Public Meeting
National Pollutant Discharge Elimination System (NPDES)

Draft Permit
for the
Massachusetts Water Resources Authority (MWRA)
Deer Island Treatment Plant & Combined Sewer Overflows

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July 12, 2023

Agenda

- Purpose of the Meeting
- NPDES Permitting in Massachusetts
- Overview of MWRA Deer Island Treatment Plant Permitting History
- Overview of Draft Permit
  - Outfall T01 – the Massachusetts Bay outfall
  - CSO Treatment Facilities
  - CSOs
  - Other significant changes
- MassDEP Permit
- Questions

NOTE: This meeting will end promptly at 7:45, so we can promptly start the Public Hearing starting at 8:00.

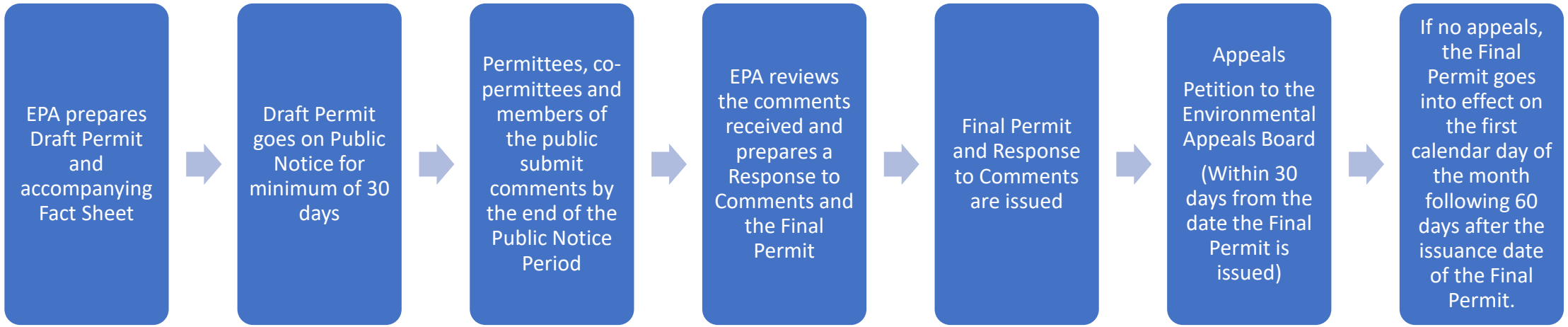
Purpose of this Meeting

- Explain the NPDES permitting process
- Explain the elements of the draft permit
- Following this meeting, we will be holding a public hearing. You will be able to comment orally during the public hearing.
- Comments may also be submitted in writing during the extended public comment period which now closes on August 30, 2023.
- Oral and written comments have equal value, and both will be addressed in EPA's Response to Comments which will be issued along with the Final Permit.

NPDES Permitting Program in MA

- EPA Region 1 issues NPDES permits in MA and NH.
- EPA and MassDEP issue two separate permits: a federal NPDES Permit and a state surface water discharge permit.
- MassDEP, generally, incorporates the EPA permit into the state permit and, if necessary, adds any state-only requirements.
- The comment period for both permits runs simultaneously. Those wishing to comment on either or both permits should submit comments to the appropriate agency.

EPA's NPDES Permit Process



MWRA Deer Island Treatment Plant Permitting History

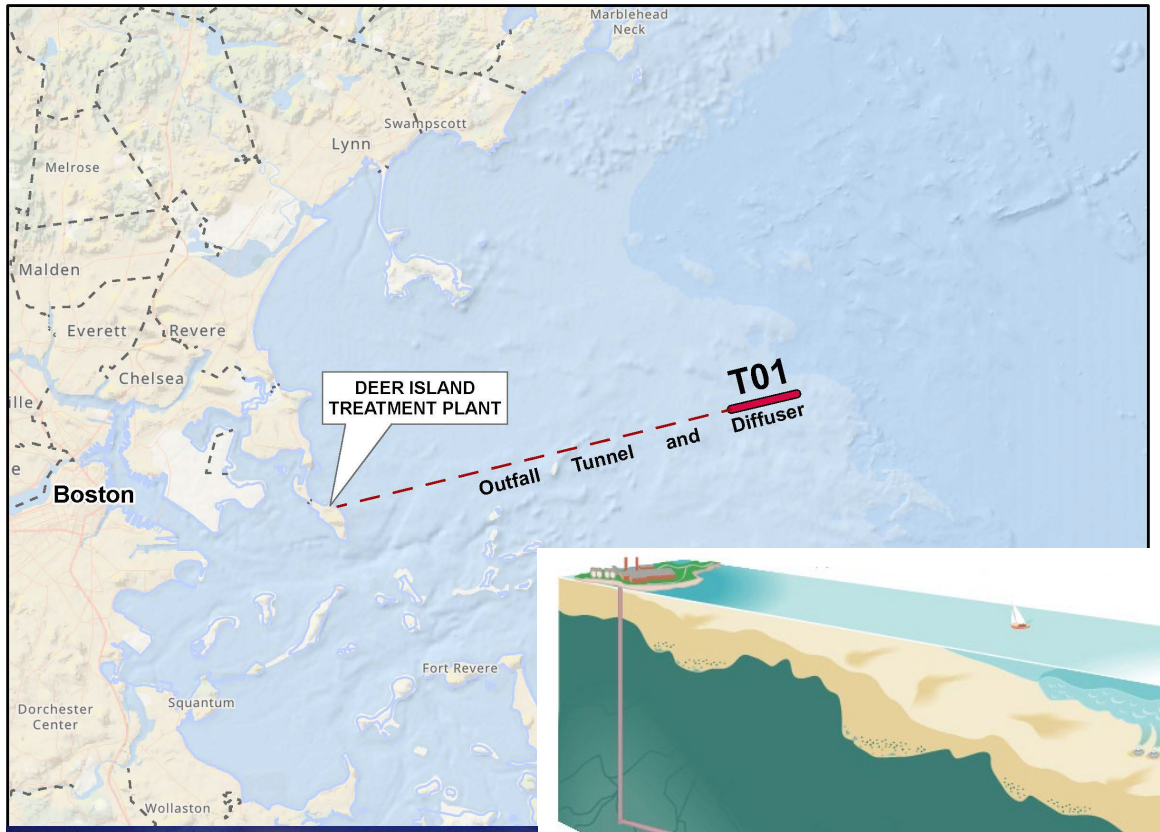
1985 - MWRA formed by the Massachusetts' Legislature

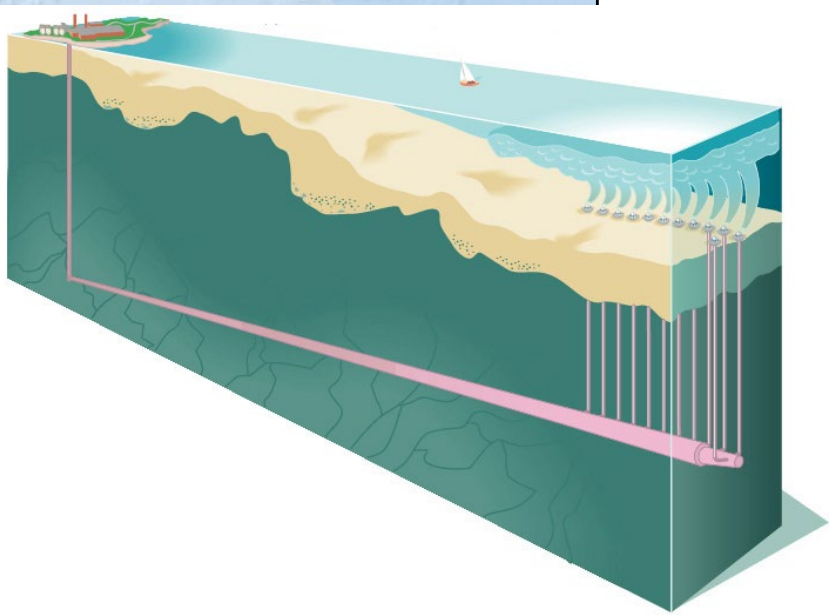
1991 – Sludge discharge to Boston Harbor ends

1995 - First stages of the improved primary treatment units begin operation

1997 - First of three batteries of secondary treatment started up

2000 – 2000 NPDES Permit becomes effective, and discharge is moved from Boston Harbor to the Massachusetts Bay





The 2000 MWRA DITP Permit

- The 2000 Permit was developed based on effluent data from the old primary treatment plant and a pilot plant since the Deer Island Treatment Plant was still being built.
  - Stringent effluent limitations
  - Extensive monitoring of the effluent for non-limited parameters
- It also focused on assuring the new discharge to Massachusetts Bay did not negatively impact Massachusetts or Cape Cod Bays.
  - Ambient Monitoring Plan
  - Contingency Plan
  - Outfall Monitoring Science Advisory Panel (OMSAP)
- The permit also included requirements for:
  - a Best Management Plan
  - a Pollution Prevention Plan
  - an Industrial Pretreatment Program
  - Operation and Maintenance requirements
  - Dye Studies to confirm dilution of the diffuser

This table is part of a presentation. For specifics on effluent limits, monitoring requirements and other permit requirements, please review the Draft Permit.

Changes between 2000 Permit and 2023 Draft Permit for Massachusetts Bay outfall (T01) – Effluent Limits & Monitoring Requirements

Effluent Parameter	2000 Final Permit	2023 Draft Permit	Change	Reason
Effluent flow, MGD	436 MGD, avg monthly	361 MGD, annual rolling avg, reported monthly	↑	361 MGD is the annual average design flow for secondary treatment that was built
CBOD & TSS, % removal	No limit	85% removal, during dry weather	↑	Consistent with other NPDES permit for POTWs with CSOs
pH, S.U.	6.0-9.0	6.0-8.5	↑	Brings consistent with current state regulations
Fecal Coliform Bacteria	14,000 avg. weekly, 14,000 max. daily	980 avg. weekly, 1960 max. daily	↑	Brings consistent with current state regulations
Enterococcus	No limit	2450 colonies/100 mL avg. monthly, 9100 colonies/100 mL max. daily	↑	Brings consistent with current state regulations
Oil & Grease	Narrative language	Non-detect limit	↑	Reasonable potential based on effluent data
PCB, Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260 ug/L	0.000045 ug/L avg. monthly, Report max. daily	No limit	↓	No limit required as PCB Aroclors never detected in effluent since 2000 Permit became effective
Total Nitrogen	No requirement	Report calculated value from data	↔	Provides added information
40 PFAS Analytes	No requirement	Report	↔	Region 1 standard requirement implementing EPA Strategic Roadmap for PFAS
Adsorbable Organic Fluorine	No requirement	Report	↔	Region 1 standard requirement implementing EPA Strategic Roadmap for PFAS

↑	↓	↔	☑
More Stringent	Less Stringent	Report	Done; completed

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Changes between 2000 Permit and 2023 Draft Permit for Massachusetts Bay outfall (T01) – Whole Effluent Toxicity (WET) Testing

Effluent Parameter	2000 Final Permit	2023 Draft Permit	Change	Reason
Whole Effluent Toxicity LC50, %	≥50%	≥100%	↓	Frequency reduced from monthly to quarterly, limit revised to ≥100% to be consistent with MA policy. No exceedances.
Whole Effluent Toxicity C-NOEC	≥1.5%	≥1.5%	↔	Frequency from monthly to quarterly, no exceedances; most permittees with dilution between 20.1-100:1 have no chronic limit but retained due to the significance volume of the discharge and its location.
Salinity	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Ammonia Nitrogen	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Total Cadmium	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Total Copper	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Total Nickel	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Total Lead	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Total Zinc	No requirement	Report	↔	Current WET testing protocols now apply to MWRA
Total Organic Carbon	No requirement	Report	↔	Current WET testing protocols now apply to MWRA

↑	↓	↔	☑
More Stringent	Less Stringent	Report	Done; completed

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Changes between 2000 Permit and 2023 Draft Permit for Massachusetts Bay outfall (T01) – Ambient Monitoring Plan

Requirement	2000 Final Permit	2023 Draft Permit	Change	Reason
Ambient Monitoring Plan (AMP)	Implement monitoring plan • Effluent Monitoring • Ambient Monitoring • Fish & Shellfish Monitoring • Benthic Monitoring	Revise AMP to reflect the changes in monitoring requirements	↔	Ambient monitoring plan requirements have been revised to continue water column monitoring during the same target weeks and at the same stations, drop duplicative effluent monitoring, drop fish & shellfish and benthic monitoring as questions have been answered. Enhanced rapid response monitoring for HABs and nuisance algae *to* address regional changes.
• Bays Eutrophication Model (BEM)	Update, run and maintain BEM (at least annually)	No longer required	↓	BEM is a hindcast model. Continued ambient monitoring and enhanced HABs monitoring will address the concern.
• Plume tracking	Implement plume track	Completed	☑	Permit requirement is complete.
• Food Web Model	MassDEP & EPA to review scope and determined if necessary	Requirement met	☑	MassDEP & EPA deemed unnecessary
• Outfall Monitoring Science Advisory Panel (OMSAP)	Conduct peer reviews, evaluate monitoring data and advise EPA and MassDEP; evaluate exceedances of Contingency Plan thresholds	No longer a requirement	☑	In 2018, OMSAP stated ; “after 25+ years of monitoring, the data show that the MWRA outfall has not adversely affected Massachusetts Bay.” OMSAP also found that the original questions that were the basis for the AMP have been answered. They have encouraged a more regional approach with coordinated monitoring with other major dischargers.
• Lobster studies	Contaminant monitoring	No longer required	↓	Contaminant concentrations considerably less than CP levels.
• Red Tide Monitoring Stations	OMSAP to investigate the need for additional Red Tide Monitoring stations	2023 Draft Permit includes monitoring and rapid response monitoring for selected HABs	↑	Enhanced rapid response monitoring for *Alexandrium, Pseudo nitzschia, Dinophysis, Phaeocystis, Karenia and Margalefidinium* to address regional changes.

↑	↓	↔	☑
More Stringent	Less Stringent	Report	Done; completed

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Changes between 2000 Permit and 2023 Draft Permit for Massachusetts Bay outfall (T01) – Plans and Conditions

Plans/Conditions	2000 Final Permit	2023 Draft Permit	Change	Reason
Contingency Plan	Implement plan	No longer required	↔	Outfall has been found to cause no adverse affects in MA Bay
Operation and Maintenance	Focus on SSOs, develop guidance for member communities, eliminate excessive I/I, develop Regional I/I Reduction Plan	Updated requirements including major storm and flood evaluation & mitigation requirement	↔	Consistent with other MA POTW permits
Sludge Conditions	2000 Std. Conditions	Updated Std. Conditions	↔	Consistent with existing federal and state laws
Development of Limitations for Industrial Users	2000 Std. Conditions	Updated Std. Conditions	↔	Consistent with existing federal and state laws
Industrial Pretreatment Programs	2000 Std. Conditions	Updated Std. Conditions	↔	Consistent with existing federal and state laws

↑	↓	↔	☑
More Stringent	Less Stringent	Report	Done; completed

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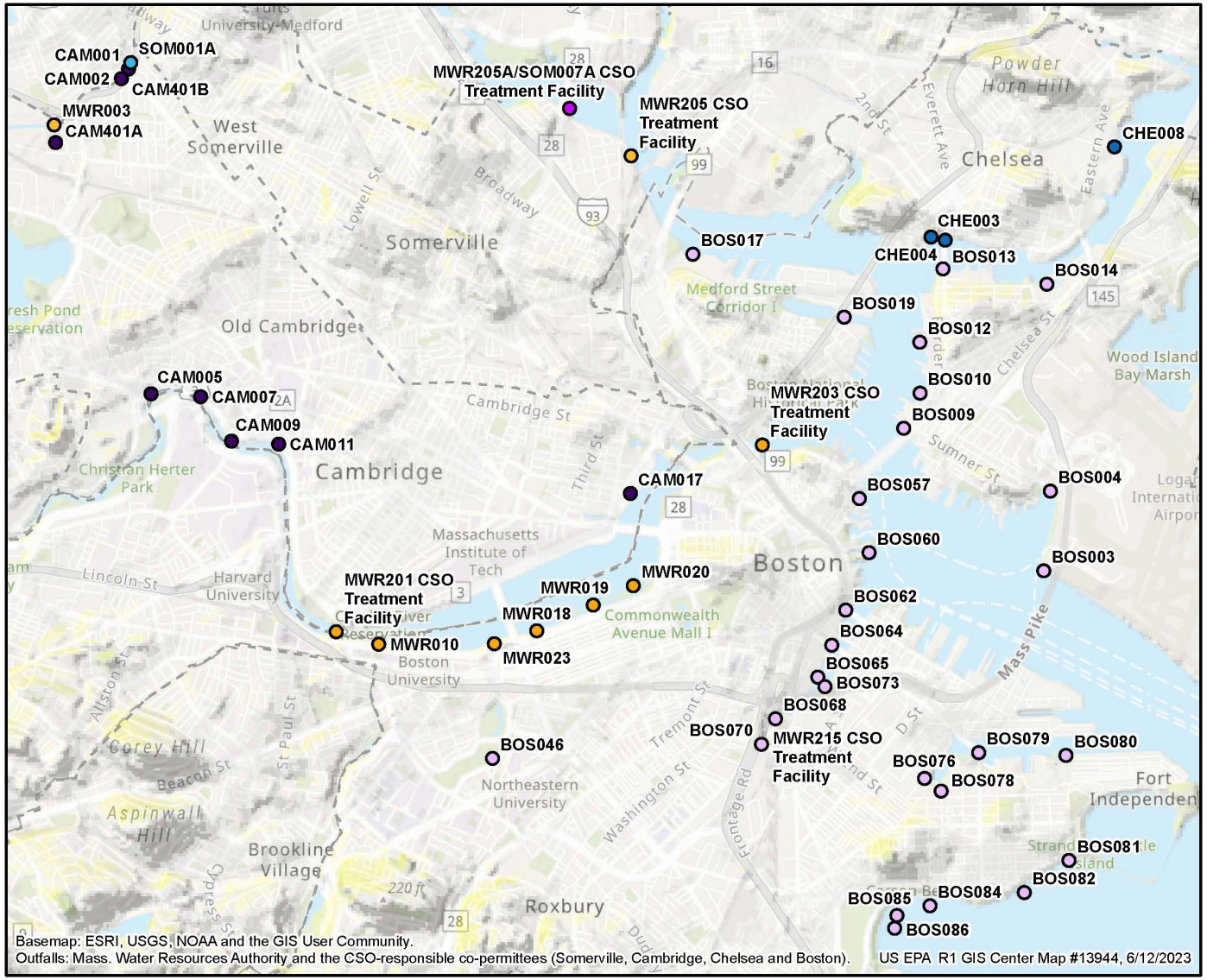
Changes between 2000 Permit and 2023 Draft Permit for Massachusetts Bay outfall (T01) – Plans and Conditions, continued

Plans/Conditions	2000 Final Permit	2023 Draft Permit	Change	Reason
Best Management Practices Plan	Develop & implement	Continue to implement	↔	
Assurance of compliance with 436 MGD Flow Limit	Reports on WWTP flows and water conservation	Effluent Limit	↔	Consistent with other MA POTW permits
Pollution Prevention Plan	Develop, submit & implement	Update Household Hazardous Waste booklet and school curriculum to include CECs	↔	Focuses on household hazardous waste education, industrial pretreatment program covers the industrial sources
Groundwater Remediation Site Waters	Review of prohibition	No requirement	↔	Required under MA law

↑	↓	↔	☑
More Stringent	Less Stringent	Report	Done; completed

Combined Sewer Overflows (CSOs) & CSO Treatment Facilities

- MWRA
  - 4 CSO Treatment Facilities
  - 6 CSOs
- Boston
  - 27 CSOs
- Cambridge
  - 9 CSOs
- Chelsea
  - 3 CSOs
- Somerville
  - 2 CSOs



Progress on CSOs

Where it started - 1987

- 86 active, uncontrolled CSOs
- 3.3 billion gallons of CSO estimated annually
- 0% of discharge flows were treated

Where are we now - 2023

- 51 CSOs remain
- 414 million gallons of CSO annually (87% reduction)
- 93% of remaining discharge flows are treated.

Note: Columns represent the annual volume of CSO discharge flows.

This table is part of a presentation. For specifics on effluent limits, monitoring requirements and other permit requirements, please review the Draft Permit.

Combined Sewer Overflow (CSO) Treatment Facilities: Changes between 2000 Permit and 2023 Draft Permit

Effluent Parameter	2000 Final Permit	2023 Draft Permit	Change	Reason
Effluent Flow, MGD	Report	Report	↔	No change
Rainfall/Precipitation	Report	Report	↔	No change
BOD	Report	Report	↔	No change
TSS	Report	Report	↔	No change
Total Residual Chlorine (TRC)	0.1 mg/L avg. weekly, 0.25 max. hourly	Specific to each outfall	↑	Consistent with WQS
E. Coli (Outfalls MWR201 and MWR205A)	No limit	126 cfu/100 mL avg. monthly, 410 cfu/100 mL max. daily	↔	Bring consistent with current MA WQS
Enterococcus (Outfalls MWR203, MWR205, & MWR215)	No limit	35 cfu/100 mL, 130 cfu/100 mL	↔	Bring consistent with current MA WQS
Fecal Coliform Bacteria	Shall meet water quality standards	No requirement	↔	MA WQS have changed, and indictor bacteria are now *E. coli* and *Enterococcus*
Whole Effluent Toxicity	Report	Report	↔	Includes effluent and ambient monitoring in current WET protocols
Dye Studies for the CSO Treatment Facility	No requirement	New requirement	↑	Provide accurate dilution information for future permitting decisions

↑	↓	↔	☑
More Stringent	Less Stringent	Report	Done; completed

Combined Sewer Overflows (CSOs)

EPA's CSO Control Policy requires communities:

- Implement the nine minimum controls
- Implement their long-term control plan
- Conduct monitoring to verify that water quality standards are being met

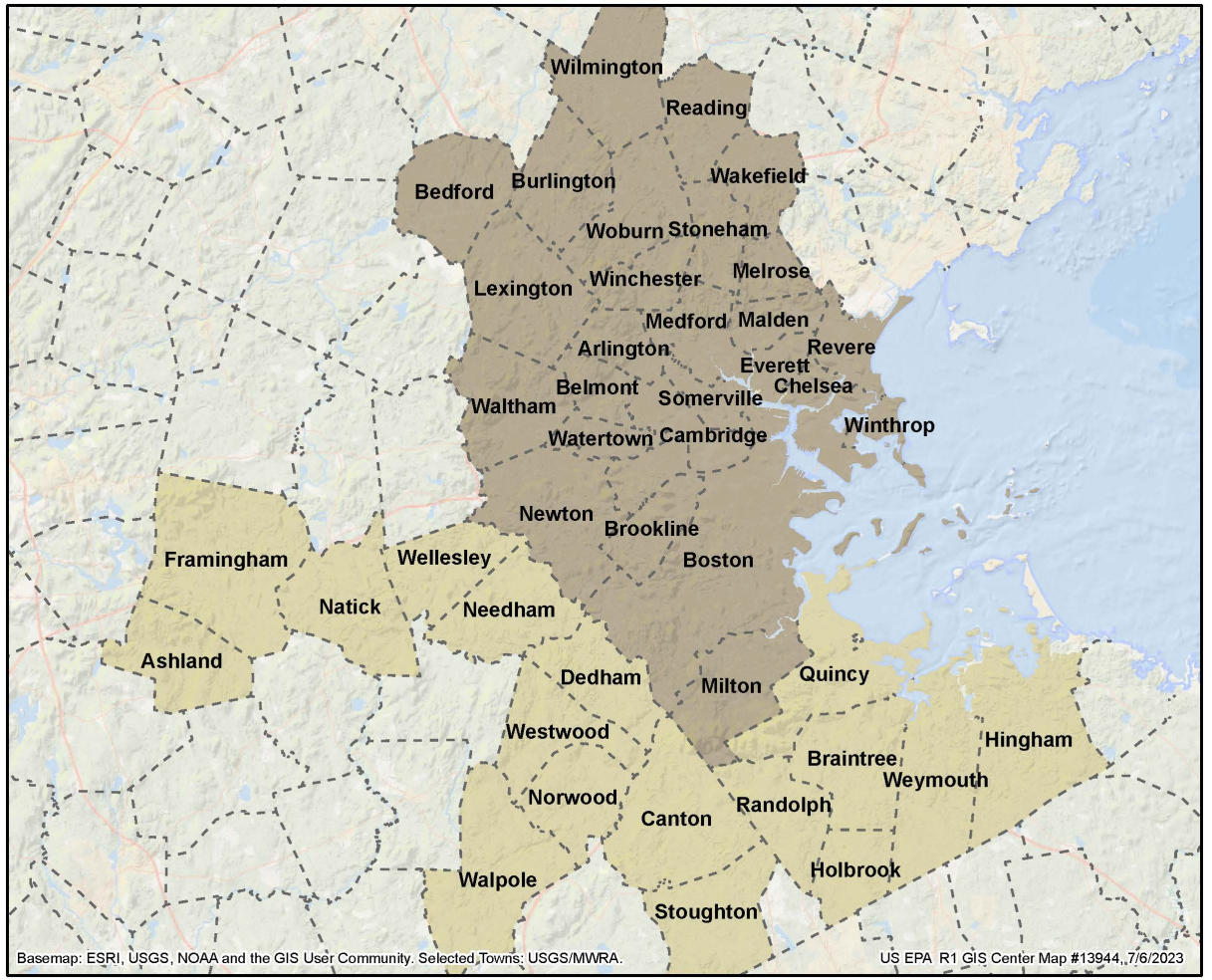
Additional CSO requirements

- CSOs hydraulically connected to the Deer Island Treatment Plant are also overseen by the Federal Court as part of the Boston Harbor case.
- The Draft Permit authorizes discharges from these CSOs in accordance with the typical year discharge frequencies and volumes that are in Attachment I of the Draft Permit.
- The discharges must meet federal and state WQS subject to and consistent with any water quality standards variances issued by MassDEP and approved by EPA.
- MWRA and each of the CSO-responsible co-permittees must submit annual reports including information on activation frequency and volumes.

Co-permittees

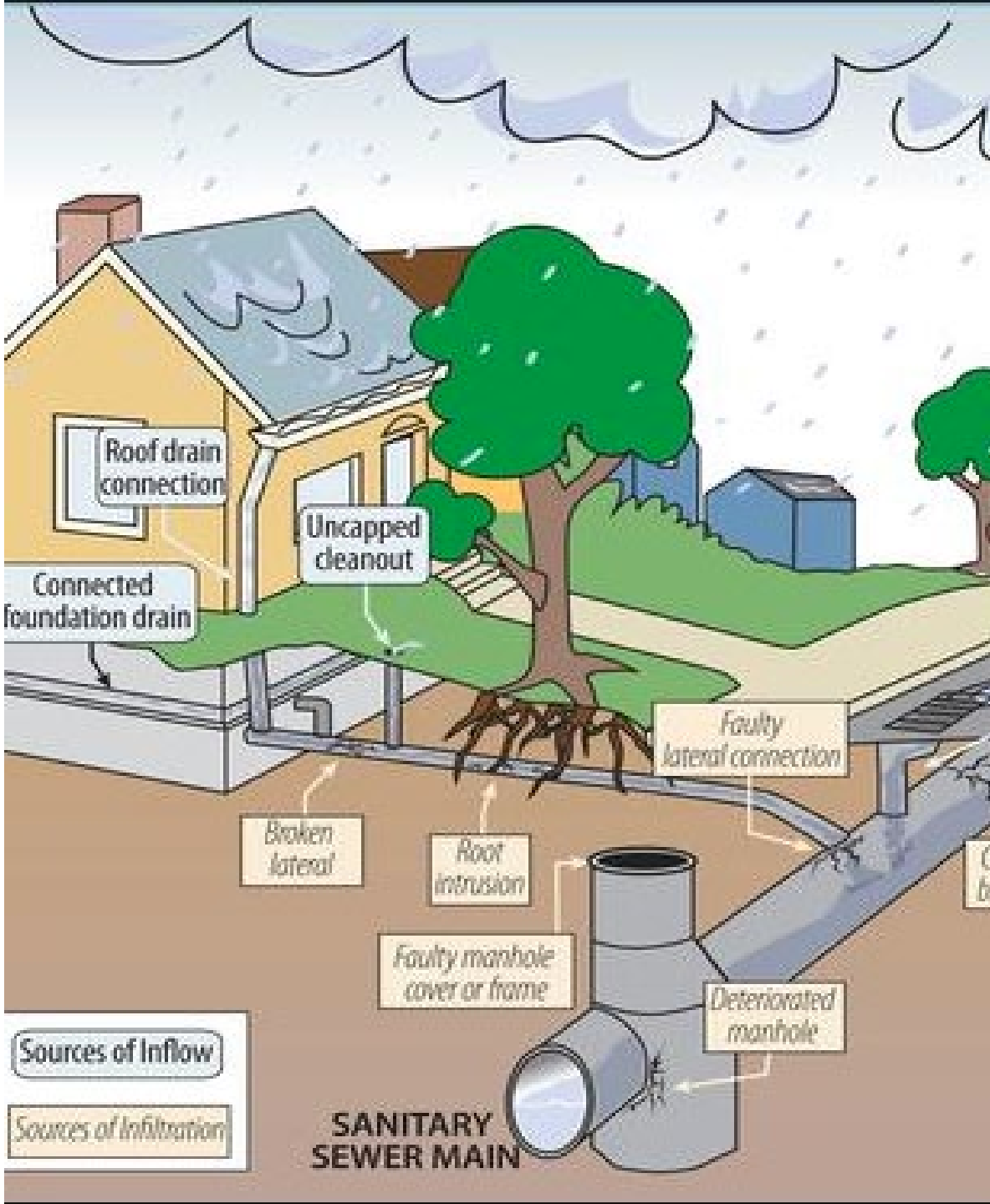
Co-permittees are municipalities that own or operate sanitary sewer systems that contribute to the Deer Island Treatment Plant.

- There are 43 co-permittees that discharge to Deer Island including the CSO-responsible Co-permittees of Boston, Cambridge, Chelsea and Somerville.
- Only four sections of the draft permit are applicable to all co-permittees:
  - Unauthorized Discharges (Section C)
  - Operation and Maintenance of the Sewer System (Section E) including a major storm and flood events plan.
  - Alternative Power Source (Section F)
  - Reporting Requirements (related to the requirements above in Section J)



Region 1 Co-permittee Background

- Region 1 began routinely including co-permittees in Publicly Owned Treatment Works (POTW) permits in 2005 in MA and NH. (The first was MWRA Clinton in 2000 at MWRA's request.)
- Definition of POTW (40 CFR 122.2) includes the collection system
- Purpose is to require that all portions of the POTW, including the collection systems that feed the treatment plant are properly operated and maintained.
- Provides accountability and enforceability of federal and state collection system operation and maintenance requirements.
- Addresses ongoing problems of:
    - Sewer System Overflows (SSOs)
    - Infiltration (groundwater)
    - Inflow (stormwater)
    - Obstructions (roots, collapses)



Massachusetts Permit Process

- EPA is NPDES permitting authority in Massachusetts.
- Until June 2020, EPA and MassDEP jointly issued NPDES permits, and State surface water discharge permits as one document.
- Agencies now issue two separate permits.
- MassDEP generally incorporates the EPA permit (by reference) into the state permit and, if necessary, adds any state-only requirements.
- State draft permit and draft Water Quality Certification can be reviewed at https://www.mass.gov/info-details/massdep-permits-approvals-for-comment.
- Comments on the State permit or the Water Quality Certification should be submitted to massdep.npdes@mass.gov.

MassDEP Surface Water Discharge (SWD) Permit Requirements

- Incorporates by reference all terms and conditions of the NPDES permit
- PFAS testing:
  - Influent
  - Effluent
  - Sludge
  - All Significant Industrial Users (SIUs) [different from NPDES limited listing]:
    - Subject to categorical pretreatment standards; OR
    - Discharges and average of 25,000 gpd or more process wastewater to the POTW; OR
    - Contributes a wastestream that makes up 5 % or more of average dry-weather hydraulic or organic capacity of the POTW; OR
    - Designated by the POTW as having a reasonable potential to adversely affect the POTW operation of for violating a pretreatment standard/requirement
- All PFAS results (NPDES and SWD) are uploaded to MassDEP database by testing laboratory
- Submittal of names and locations of all tested industries (NPDES and SWD) with updating once a year as needed

Contacts:

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MassDEP Contact:

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