



# Massachusetts Water Resources Authority

*Presentation to*

**WAC**

## *MWRA Environmental Monitoring*

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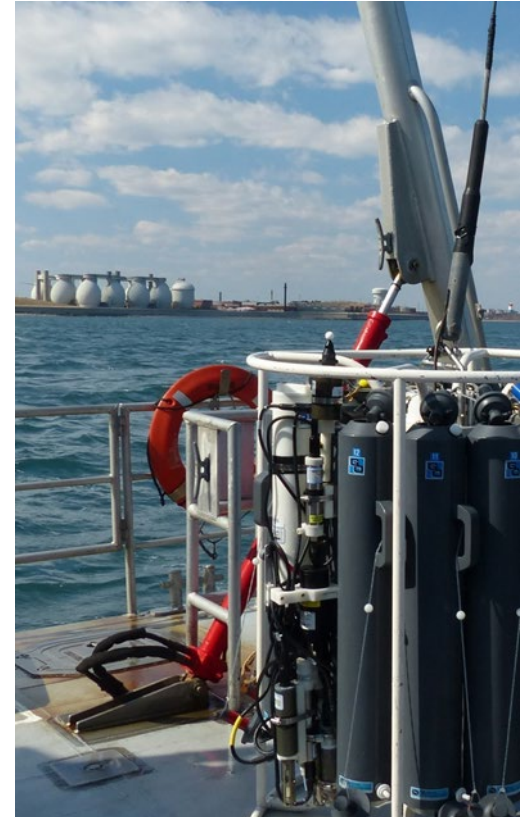
MWRA Environmental Quality Department

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# MWRA Environmental Monitoring Programs

- Outfall related
  - Massachusetts Bay
    - Water column
    - Benthic
    - Fish/shellfish
    - Other
  - Cape Cod Bay
- Other programs
  - Boston Harbor
  - Charles, Mystic, and Neponset Rivers





# Ambient Monitoring Plan

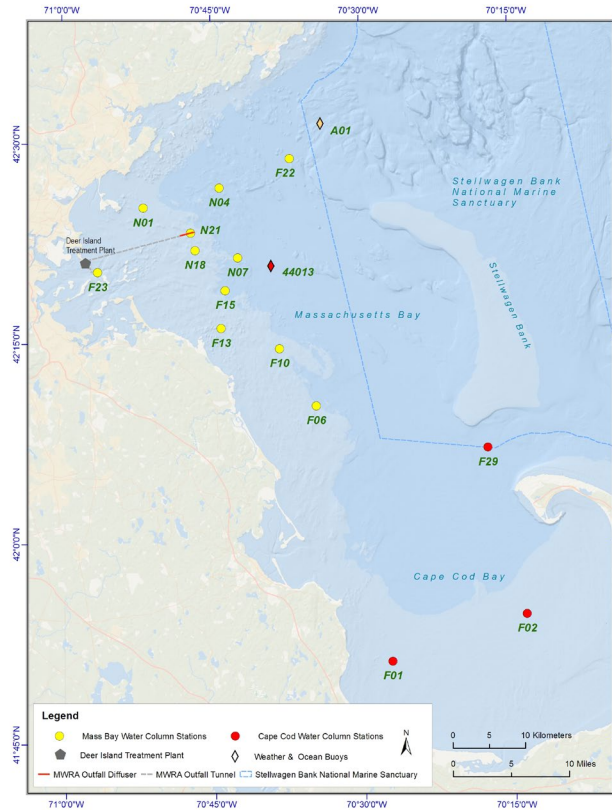
- Included in the Deer Island NPDES permit
- 30+ monitoring questions were developed by OMTF (precursor to OMSAP) that address four main concerns:

Safe for swimming?	Safe to eat fish?
Aesthetic problems?	Ecosystem degradation?

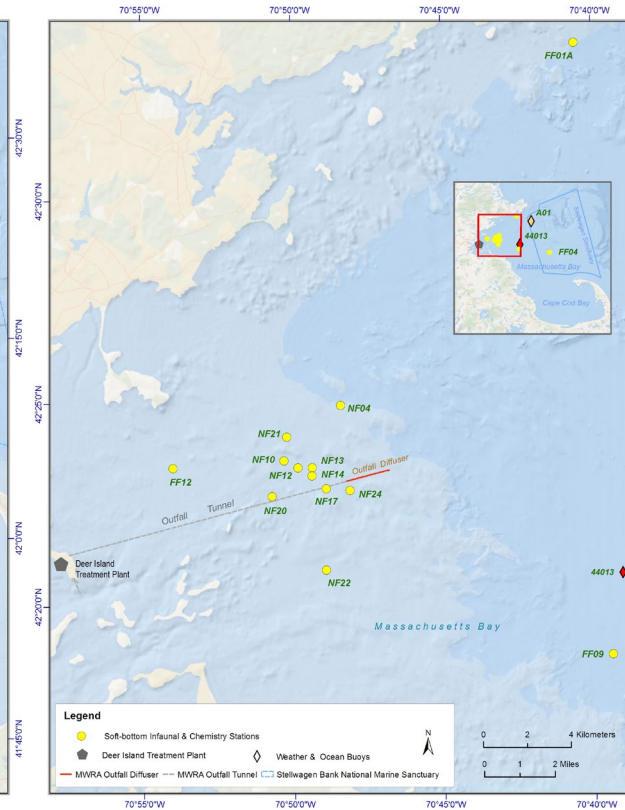
- Regular monitoring concentrated around the outfall (“nearfield”) with more distant locations (“farfield”) as references
- Revised in 2004, 2010, and 2021



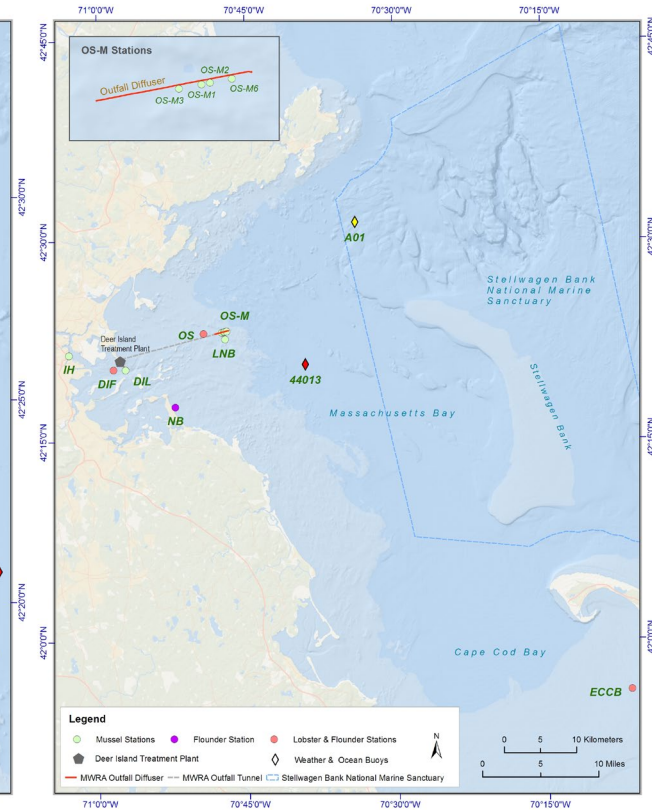
# Monitoring locations



Water column



Soft bottom sediment



Fish and shellfish



## Other Ambient Monitoring Plan components

- Bays Eutrophication Model: models nutrient impacts in Massachusetts Bay
- Continuous monitoring using buoy-based instruments
  - Bowdoin College: chlorophyll
  - University of Maine: temperature, salinity, dissolved oxygen
  - Includes maintenance of instruments and data management
- Occasional “special studies” examining issues of particular interest (e.g., detailed reports on *Alexandrium*, flounder skin lesions)



# Contingency Plan

- Also included in the Deer Island NPDES permit
  - “...the Contingency Plan identifies numerical or qualitative thresholds that can suggest that effluent quality or environmental conditions may be changing or might be likely to change in the future.”
  - Ambient thresholds based on pre-outfall data
  - Exceedances are observed changes in conditions – they do not have to be related to the outfall or necessarily be harmful to the environment
- Exceedances of the Contingency Plan must be reported to EPA, DEP, OMSAP, and other interested parties

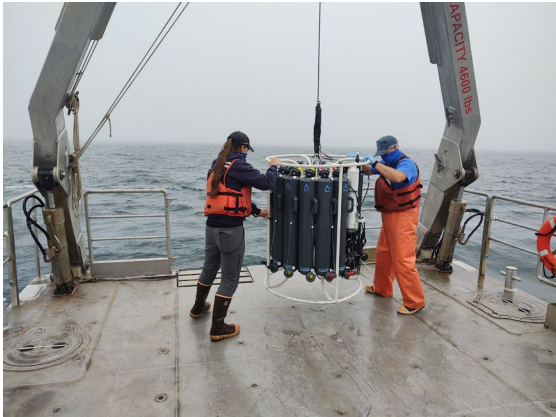


- As OMTF, helped develop original monitoring questions which informed development of the technical aspects of the Ambient Monitoring Plan
- MWRA can suggest changes to the Ambient Monitoring and Contingency Plans, and OMSAP advises EPA and DEP on these changes
- MWRA sends all monitoring related technical reports to OMSAP, EPA, and DEP





# Monitoring Costs



Work under the Ambient Monitoring Plan is split into multiple contracts totaling approximately \$1.6m/year

- Water column: Battelle Memorial Institute
  - \$767,000 (2021)
- Benthic/fish and shellfish: Normandeau Associates
  - \$474,000 (2021)
- Cape Cod Bay: Center for Coastal Studies
  - \$136,000/year (2021)
- Bays Eutrophication Model: Deltares
  - \$100,000/year (estimate of future costs)
- Continuous monitoring: Bowdoin & University of Maine
  - \$95,000/year (FY22)





# Evolution of the Ambient Monitoring Plan

- 2004: Emphasis on long-term chronic effects as short term effects were not seen; reduction in number of locations and surveys
  - Savings of \$900,000/year
- 2010: Further reduce number of locations and surveys as general outfall effects not discernible; focus monitoring closer to outfall; use data from continuous monitoring instrumentation to take advantage of technological advances
  - Savings of \$840,000/year
- 2021: Reduce the number of flounder monitoring locations as monitoring questions have been answered
  - Savings of \$50,000/year



## Results/Reports

- Ambient Monitoring Plan (v2.1, 2021)
  - <http://www.mwra.com/harbor/enquad/pdf/2021-08.pdf>
- Contingency Plan (Revision 1, 2001)
  - <http://www.mwra.com/harbor/enquad/pdf/2001-ms-71.pdf>
- 2020 Outfall Monitoring Overview
  - <http://www.mwra.com/harbor/enquad/pdf/2021-10.pdf>
- Other technical reports
  - <https://www.mwra.com/harbor/enquad/trlist.html>



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- Questions?
- Further questions please email [david.wu@mwra.com](mailto:david.wu@mwra.com)

