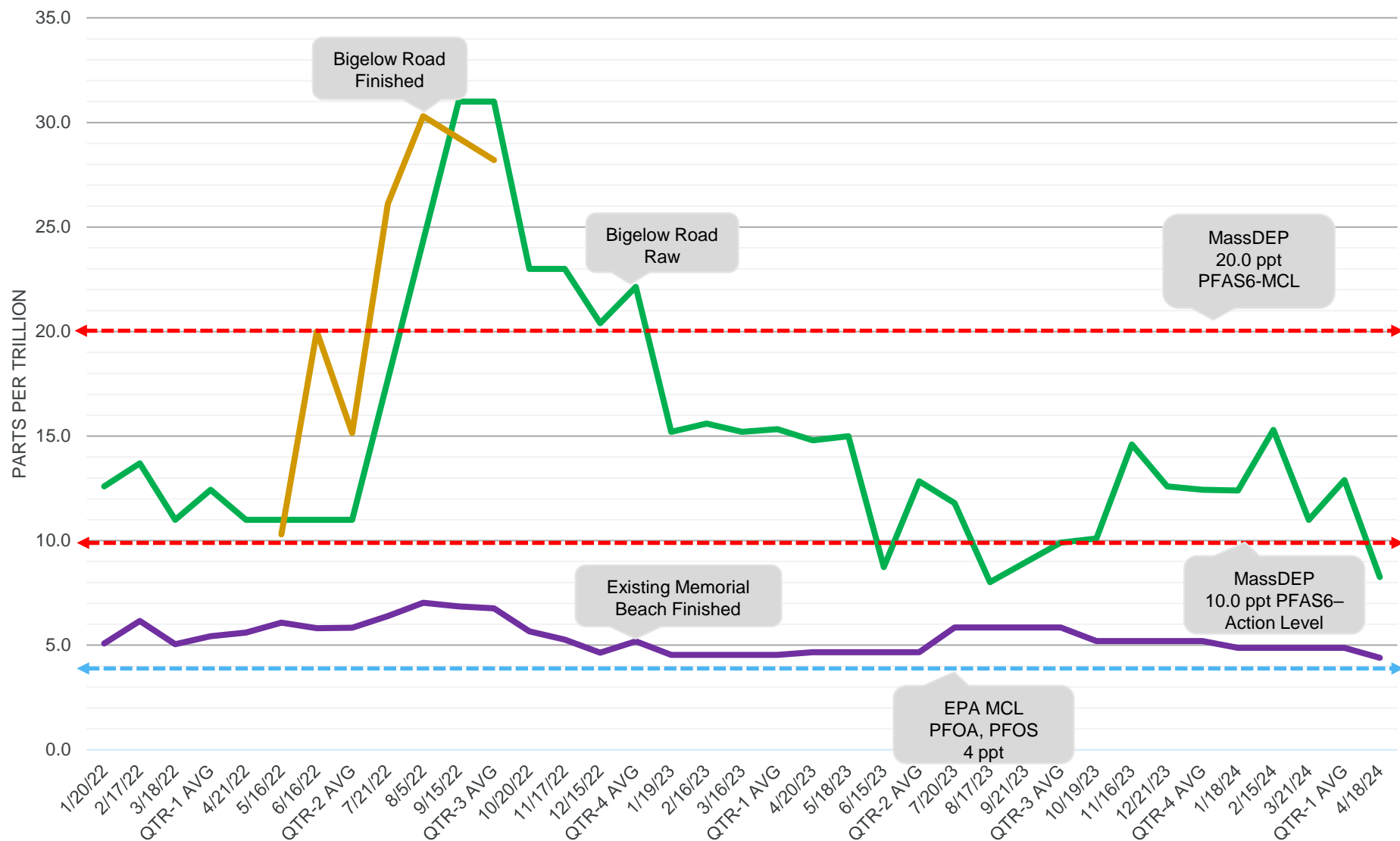
- Pump Station No. 1 and Pump Station No. 2 (6 wells)
- Recently used as Webster's Primary Water Supply
- Iron and Manganese Treatment added in 2019

## Bigelow Road Well (~2 MGD)

- Pump Station No. 3 (1 well)
- Emergency use only since PFAS was detected above the MCL in July 2021



# WEBSTER WATER SUPPLY PFAS CONCENTRATIONS



# RECENT WEBSTER WATER SUPPLY PFAS CONCENTRATIONS COMPARED TO EPA MCL

Compound	MCLG	MCL	Bigelow Raw (4/18/24)	Memorial Finished (4/18/24)
PFOA	0	4 ppt	<b>5.63</b>	2.18
PFOS	0	4 ppt	2.63	2.22
PFHxS	10 ppt	10 ppt	1.54	0.67
PFNA	10 ppt	10 ppt	ND	ND
HFPO-DA (GenX)	10 ppt	10 ppt	ND	ND
Mixtures containing 2 or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) *Hazard Index	1 (unitless) *Hazard Index	0.17	0.08



# 2023 TOWN MEETING APPROPRIATION (\$33M)

## Allows for construction of 2 new WTPs

- Bigelow Road WTP: Iron, Manganese, and PFAS Treatment
- Memorial Beach PFAS WTP: PFAS Treatment

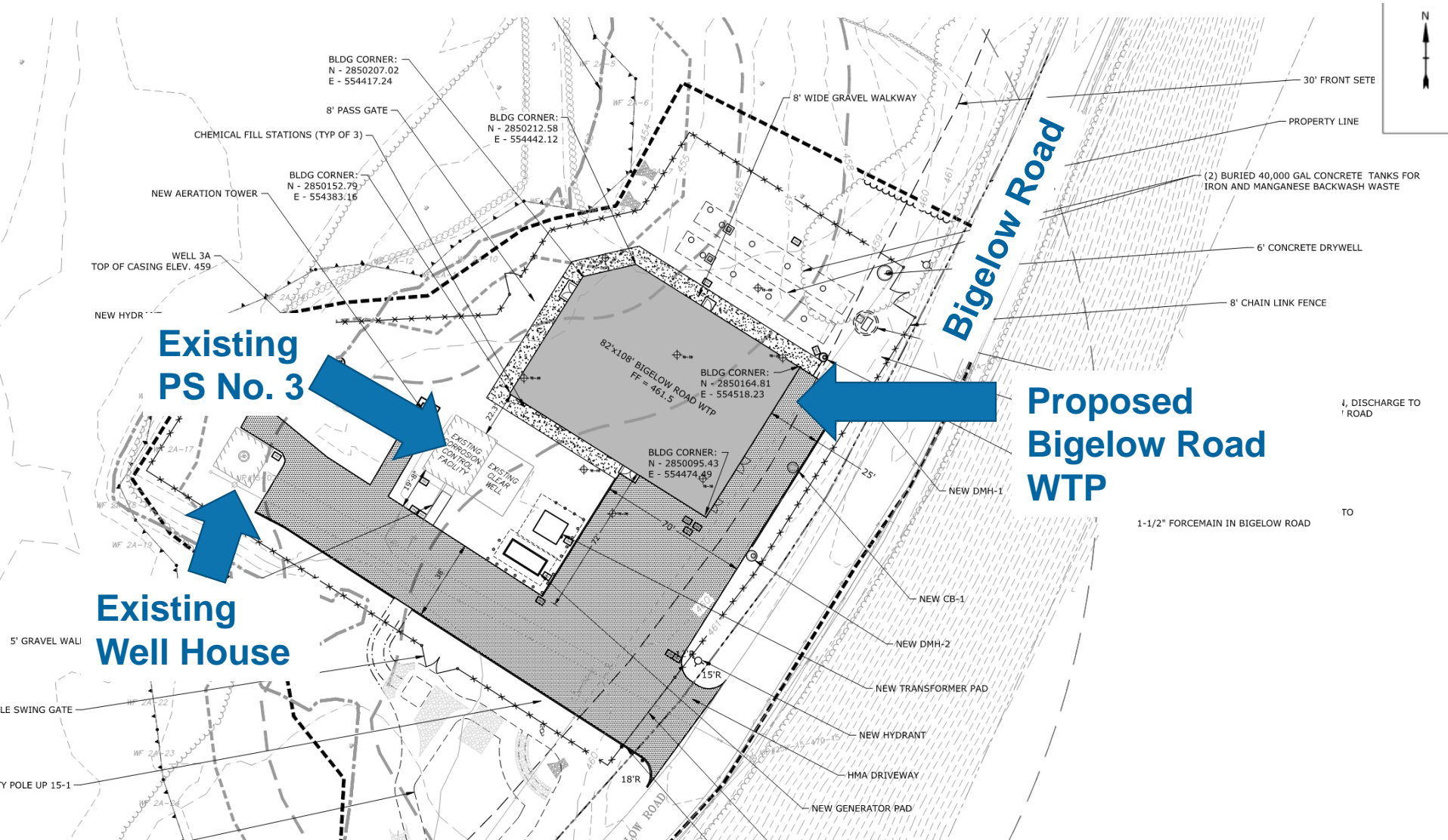
# 2024 TOWN MEETING APPROPRIATION (\$3M)

## Additional Appropriation of \$3,000,000 allows for:

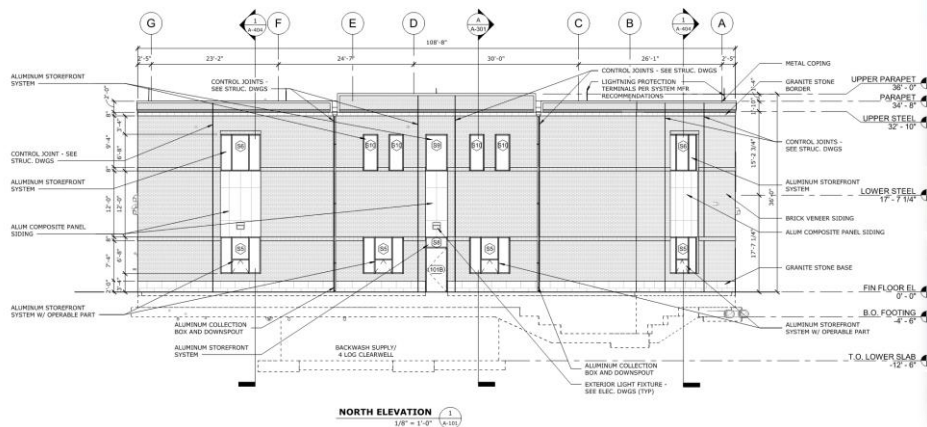
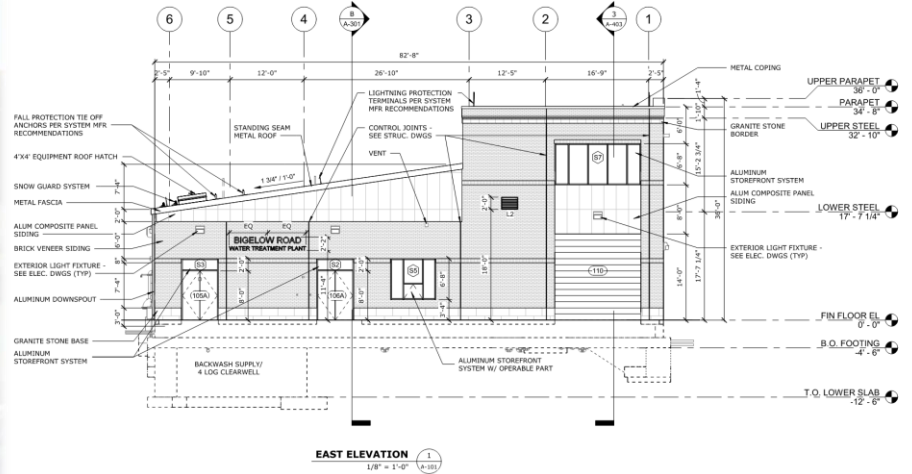
- Two replacement wells, one at Bigelow and one at Memorial
- Cured in place pipe lining (CIPP) along Bigelow Road

*Additional appropriation is necessary for system redundancy and will result in lower costs, compared to completing these projects in the future*

# BIGELOW ROAD WTP SITE PLAN

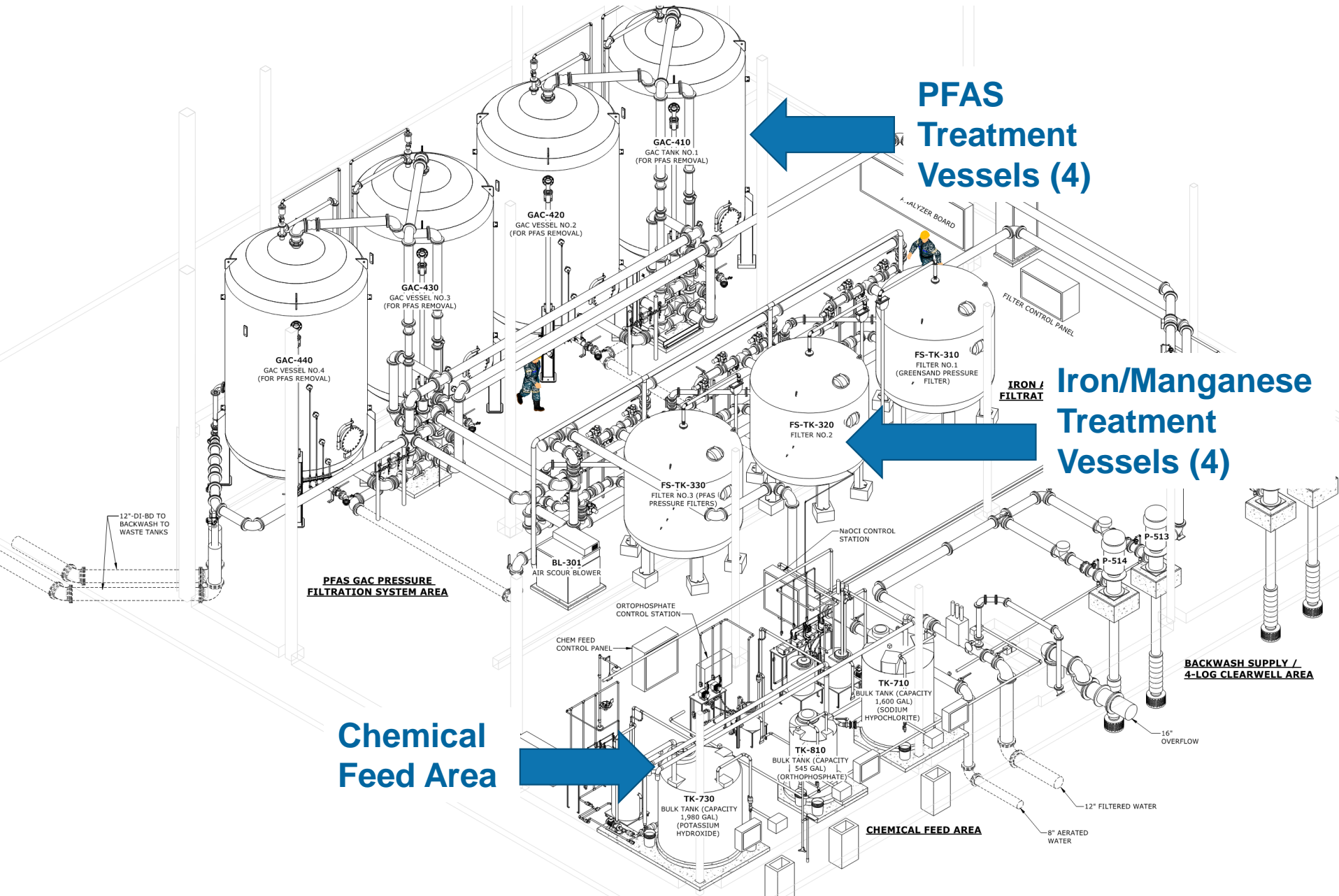


# BIGELOW ROAD WTP ELEVATIONS





# BIGELOW ROAD WTP FLOOR PLAN

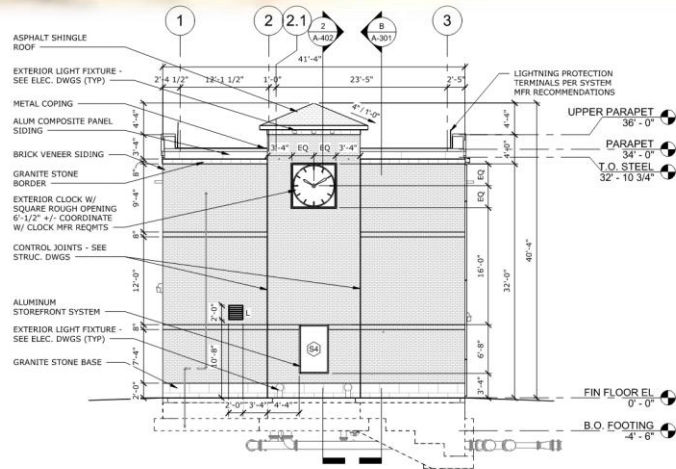
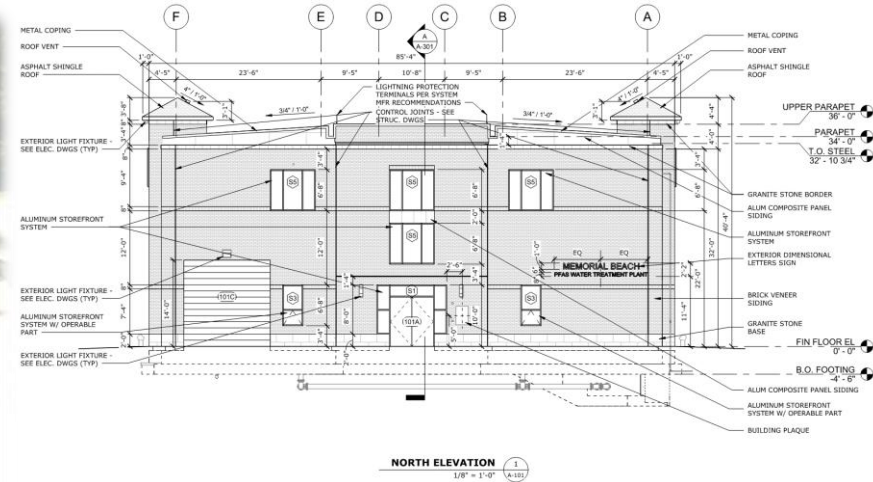


## Existing Memorial Beach Iron/Manganese WTP



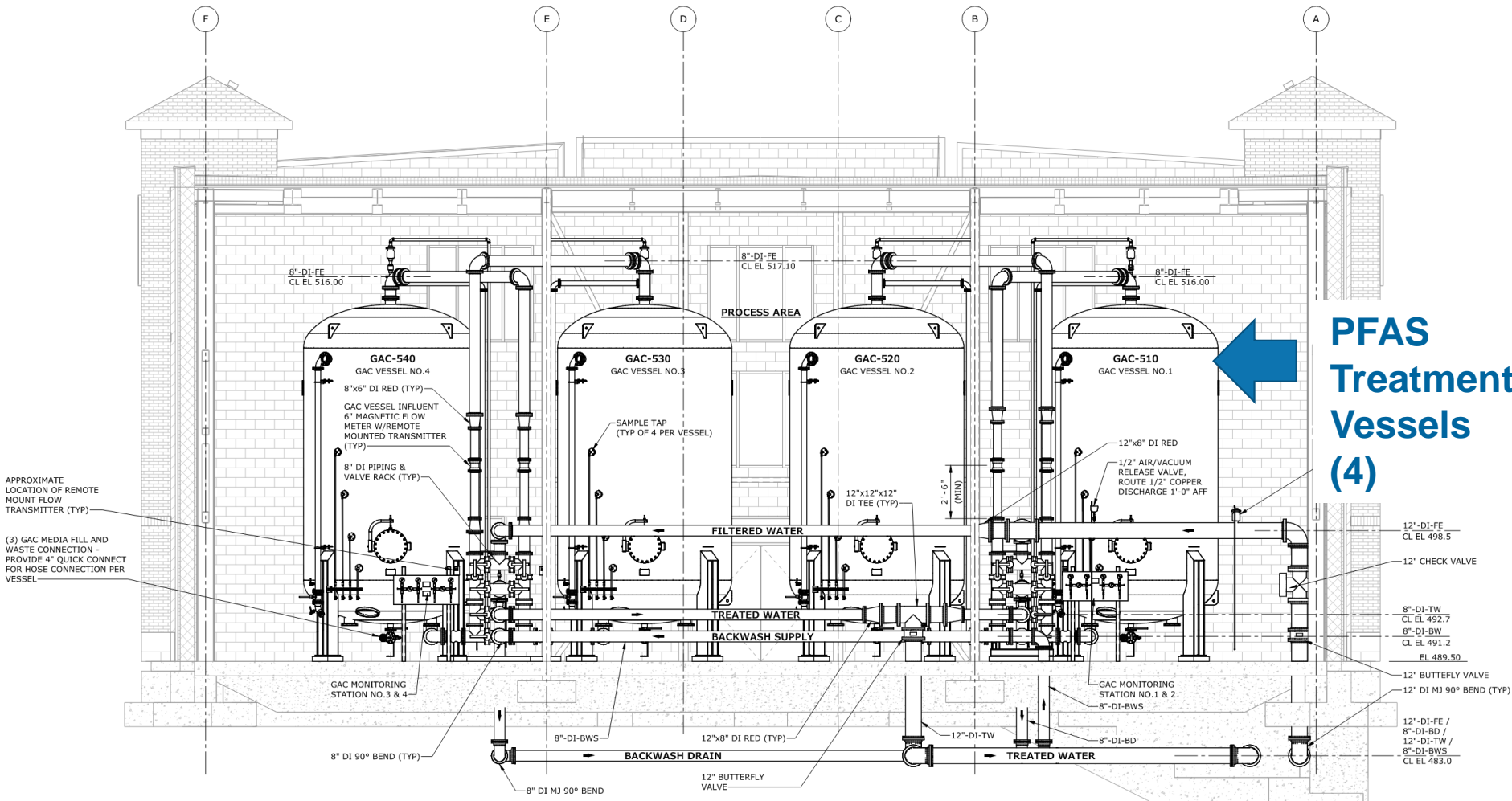


# MEMORIAL BEACH PFAS WTP ELEVATIONS



# MEMORIAL BEACH PFAS WTP

## PFAS Treatment Vessels (4)



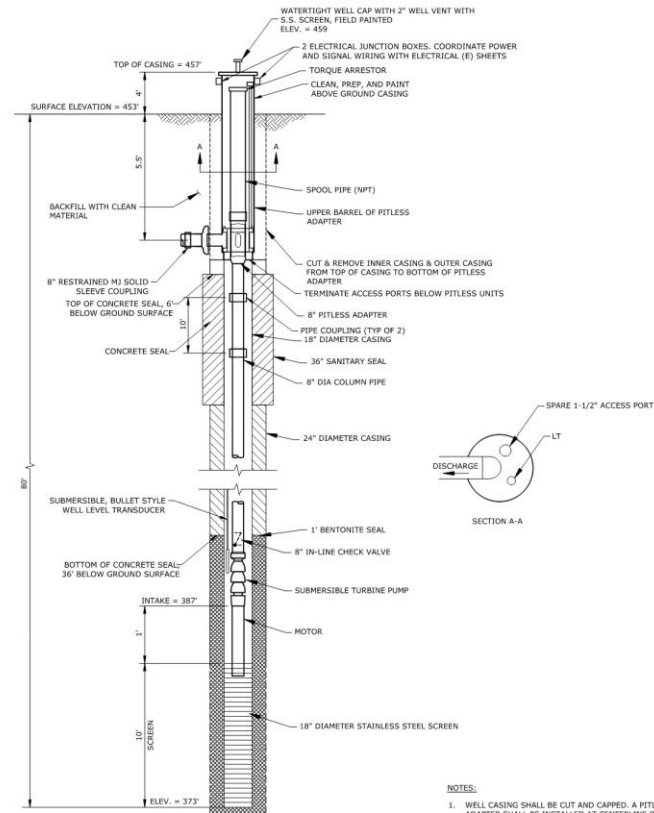
**SECTION**  
1/4" = 1'-0"



# 2024 TOWN MEETING APPROPRIATION

## Additional Appropriation of \$3,000,000 allows for:

- Two replacement wells, one at Bigelow and one at Memorial
  - Wells are upwards of 60 years old and will need replacement in the near future
- Cured in place pipe lining (CIPP) along Bigelow Road
  - Improve the integrity of the existing water main to deliver treated water from the Bigelow WTP to the distribution system



***Additional appropriation is necessary for system redundancy and will result in lower costs, compared to completing these projects in the future***

# PROJECT FUNDING

## Construction Funding through MassDEP State Revolving Fund (SRF) Loan Program

- 30 year construction loan with below market interest rates: 0% interest rate for PFAS Projects
- Webster is eligible for principal forgiveness –19.8% up to 15M and 9.9% up to 10M



# PROJECT BUDGET

Budget for Construction	
Construction of 2 WTPs	\$31,000,000
Construction Contingency	\$1,850,000
Engineering Allowance	\$2,950,000
Police Detail/Special Testing Allowance	\$200,000
<b>Total</b>	<b>\$36,000,000 (all SRF Eligible)</b>



# ANTICIPATED PROJECT SCHEDULE

Task	Date
Bid Opening	April 2024
Award Phase	May 2024
Construction Contractor's Notice to Proceed	July 2024
Construction Partial Substantial Completion (Bigelow Online)	June 2026
Construction Substantial Completion	November 2026
Final Payment	December 2026

\*Pending lead time for equipment delivery

# QUESTIONS AND DISCUSSION





**PFAS Water Treatment Plants Project**  
**DWSRF Project No. 10380**  
Webster, Massachusetts

**Bid Date: Thursday, April 25, 2024 @ 2:00 p.m.**

**Summary of General Bids**

BIDDER	BASE BID TOTAL (Items 1-4)	ADD ALTERNATE NO. 1	ADD ALTERNATE NO. 2	ADD ALTERNATE NO. 3	TOTAL BID (Base Bid Total and Add Alternates)	Bid Bond	Acknowledge Addenda No. 1 through 8	DCAMM Forms	Rank
Methuen Construction, Company	<i>\$28,325,974</i>	\$560,983	\$438,914	\$1,069,109	<i>\$30,394,980</i>	✓	✓	✓	1
Daniel O'Connell's Sons	<i>\$31,670,000</i>	\$475,000	\$350,000	\$695,000	<i>\$33,190,000</i>	✓	✓	✓	2
Barletta Heavy Division	\$31,808,000	\$517,000	\$469,000	\$606,000	\$33,400,000	✓	✓	✓	3
Associated Construction, Company	<i>\$31,642,339</i>	<b>\$546,952</b>	\$695,986	\$1,180,009	<b>\$34,065,286</b>	✓	✓	✓	4
Walsh Construction Company	<i>\$37,844,850</i>	\$410,000	\$276,725	\$595,420	<i>\$39,126,995</i>	✓	✓	✓	5

\*Italicized numbers were updated with correct Electrical FSB value and highlighted numbers were updated to correct mathematical errors.

**BIDS OPENED BY:**

Tom Cutler  
Town of Webster

**WITNESSED BY:**

Danielle Teixeira  
Tighe & Bond