

The primary focus of the Coastal Stormwater Discharge Analysis project was to identify the Commission's most critical and vulnerable outfalls and develop conceptual adaptation solutions at a subset of these outfalls. However, it is important to recognize that the Commission's stormwater system depends on the functionality of several hundred outfalls that are located throughout the City. To address the less critical - but still vulnerable - outfalls that were not advanced to the conceptual design phase of this project, an Implementation Timeline/Plan was developed that can be used as a "roadmap" to adapt these remaining outfalls. The Implementation Timeline groups outfall adaptation solutions into three time periods, based on the implementation time period chosen by Climate Ready Boston (as of December 2022) for the section of shoreline that the outfalls are along. The three time periods are: near term, defined as by 2030, mid term, defined as between 2030 and 2050, and long term, defined as between 2050 and 2070. As Climate Ready Boston continues to update and refine their plans for coastal flood protection, the timeline for adaptation of Commission outfalls will also need to be updated; Climate Ready Boston's presently completed and planned solutions for coastal flood protection are integral parts of all solutions designed for the outfalls in the Implementation Timeline. Insofar as it is feasible, the ideal method of advancing the Implementation Timeline solutions, enumerated herein, is one that co-ordinates most with the design of CRB's planned coastal flood mitigation projects.

The Implementation Timeline only includes outfalls which are owned by the Commission (based on GIS data provided by the Commission in 2020). Outfalls were further screened based on coastal flood vulnerability. Outfalls with invert above 13.8 ft NAVD88 (the approximate projected 100-year storm surge elevation in 2070) were considered not coastal flood vulnerable, and therefore were excluded from the Implementation Timeline.

A second tier of screening was applied by analyzing the approximate drainage areas served by outfalls classified as coastal flood vulnerable and segregating them from outfalls that are not vulnerable. Outfalls which serve higher elevation drainage areas (above 13.8 ft, NAVD88) may be influenced by higher sea levels (at their downstream end), but still function as intended and discharge by gravity without additional modifications required (since they are not vulnerable to the coastal flood conditions evaluated during this project). Thus, these outfalls which serve areas with low coastal flood vulnerability were not included in the Implementation Timeline.

By following this two-tier screening process, a total of 66 outfalls were identified for inclusion in the Implementation Timeline.

A key objective when identifying a potential solution for each of the Implementation Timeline outfalls was replication of the design concepts developed (as shown in Section 5 of the accompanying report, and summarized in **Table 1**, below.)

Table 1 - Concept Solutions Overview

Concept Name	Neighborhood	Solution Type	Report Section
Airport	East Boston	Storage and Pumping	5.4
Constitution Beach	East Boston	Conveyance and Pumping	5.5
Waterfront	East Boston	Conveyance and Pumping	5.6
Greenway	East Boston	Conveyance	5.7
Schrafft Center	Charlestown	Storage and Pumping	5.8
Columbus Park	Downtown Boston	Storage and Pumping	5.9
Fort Point Channel	Downtown Boston	Storm Surge Barrier and Pumping	5.1
Davenport Creek	Dorchester	Storage and Pumping	5.11
Dorchester Bay Basin	Dorchester	Conveyance and Storage	5.12
Finnegan Park	Dorchester	Storage and Pumping	5.13
Old Harbor Park	Dorchester	Storage and Pumping	5.14

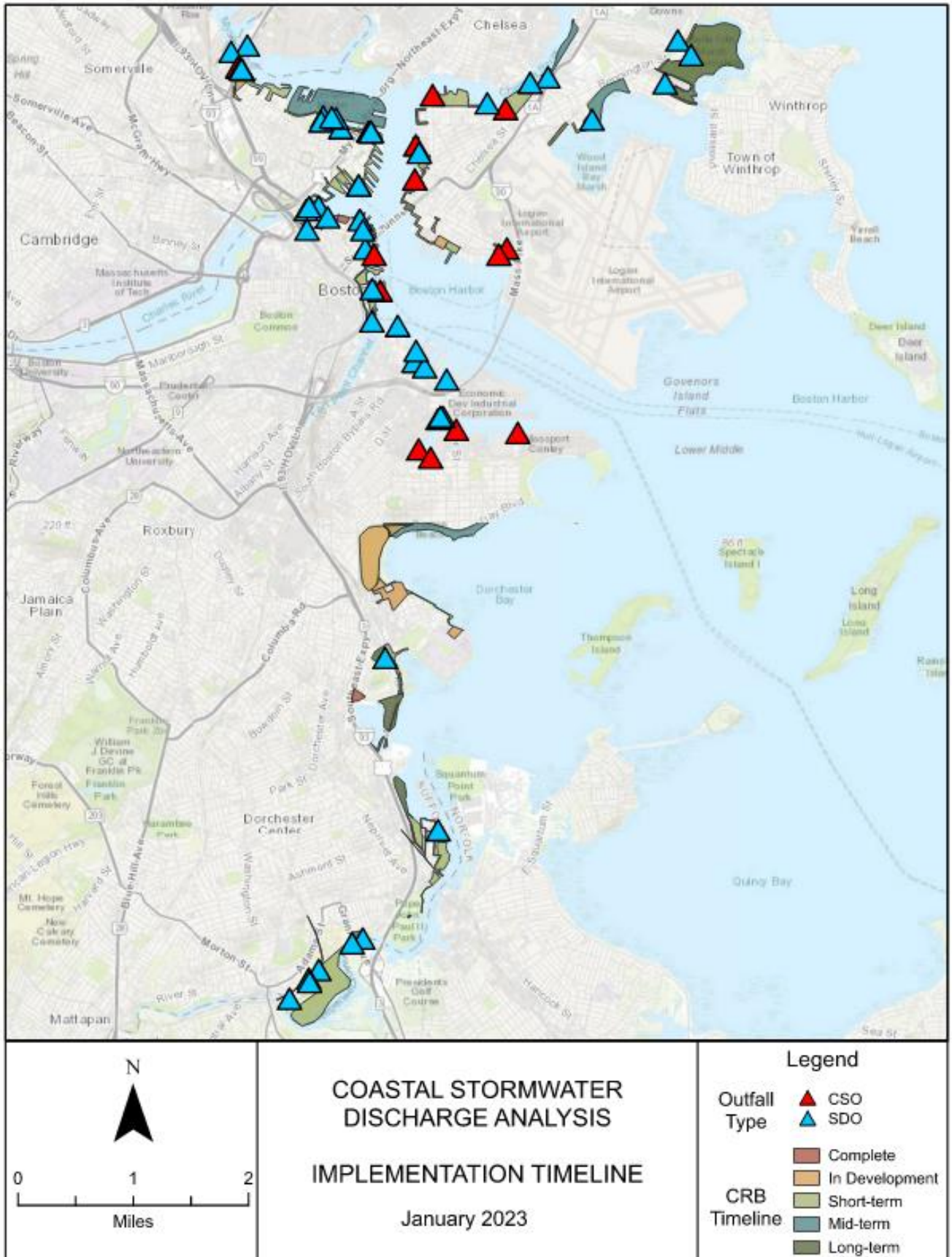
The solutions identified in the Implementation Timeline can be classified into the following categories:

- **Pump Station:** electric submersible units installed within wet wells or subsurface storage tanks to discharge stormwater against high tides.
- **Storage:** solutions that utilize natural features or constructed tanks and wetlands to manage flow from outfalls.
- **Storm Surge Barrier:** a structure that blocks higher tide levels and storm surge conditions from entering a protected area to maintain low tailwater elevations. Solutions utilizing a storm surge barrier typically “protect” multiple coastal flood vulnerable outfalls.
- **Conveyance:** modifications to existing pipe networks (or construction of new piping) to facilitate gravity drainage.
- **Consolidation and Pump Station:** new pipelines to intercept flow from multiple outfalls for conveyance to a single pump station.
- **Local Stormwater Management:** solutions that temporarily manage excess stormwater “on site” during high tide conditions.
- **Tide Gate:** devices/structures that prevent backflow of water through outfalls. Other improvements may be required to eliminate residual flooding in the future. Tide gates are a potential solution at all outfalls which do not currently have them installed.

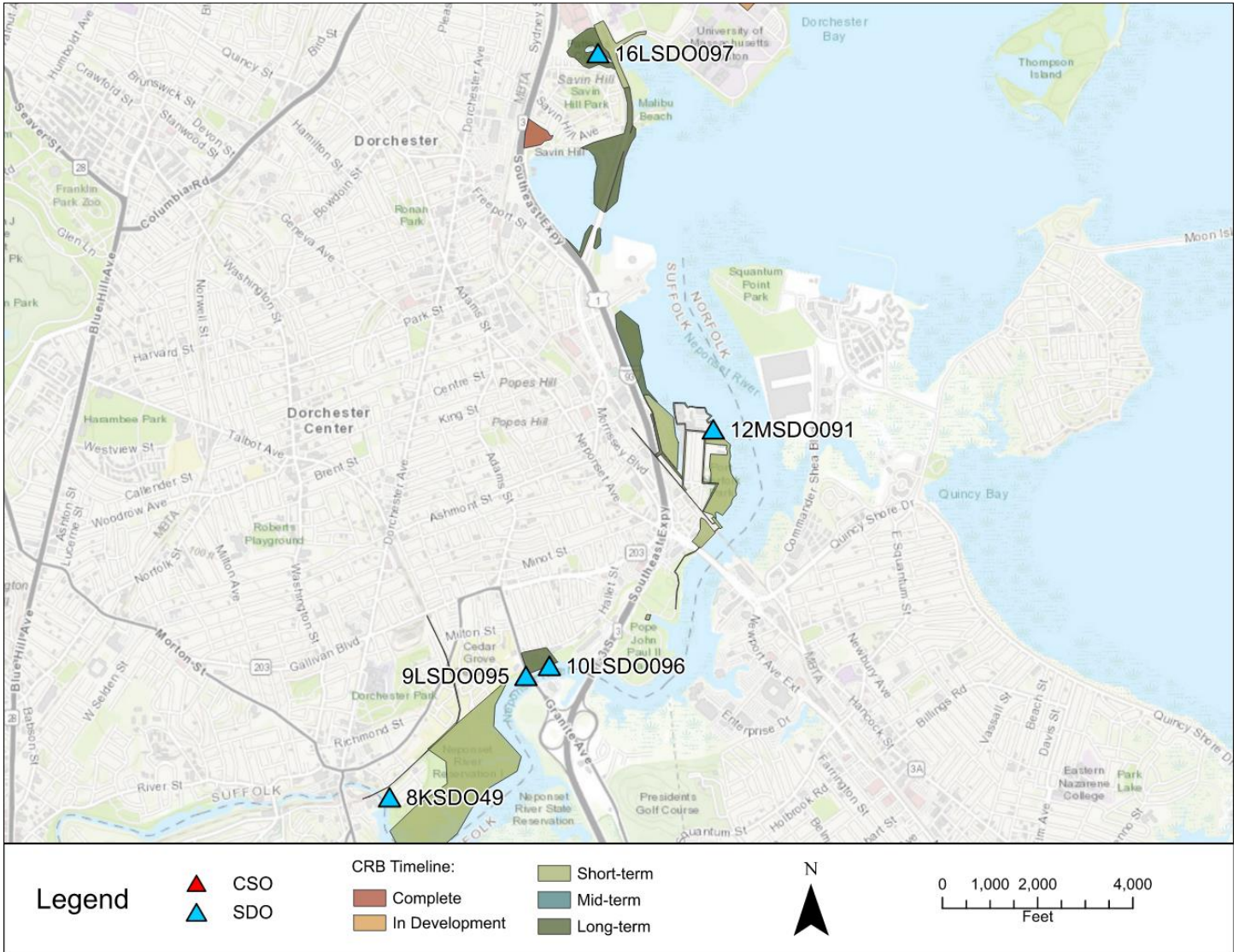
The remainder of this document summarizes recommended solutions at each Commission owned coastal flood vulnerable outfall. Outfalls are grouped by neighborhood, and categorized as described previously according to the currently stated CRB timeline for implementation. Most outfalls are included in “single outfall concepts” (solutions that only address a single outfall), although some solutions have the potential to adapt multiple outfalls with a single project. The concepts included herein are intended only to provide a starting point for adaptation of outfalls; further analyses to determine feasibility, effectiveness, and cost-effectiveness should be conducted before advancing each concept.

Notes:

- All elevations in this document use the NAVD88 datum, unless otherwise noted (BCB = NAVD88 + 6.46’).
- Outfalls that are currently intercepted by the South Boston CSO Storage Tunnel are not included in the Implementation Timeline.
- The Implementation Timeline only includes outfalls owned by the Commission. Coastal flood vulnerable outfalls owned by other entities are not included.
- Refer to the full *Coastal Stormwater Discharge Analysis* project report (Hazen, 2023) for additional information regarding coastal flood vulnerability, conceptual solutions, and other elements of the project.
- Tide gates could be installed on all coastal flood vulnerable outfalls (those identified in the full project report and this document) that do not already have them. It is important to note that although tide gates are effective at preventing backflow through vulnerable outfalls, they do not facilitate stormwater discharge. As such, installation of tide gates alone may not be sufficient to prevent significant flooding at many locations, especially in low-lying and large drainage areas. In some locations where a small amount of temporary flooding due to stormwater may be acceptable (or where the feasibility of constructing a solution for stormwater discharge is limited), tide gates may be the only solution appropriate for outfall adaptation.

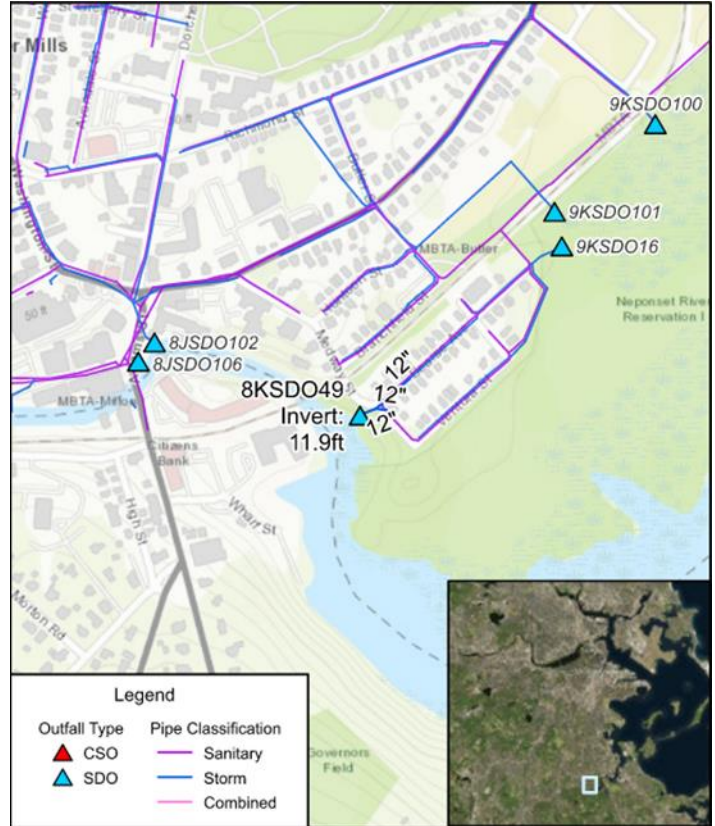


Dorchester Single Outfall Concepts



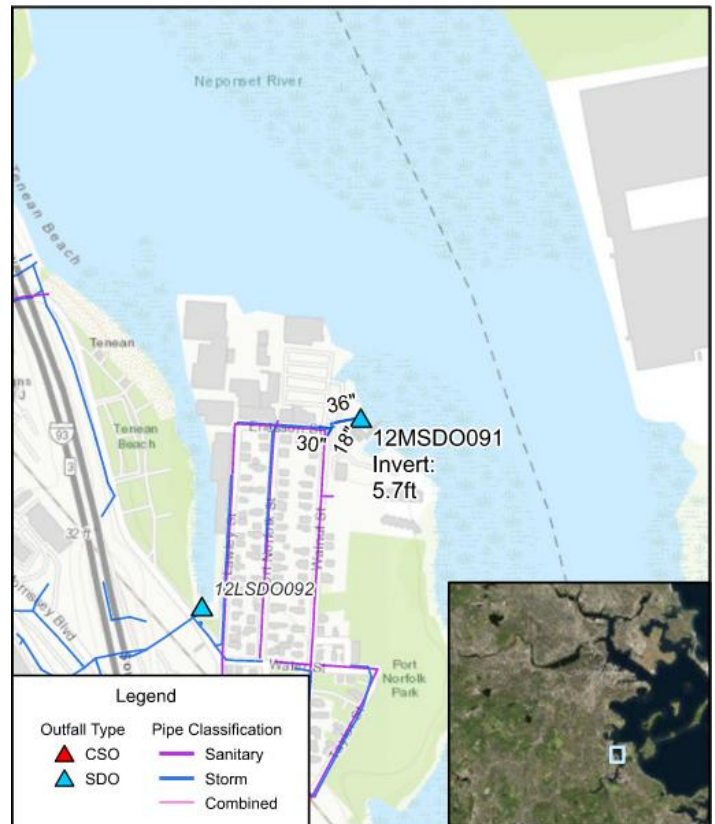
**Outfall 8KSDO49
Mattapan Trolley and Butler Station, Dorchester
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated roadways
 - 12-inch outfall serves a 2.4-acre tributary area
 - Opportunity for storage in nearby reservation
 - Permitting challenges due to nearby wetland
 - Tide gate to prevent backflow during high tide conditions
 - Further study recommended because the high tributary area elevation suggests limited benefit from further adaptation



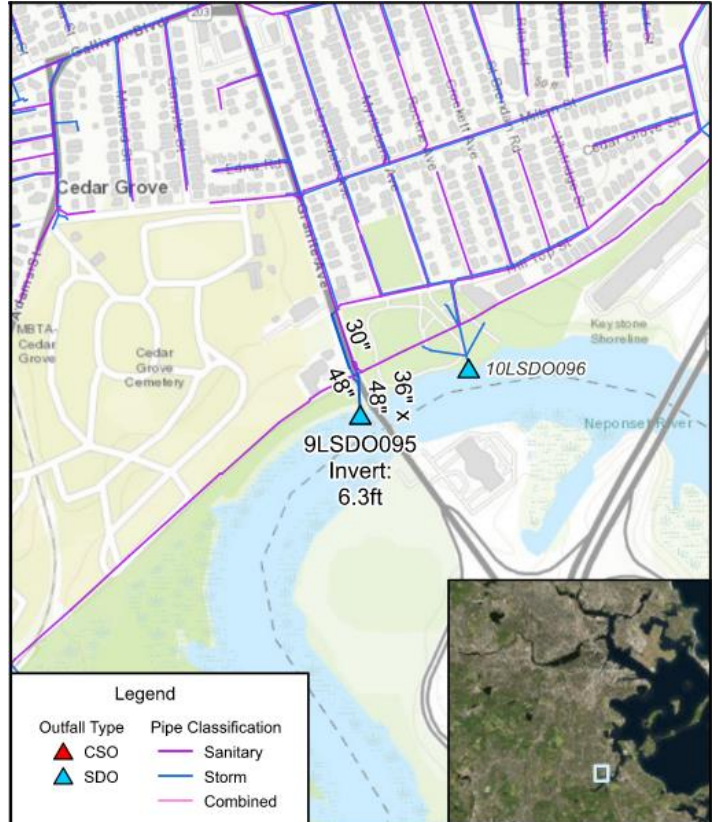
**Outfall 12MSDO091
Port Norfolk, Dorchester
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Perimeter protection including berms and floodwalls
 - 36-inch outfall serves a 5.5-acre tributary area
 - Lack of open space limits the feasibility of construction at this location
 - Localized stormwater management or tide gate



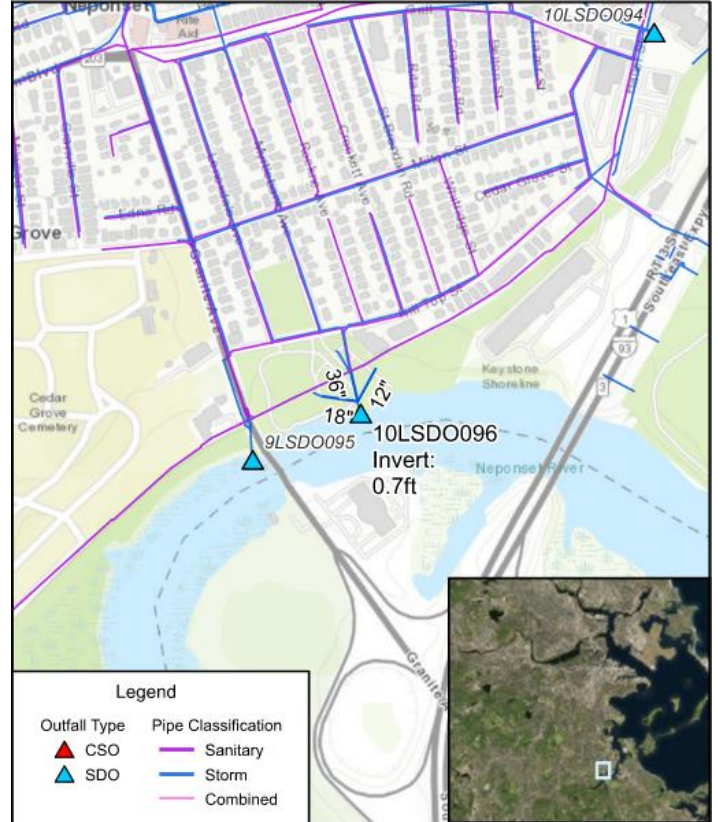
**Outfall 9LSDO095
Neponset River Reservation, Dorchester
CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: Nature based solutions
 - 36 by 48-inch outfall serves a 37.2-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Further study recommended because the high tributary area elevation suggests limited benefit from further adaptation



**Outfall 10LSDO096
Neponset River Reservation, Dorchester
CRB Implementation Date: 2070**

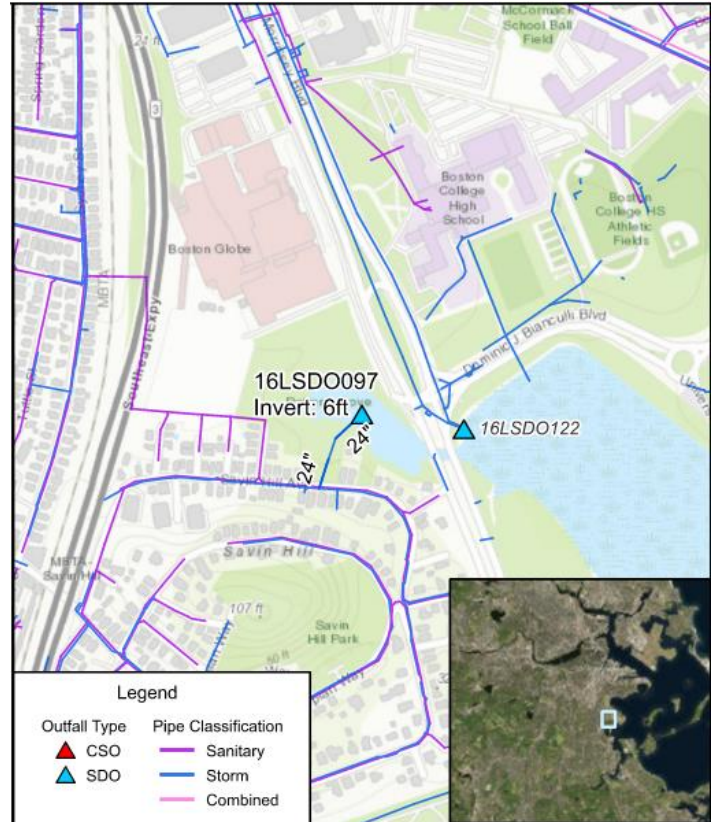
- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 36-inch outfall serves a 14.7-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Further study recommended because the high tributary area elevation suggests limited benefit from further adaptation



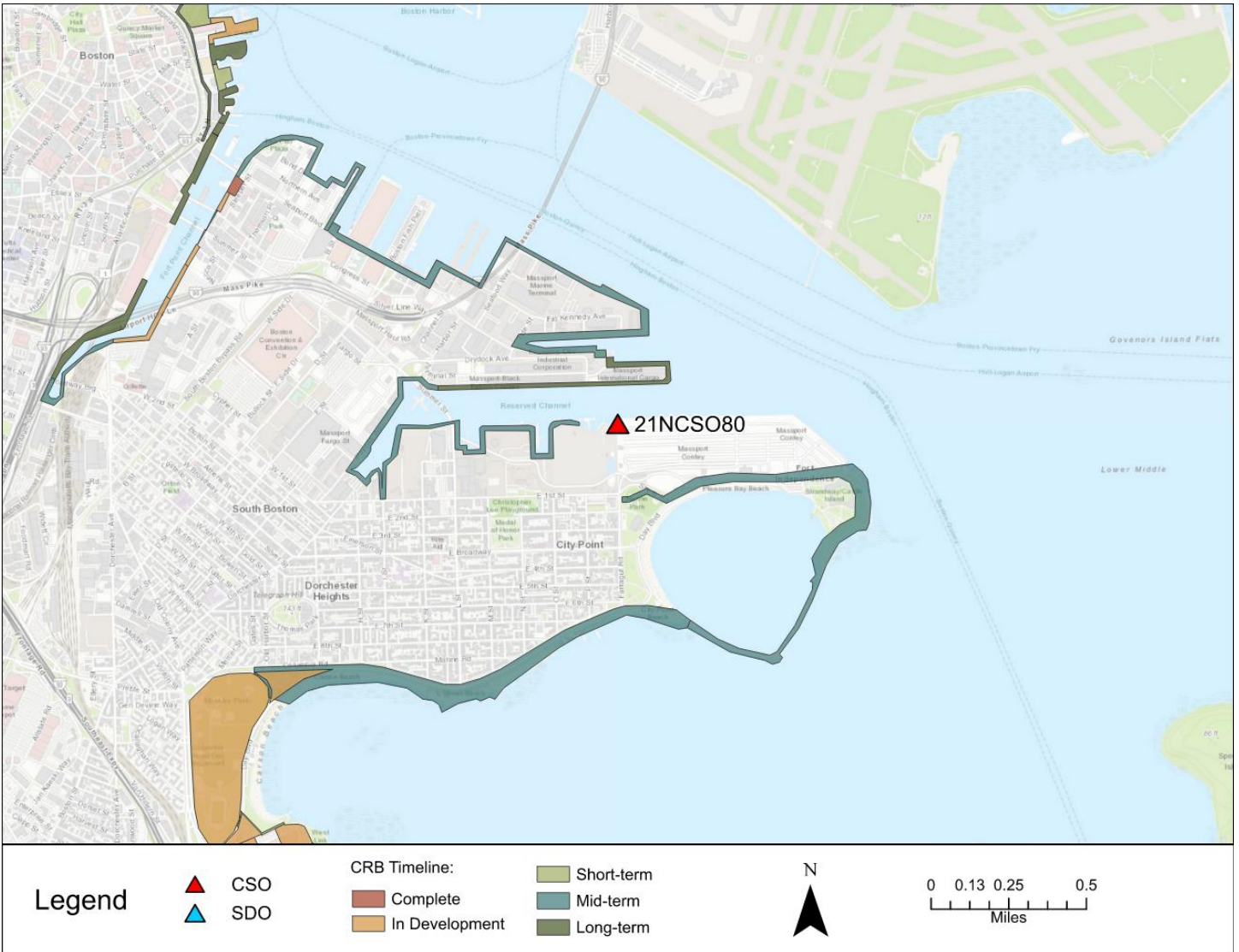
**Outfall 16LSDO097
Pattens Cove, Dorchester
CRB Implementation Date: 2070**

Existing Conditions and Recommendations:

- CRB project type: Nature based solution
- 24-inch outfall serves a 21.9-acre tributary area
- Publicly owned open space nearby provides opportunities for stormwater management
- Tide gate to prevent backflow during high tide conditions
- Flow could be diverted to the DBB concept included in the complete Coastal Stormwater Discharge Analysis project report



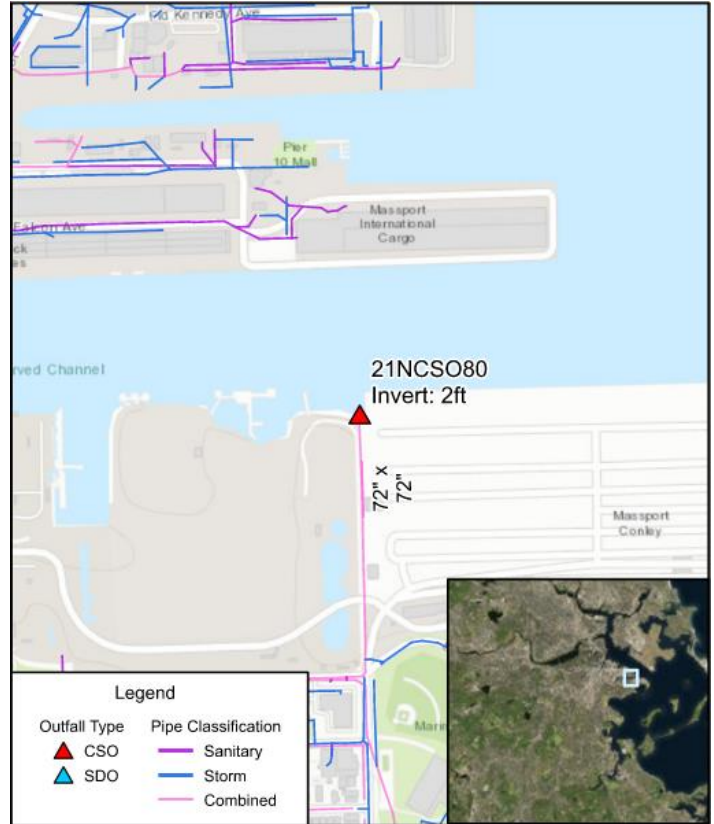
South Boston Single Outfall Concepts



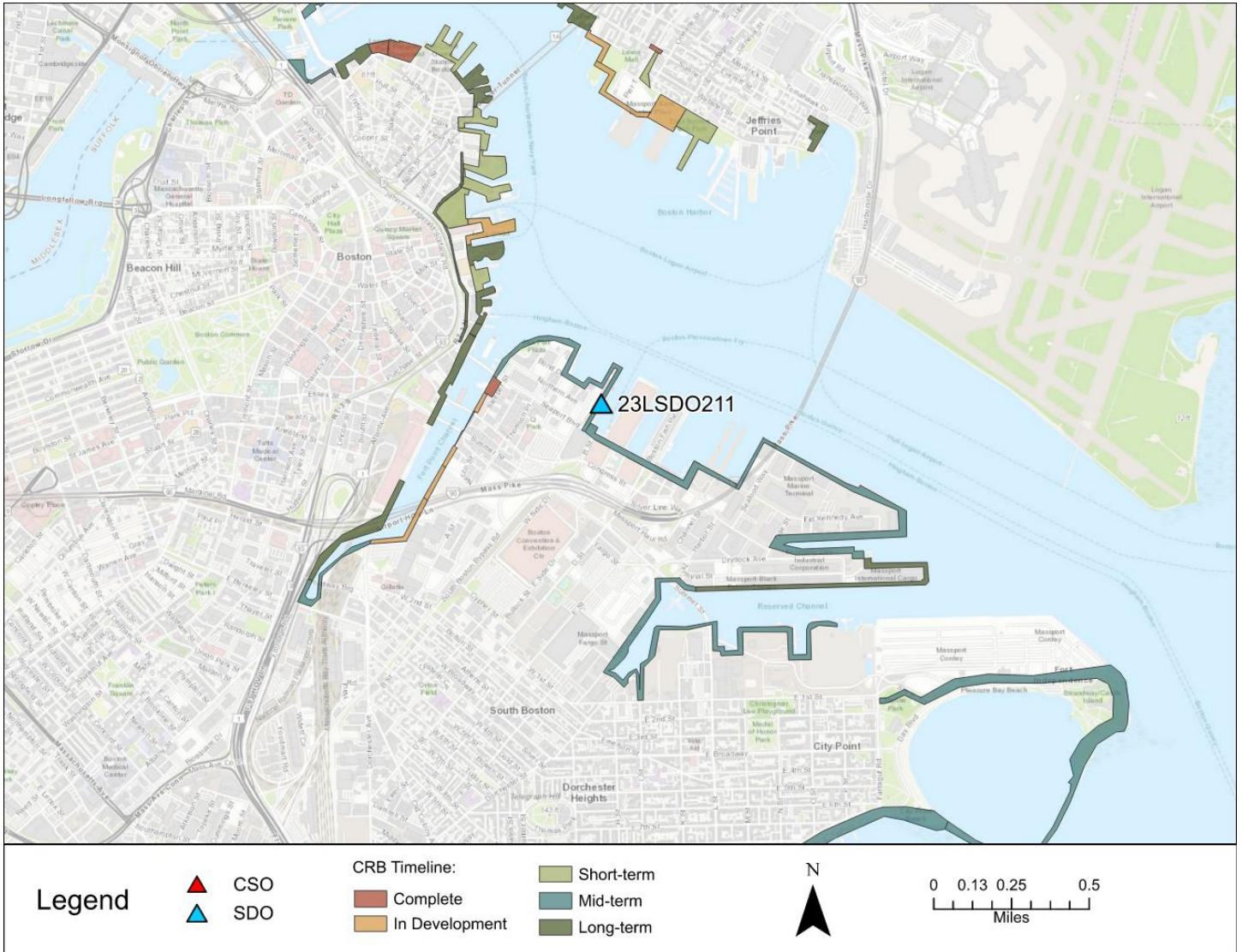
**Outfall 21NCSO80
Pleasure Bay, South Boston
CRB Implementation Date: 2050**

Existing Conditions and Recommendations:

- CRB project type: Elevated waterfront parks and berms.
- 72-inch outfall serves a 99.1-acre tributary area
- Publicly owned open space nearby provides opportunities for stormwater management
- Tide gate to prevent backflow during high tide conditions
- Subsurface storage facility and pump station could be considered in the future



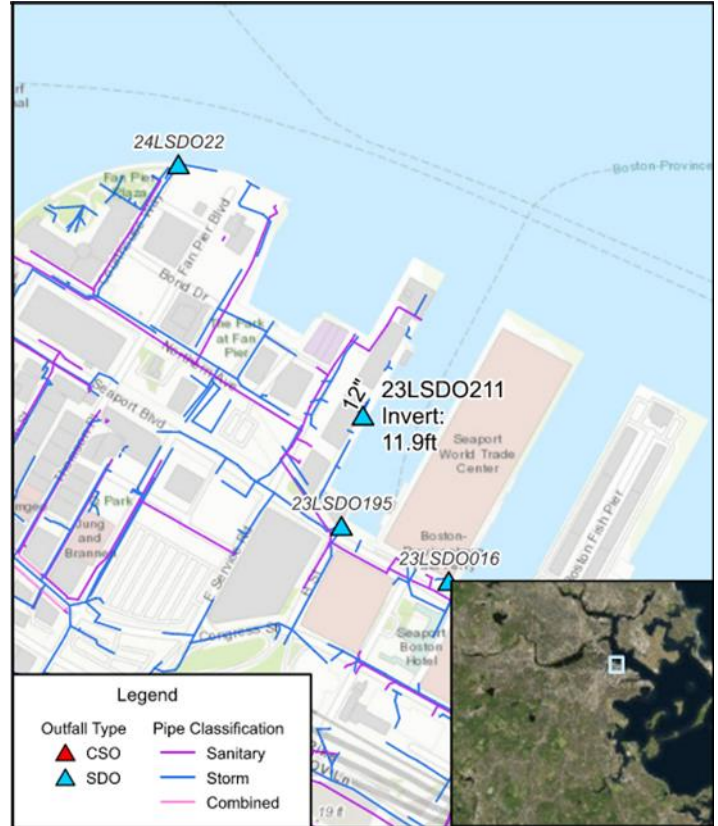
South Boston Waterfront Single Outfall Concepts



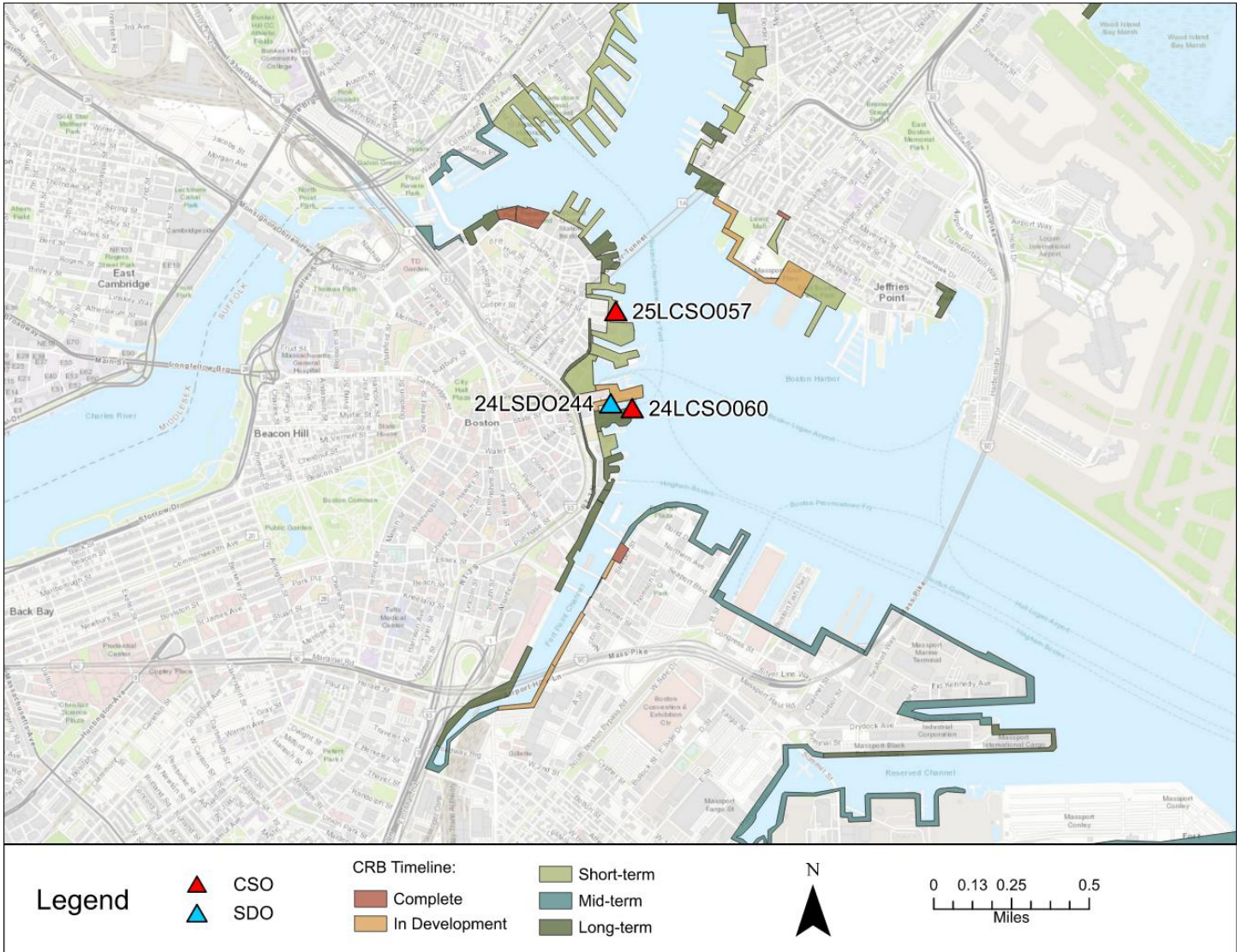
**Outfall 23LSDO211
South Boston Waterfront
CRB Implementation Date: 2050**

Existing Conditions and Recommendations:

- CRB project type: Elevated Harborwalk
- 12-inch outfall serves a small (localized) tributary area
- Lack of open space limits the feasibility of construction at this location
- Tide gate to prevent backflow during high tide conditions



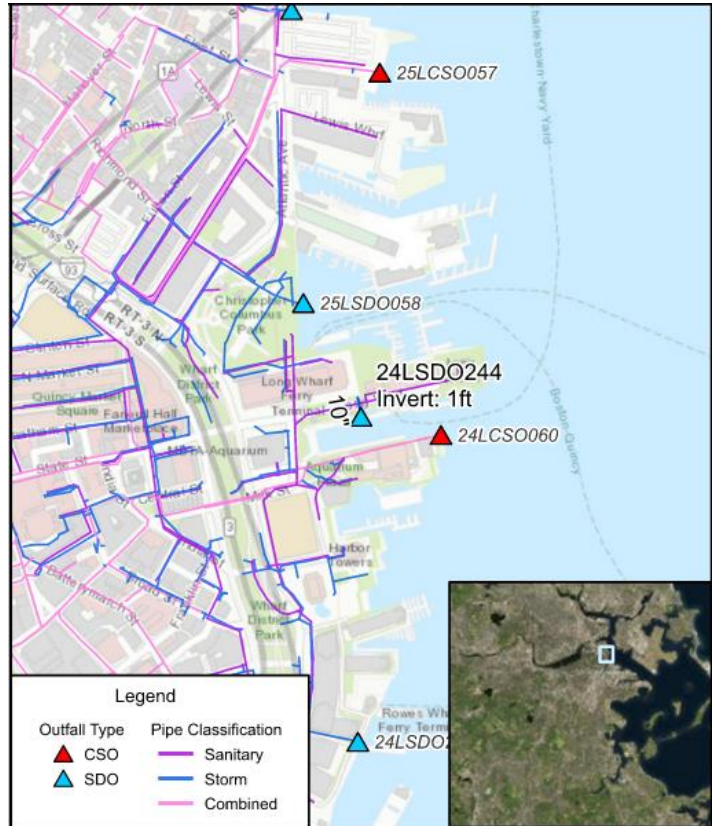
Downtown Single Outfall Concepts



**Outfall 24LSDO244
Long Wharf, Downtown
CRB Implementation Date: 2030**

Existing Conditions and Recommendations:

- CRB project type: Raised Harborwalk
- 10-inch outfall serves a small tributary area
- Tide gate to prevent backflow during high tide conditions
- Small, subsurface pump station could be installed to provide enhanced drainage for Long Wharf area, if flooding is found to occur during wet weather in the future (after shoreline protection is implemented)
- Flow could possibly be diverted to the nearby Columbus Park concept solution



**Outfall 25LCSO057
Sargent's Wharf, Downtown
CRB Implementation Date: 2030**

Existing Conditions and Recommendations:

- CRB project type: Raised Harborwalk
- 96-inch outfall serves a 175.5-acre tributary area
- Lack of open space and sensitivity to visual impacts limit the feasibility of construction at this location
- Tide gate to prevent backflow during high tide conditions
- Subsurface pump station could be installed to facilitate discharge during high sea levels
- Flow could possibly be diverted to the nearby Columbus Park concept solution



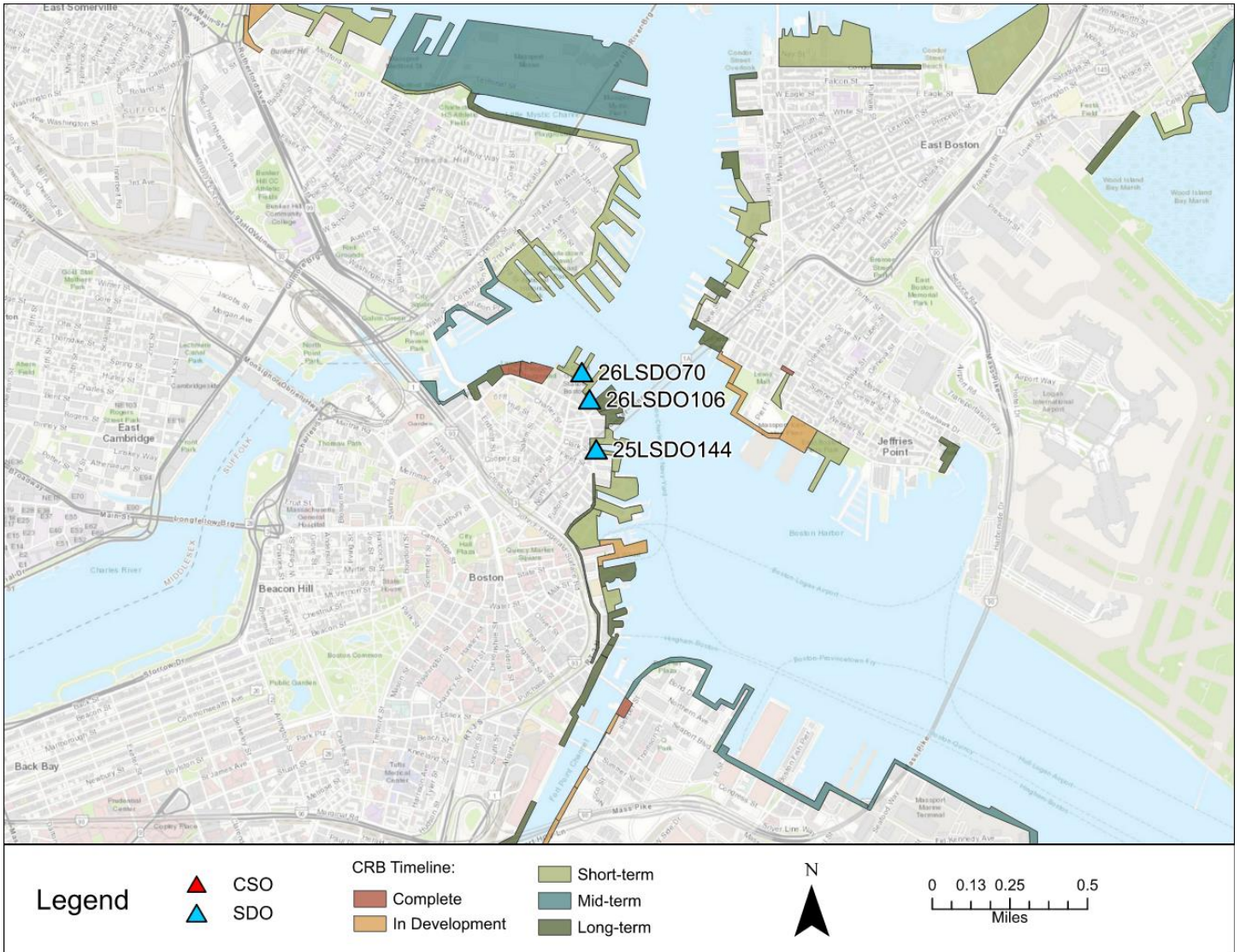
**Outfall 24LCSO060
Central Wharf and NEAQ, Downtown
CRB Implementation Date: 2070**

Existing Conditions and Recommendations:

- CRB project type: Raised Harborwalk
- 72-inch outfall serves a 14.5-acre tributary area
- Lack of open space limits the feasibility of construction at this location
- Tide gate to prevent backflow during high tide conditions
- Subsurface pump station in Rowses Wharf Plaza could be considered

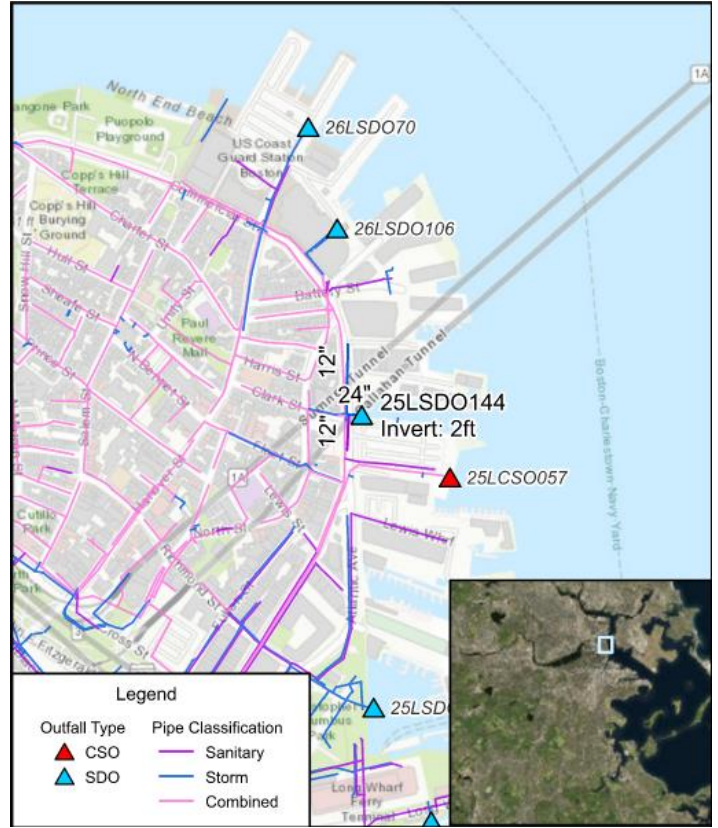


North End Single Outfall Concepts



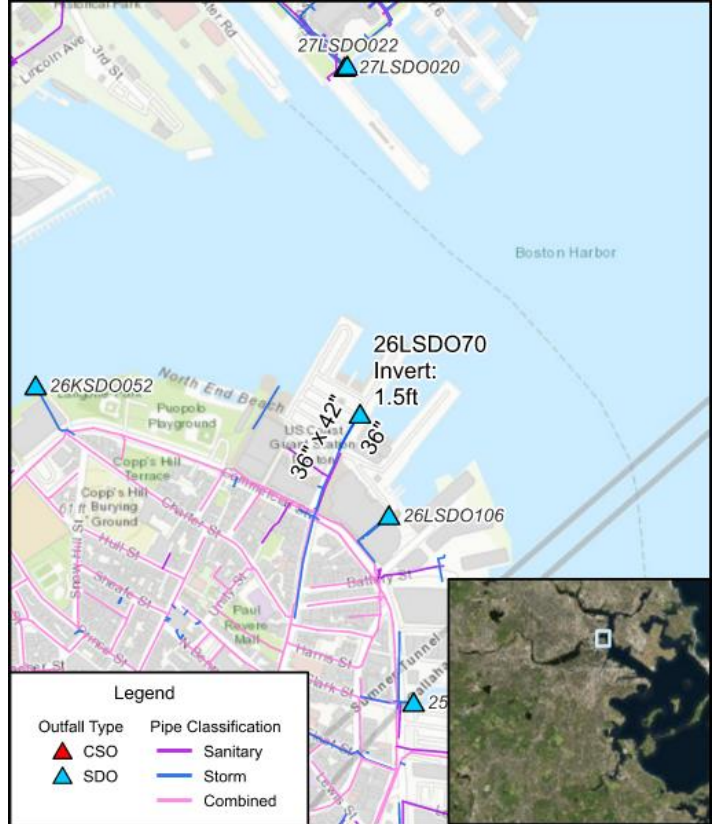
**Outfall 25LSDO144
Union Wharf, North End
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Raised Harborwalk
 - 24-inch outfall serves a 1.1-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage facility and small pump station could be installed in the adjacent parking lot



**Outfall 26LSDO70
Commercial St at US Coast Guard, North End
CRB Implementation Date: 2030**

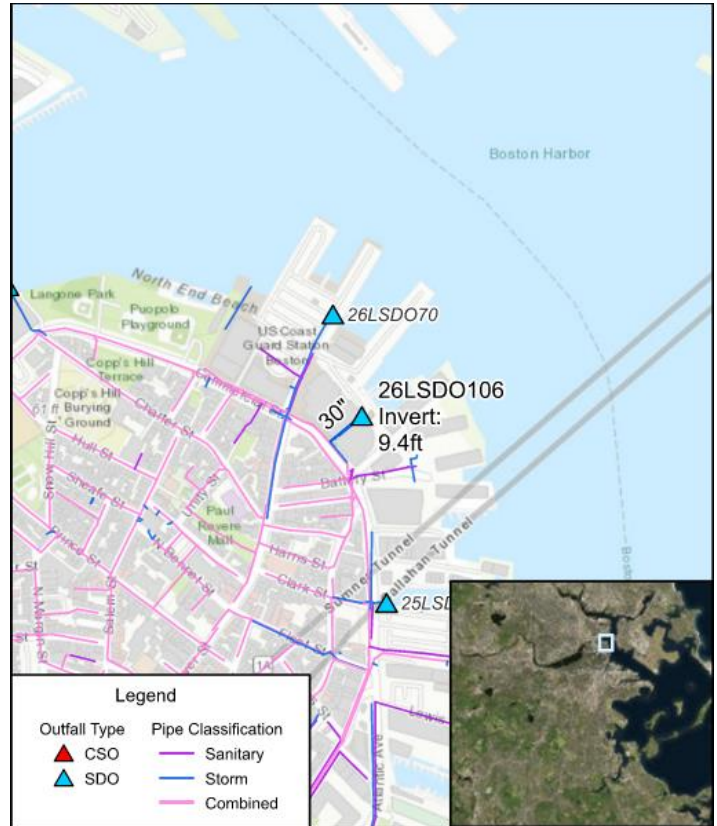
- Existing Conditions and Recommendations:**
- CRB project type: Raised Harborwalk
 - 36-inch outfall serves a 2.3-acre tributary area
 - Publicly owned opened space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage facility and pump station could be installed in the Coast Guard parking lot to facilitate discharge during high sea levels



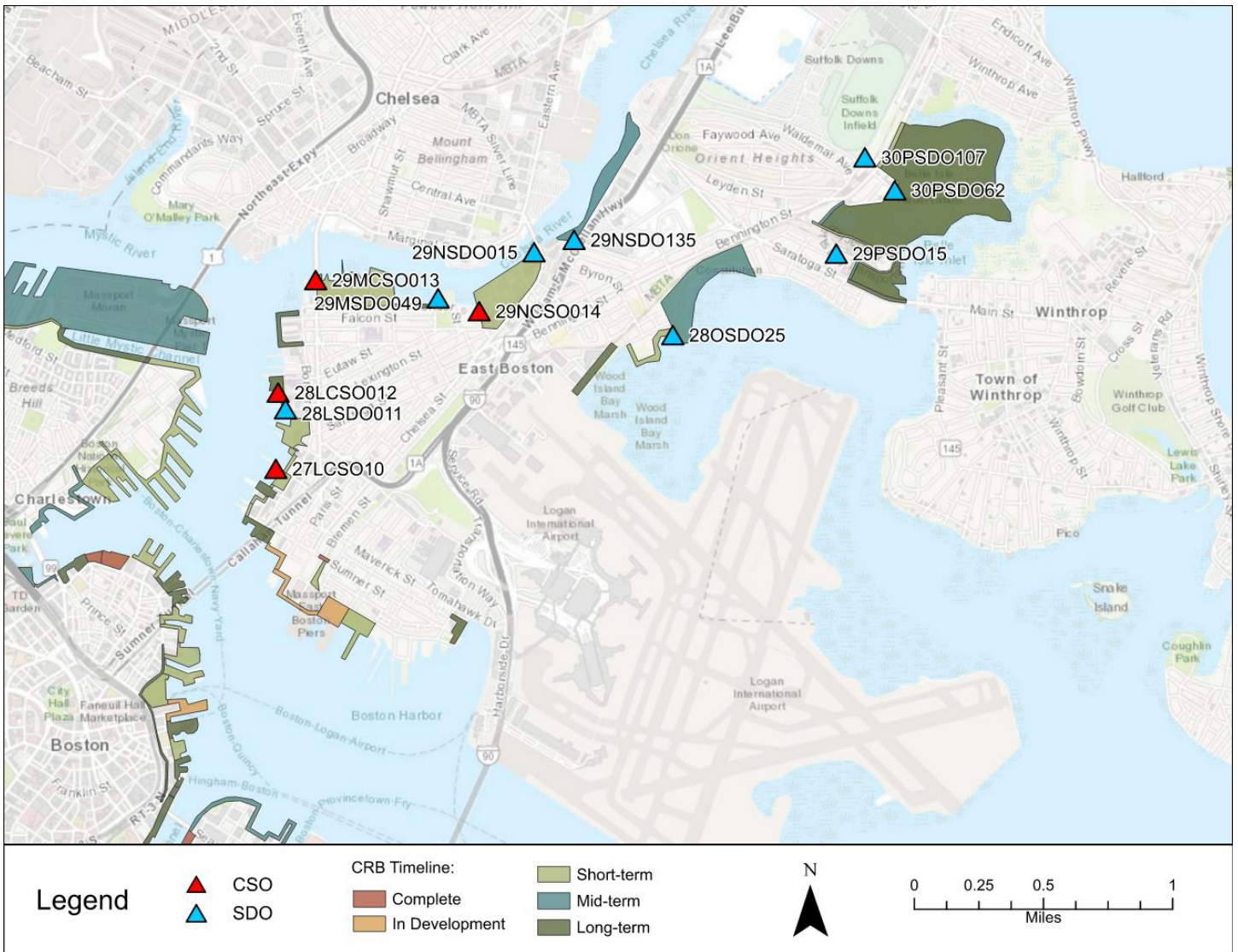
**Outfall 26LSDO106
Battery Wharf, North End
CRB Implementation Date: 2070**

Existing Conditions and Recommendations:

- CRB project type: Raised Harborwalk
- 30-inch outfall serves a 1.1-acre tributary area
- Proximity to the ocean and lack of public open space limit the feasibility of construction at this location
- Tide gate to prevent backflow during high tide conditions
- Subsurface storage facility and pump station could be installed in the Harborwalk Plaza to facilitate discharge during high sea levels

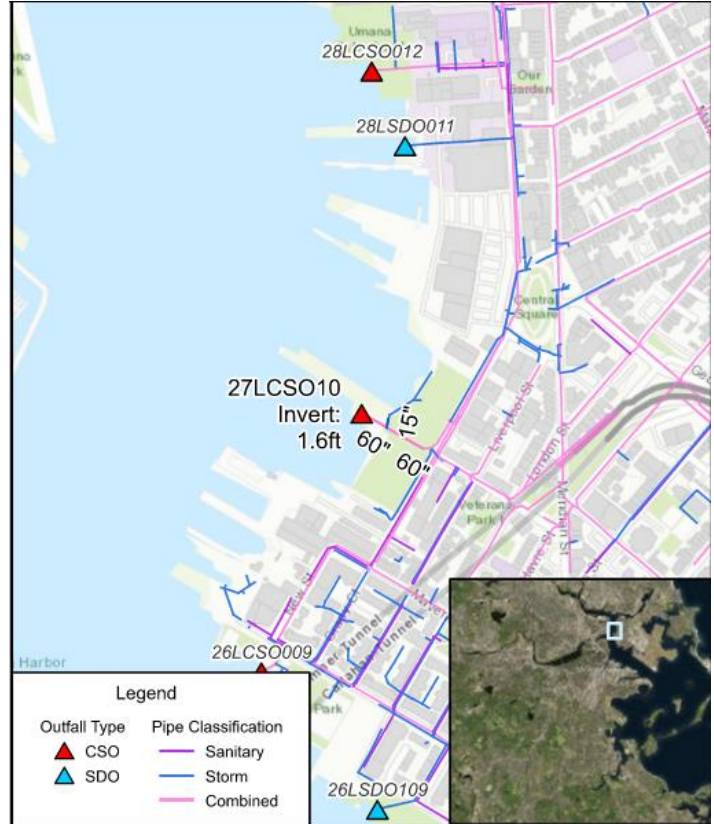


East Boston Single Outfall Concepts



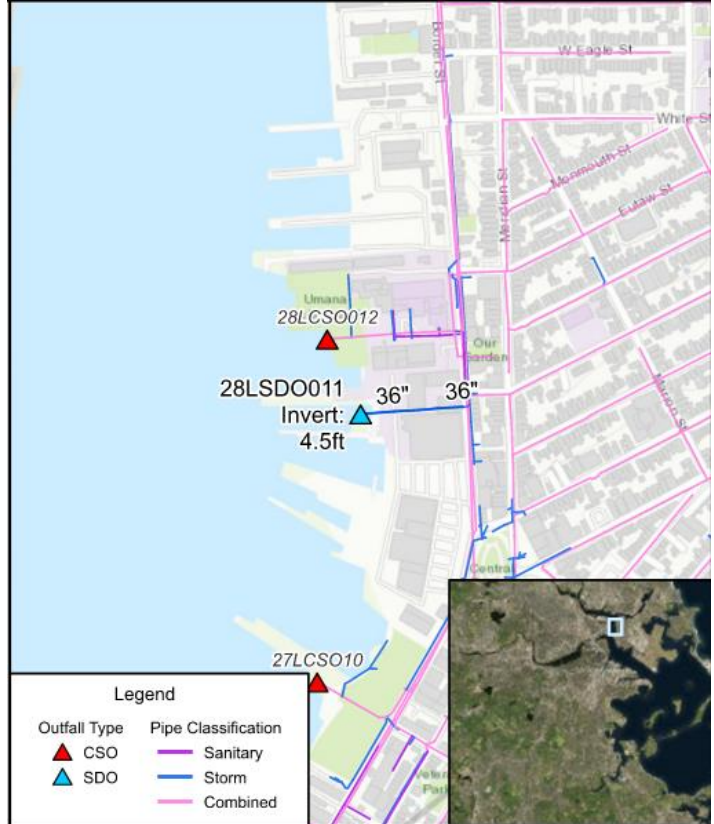
**Outfall 27LCSO10
Border Street, East Boston
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk and nature based solutions
 - 60-inch outfall serves a 37.0-acre tributary area
 - space (reduce inflow to this outfall, if it is converted to a SDO in the future)
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage facility and pump station could be installed in the adjacent grassed area to facilitate discharge during high sea levels



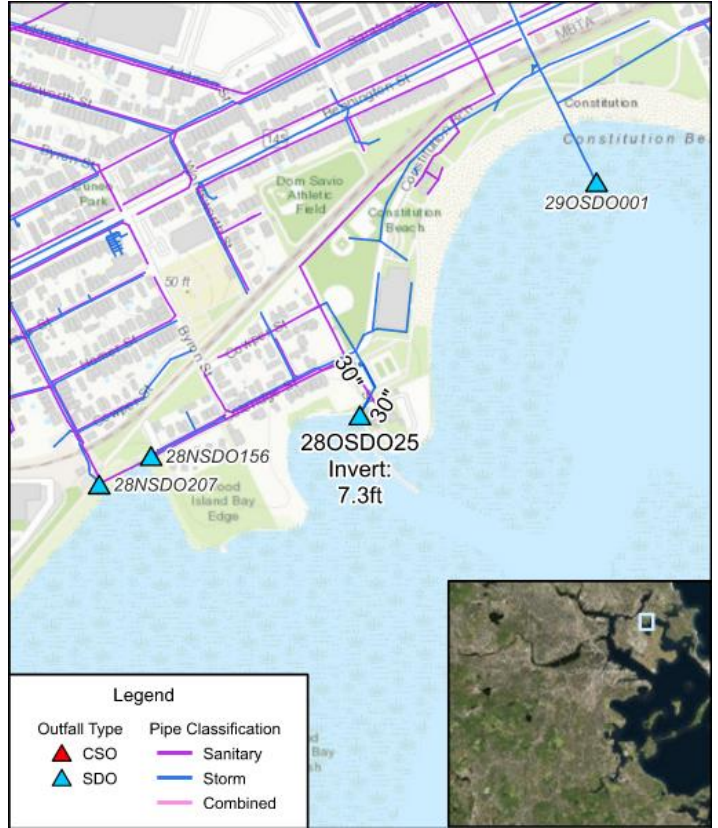
**Outfall 28LSDO011
Border St, East Boston
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk and nature based solutions
 - 36-inch outfall serves a 26.4-acre tributary area
 - Lack of open space limits the feasibility of construction at this location
 - Tide gate to prevent backflow during high tide conditions
 - Outfall
 - could be consolidated with adjacent (future) storm drain outfalls and pump station for discharge



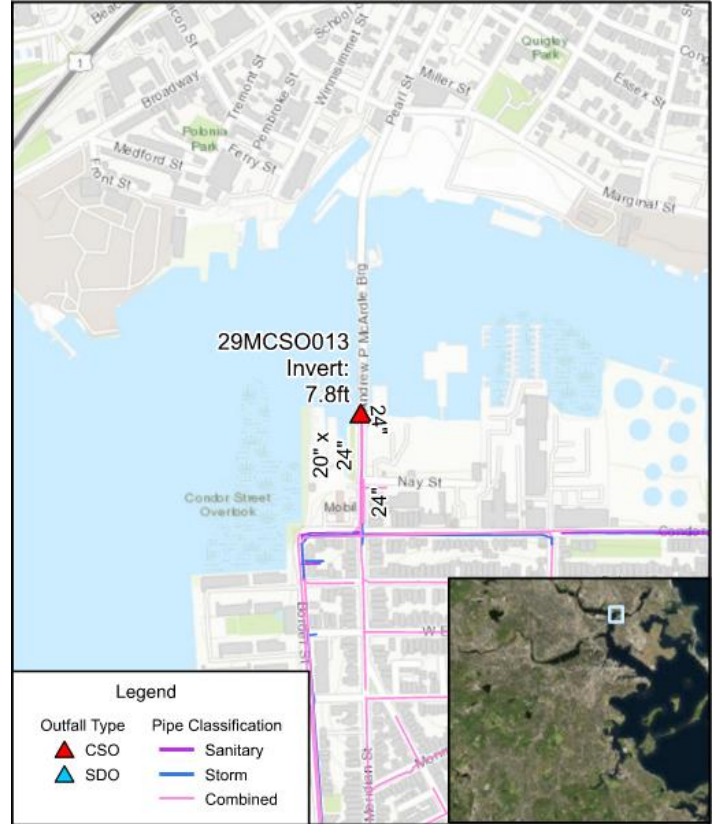
**Outfall 28OSDO25
Constitution Beach, East Boston
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 30-inch outfall serves a 11.1-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Opportunity for storage at nearby Constitution Beach athletic fields
 - Diversion of flow to potential future pump station at Outfall 29OSDO001
 - Tide gate to prevent backflow during high tide conditions



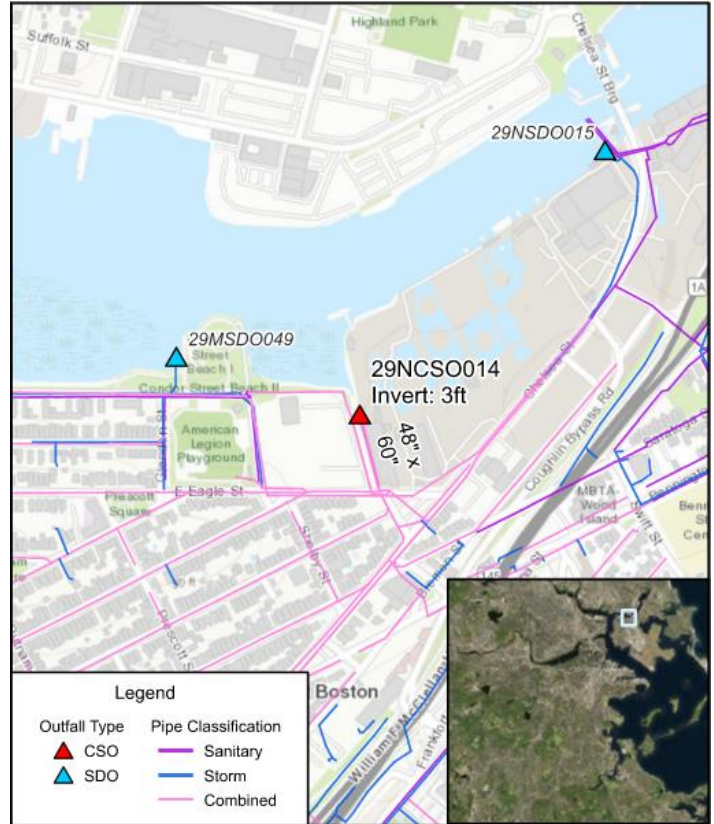
**Outfall 29MCSO013
Condor St Waterfront Properties, East Boston
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Building/site-scale adaptations.
 - 24-inch outfall serves a 17.9-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Pump station could be installed in Chelsea Creek Marine field to facilitate discharge during high sea levels



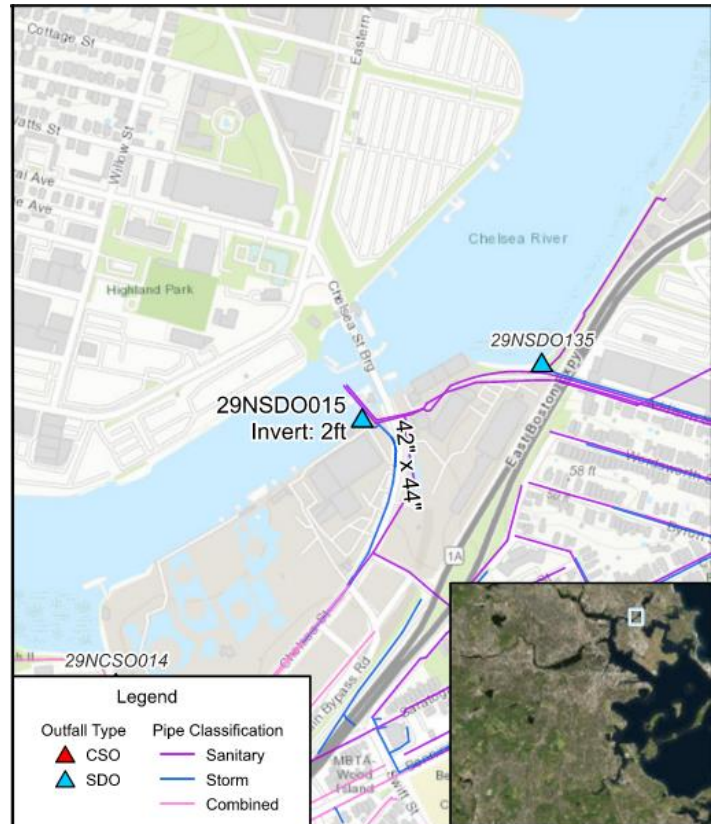
Outfall 29NCSO014
Chelsea Creek Oil Terminal, East Boston
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Building/site-scale adaptations
 - 48 by 60-inch outfall serves a 4.9-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Pump station could be installed in adjacent City-owned lot to facilitate discharge during high sea levels



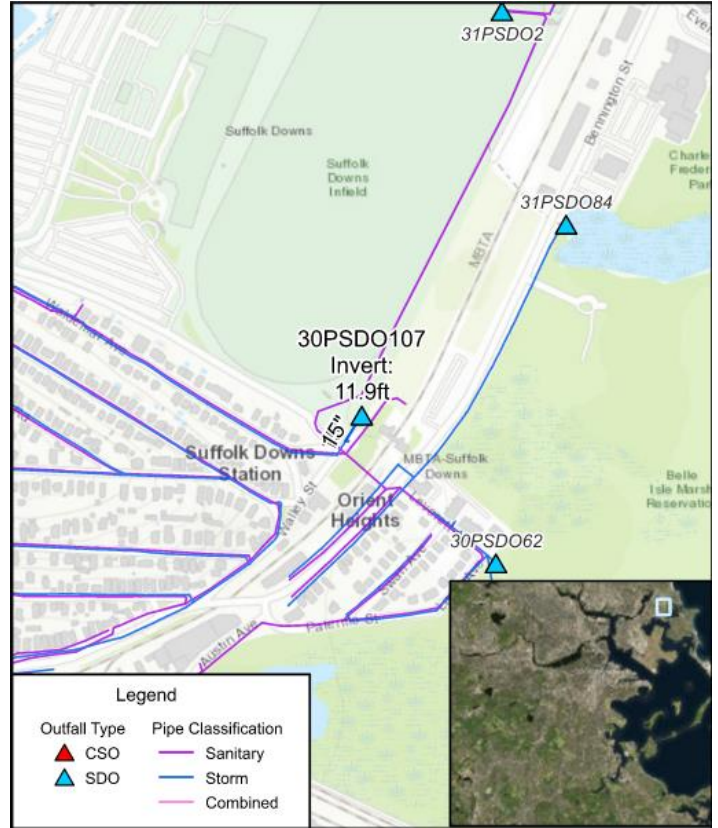
Outfall 29NSDO015
Chelsea Creek Oil Terminal, East Boston
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Building/site-scale adaptations
 - 42 by 44-inch outfall serves a 3.0-acre tributary area
 - Lack of open space limits the feasibility of construction at this location
 - Tide gate to prevent backflow during high tide conditions



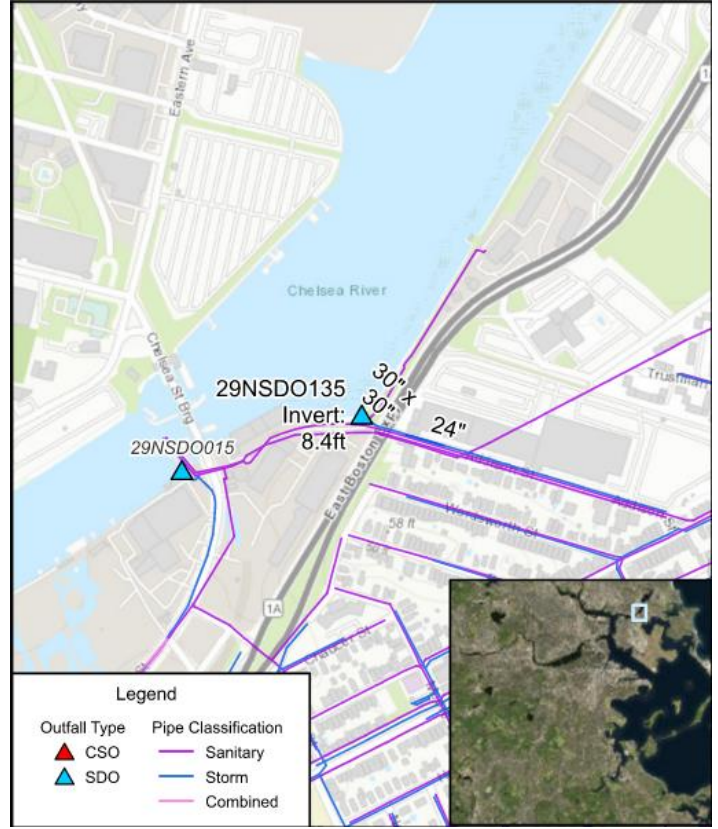
**Outfall 30PSDO107
East Boston
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: TBD
 - 15-inch outfall serves a 10.0-acre tributary area
 - Potential opportunity for storage in nearby privately owned track
 - Tide gate to prevent backflow during high tide conditions
 - Further study recommended because the high tributary area elevation suggests limited benefit to further adaptation



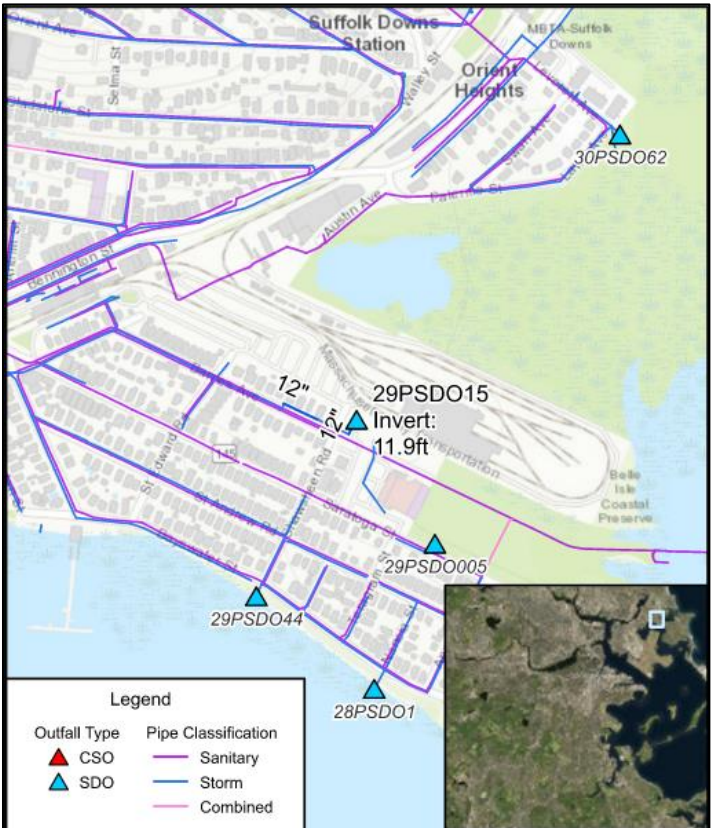
**Outfall 29NSDO135
Chelsea Creek Berm, East Boston
CRB Implementation Date: 2050**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 30-inch outfall serves a 16.2-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage and pump station could be installed to facilitate discharge during high sea levels



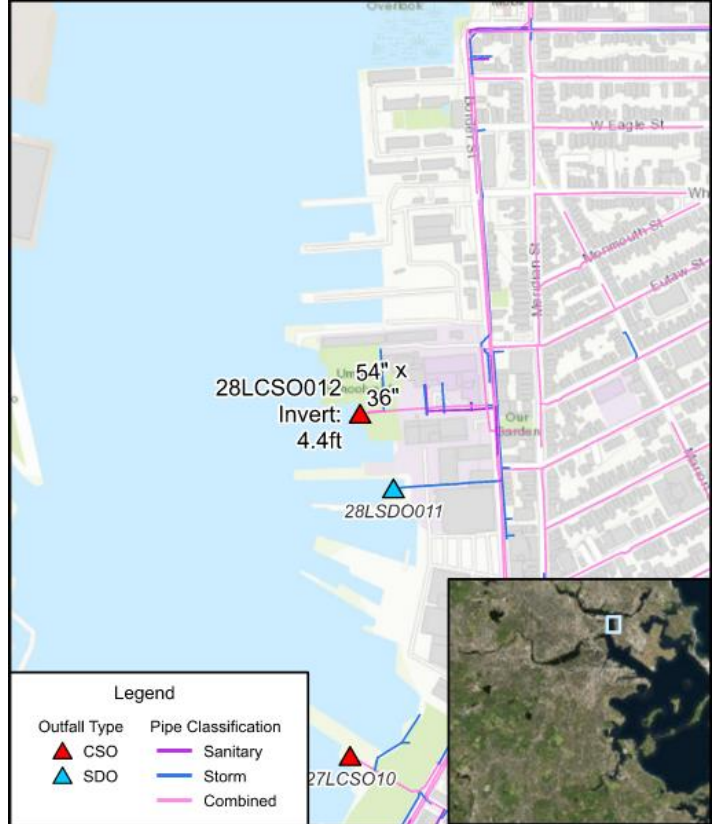
Outfall 29PSDO15
Berm at Teragram and Saratoga St, East Boston
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 12-inch outfall serves a small tributary area
 - Possible stormwater management opportunity on adjacent MBTA parking lot
 - Tide gate to prevent backflow during high tide conditions



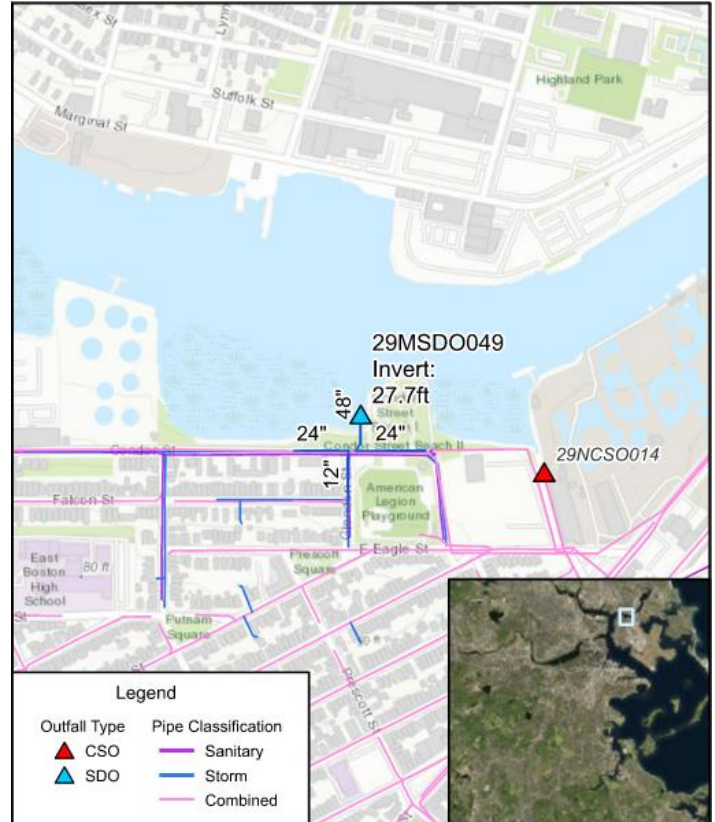
Outfall 28LCSO012
Mario Umana School, East Boston
CRB Implementation Date: 2070

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk and nature based solutions
 - 54 by 36-inch outfall serves a 26.4-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage and pump station could be installed to facilitate discharge during high sea levels



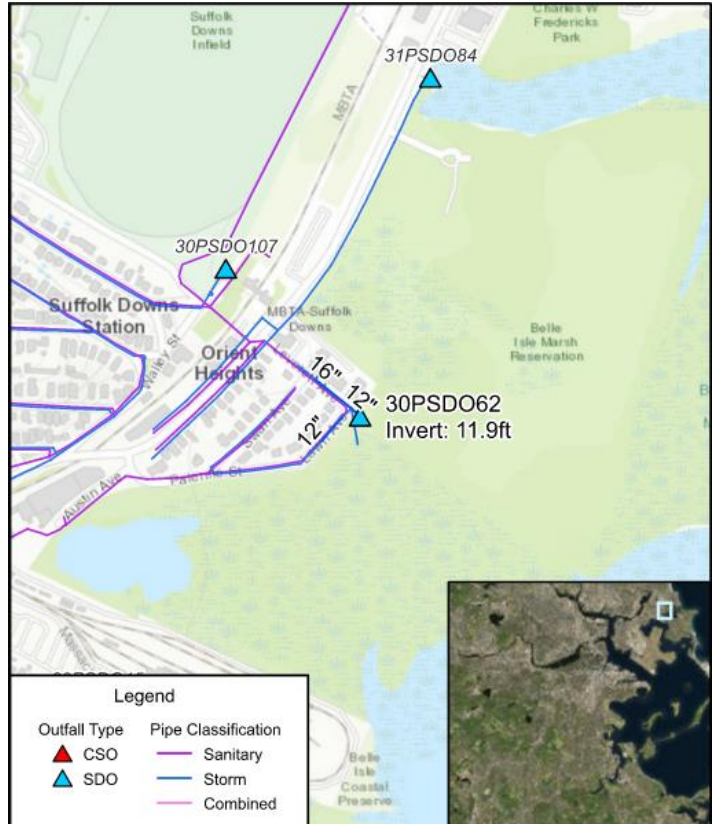
**Outfall 29MSDO049
Condor St Raised Harborwalk, East Boston
CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 48-inch outfall serves a 24.8-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage and pump station could be installed to facilitate discharge during high sea levels

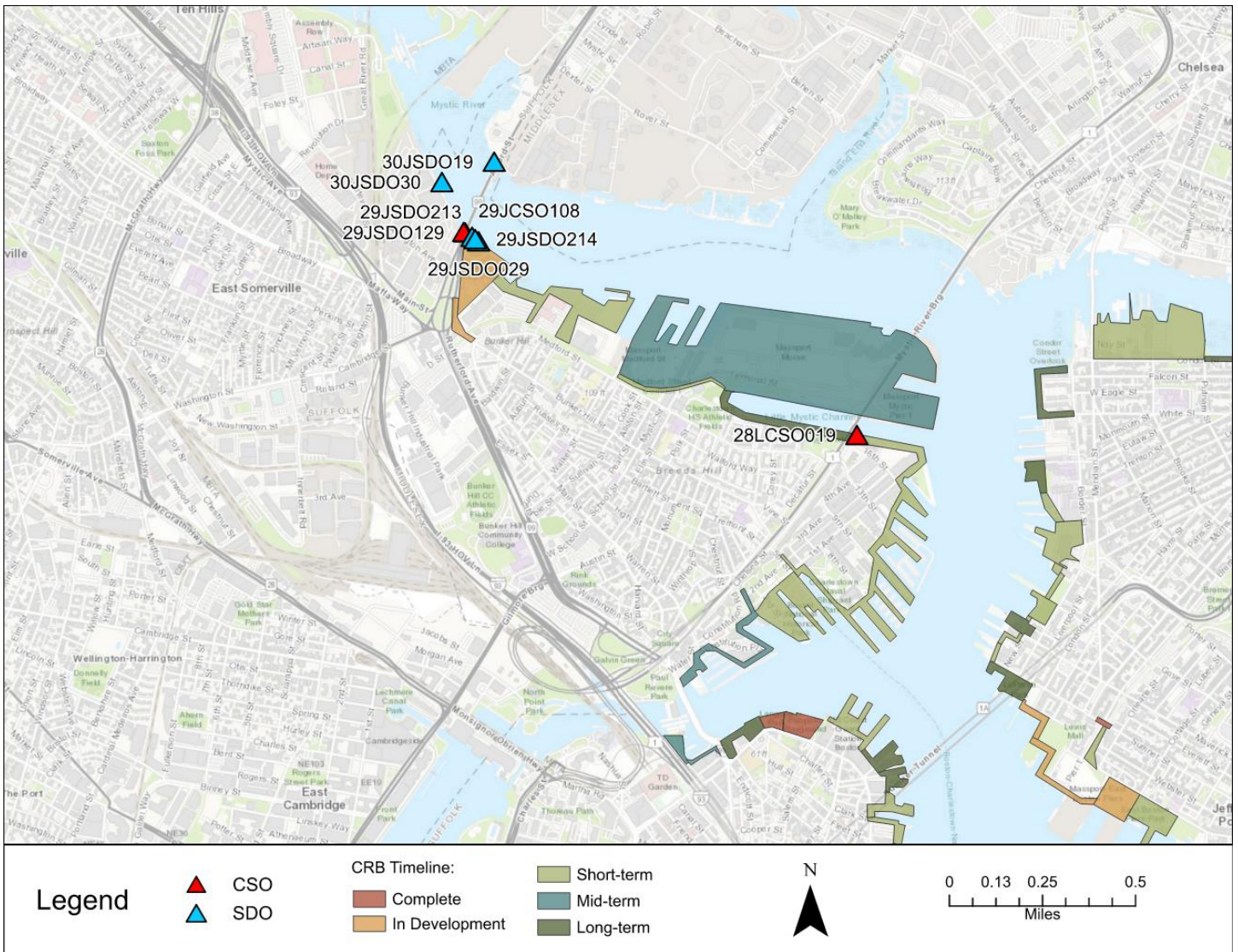


**Outfall 30PSDO62
Belle Isle Marsh Restoration, East Boston
CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: Nature based solutions
 - 12-inch outfall serves a 6.4-acre tributary area
 - Tide gate to prevent backflow during high tide conditions
 - Possible opportunity for storage in coordination with CRB nature based solution

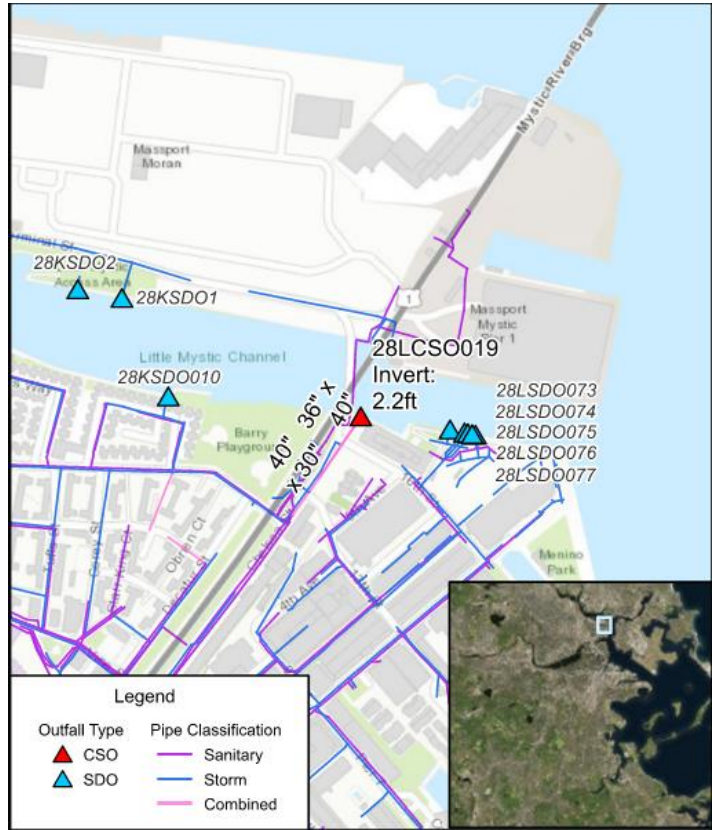


Charlestown Single Outfall Concepts



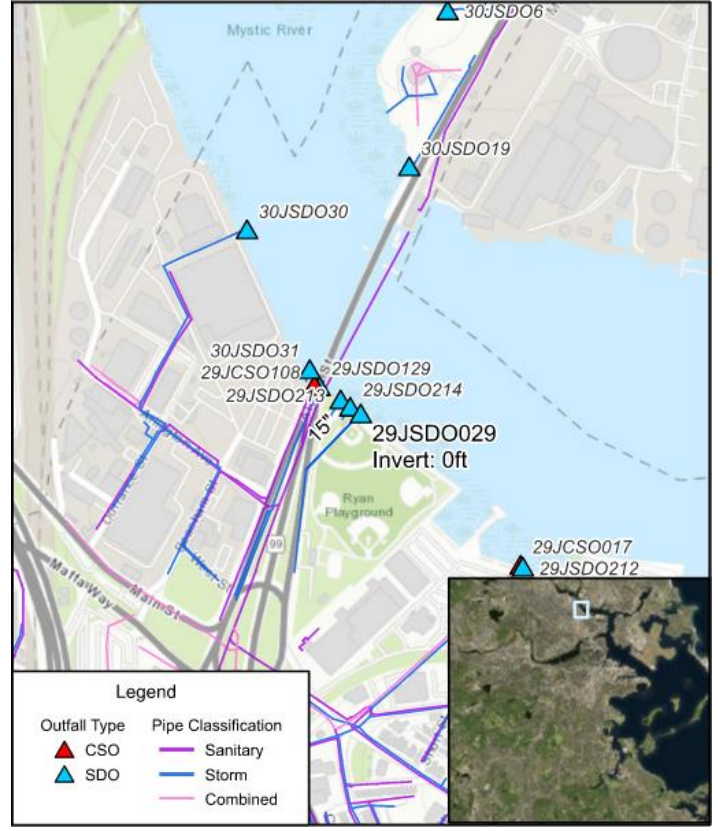
Outfall 28LCSO019
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 36 by 40-inch outfall serves a 5.5-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Storage basin could be installed in adjacent land owned by Boston Redevelopment Authority



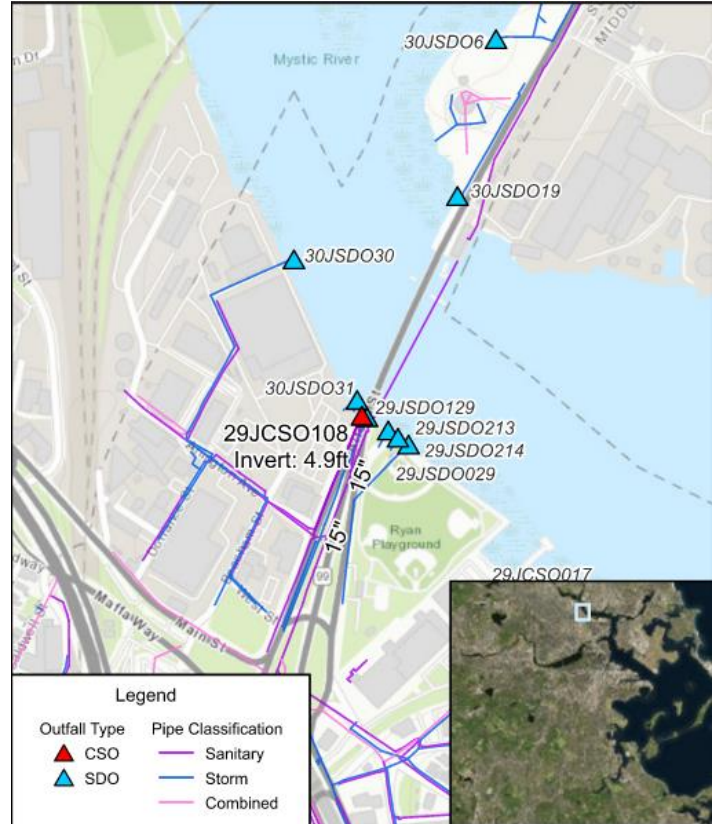
Outfall 29JSDO029
Ryan Playground, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 15-inch outfall serves a 2.5-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls for discharge at pump station



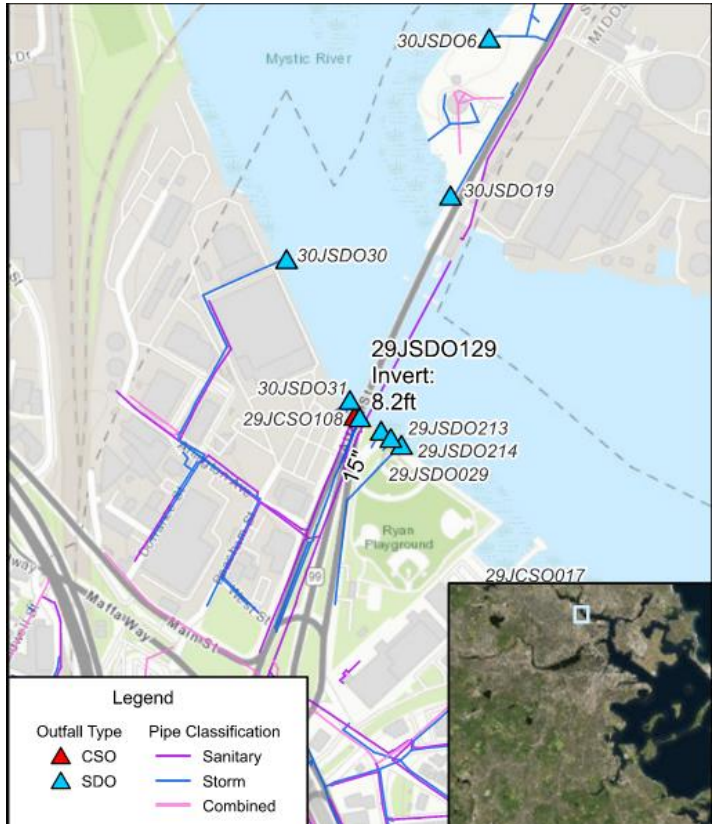
**Outfall 29JCSO108
Ryan Playground, Charlestown
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 15-inch outfall serves a 39.1-acre tributary area (shared with other outfalls)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls for discharge at pump station



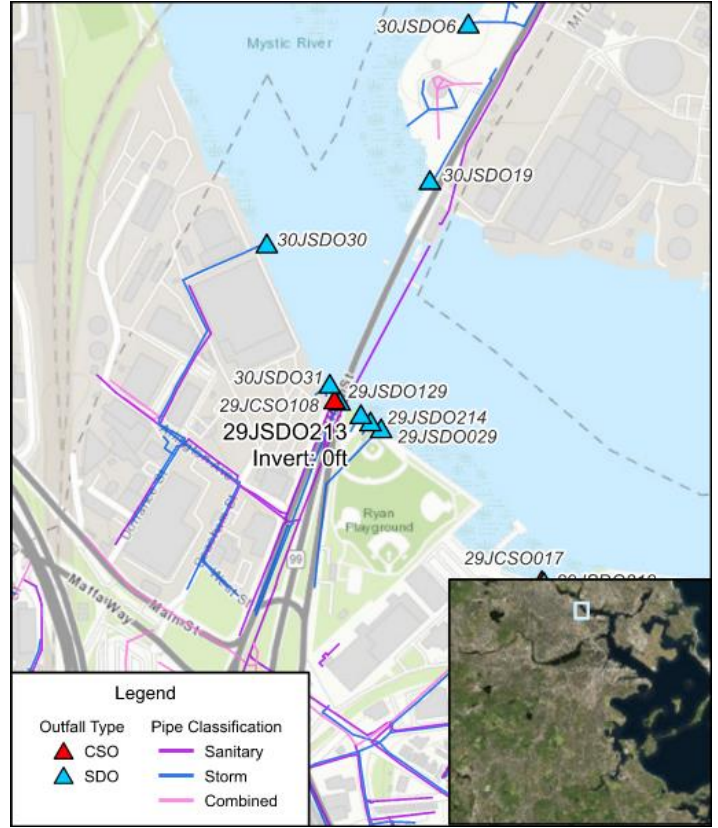
**Outfall 29JSDO129
Ryan Playground, Charlestown
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 15-inch outfall serves a 6.8-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls for discharge at pump station



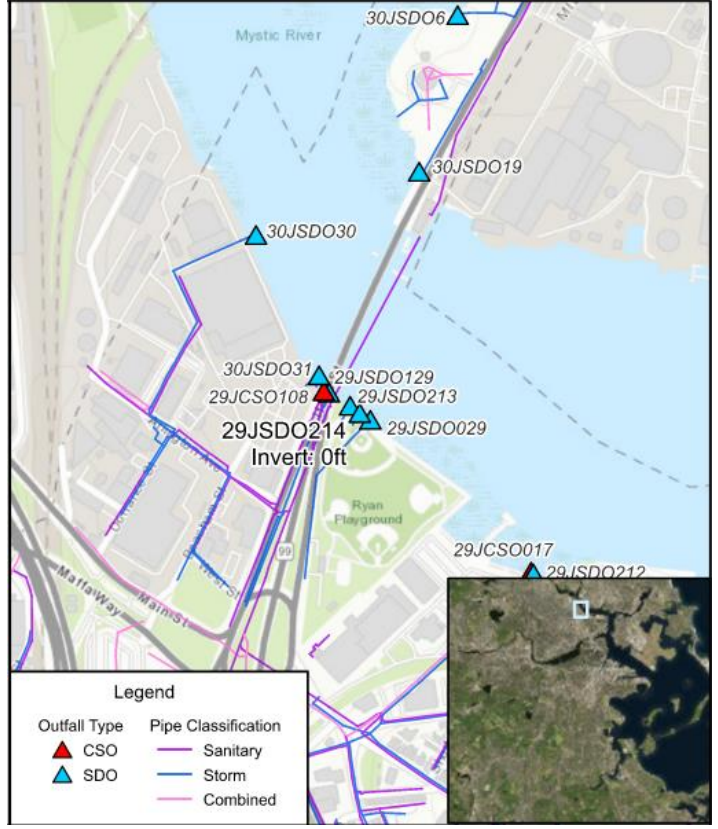
Outfall 29JSDO213
Ryan Playground, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - Outfall serves a small tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls for discharge at pump station



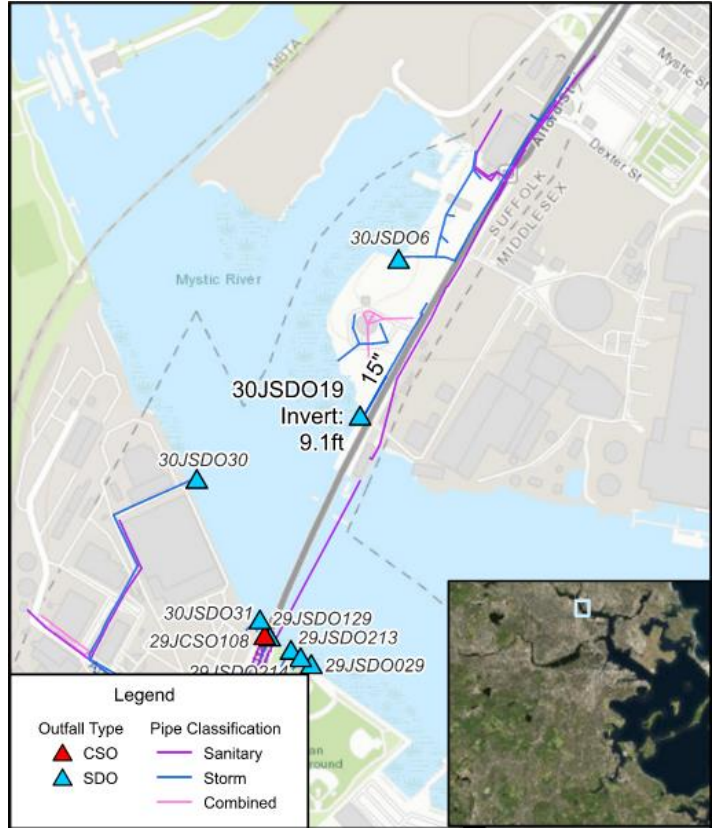
Outfall 29JSDO214
Ryan Playground, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - Outfall serves a small tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls for discharge at pump station



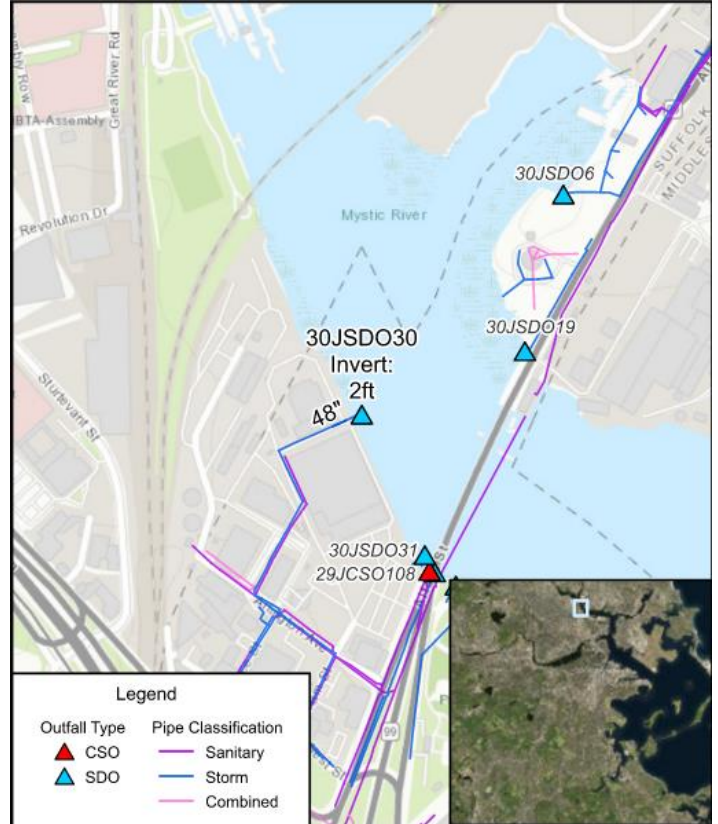
Outfall 30JSDO19
No CRB Project Identified, Charlestown
CRB Implementation Date: N/A

- Existing Conditions and Recommendations:**
- CRB project type: N/A
 - 15-inch outfall serves a 15.5-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Small, subsurface pump station could be considered for stormwater discharge

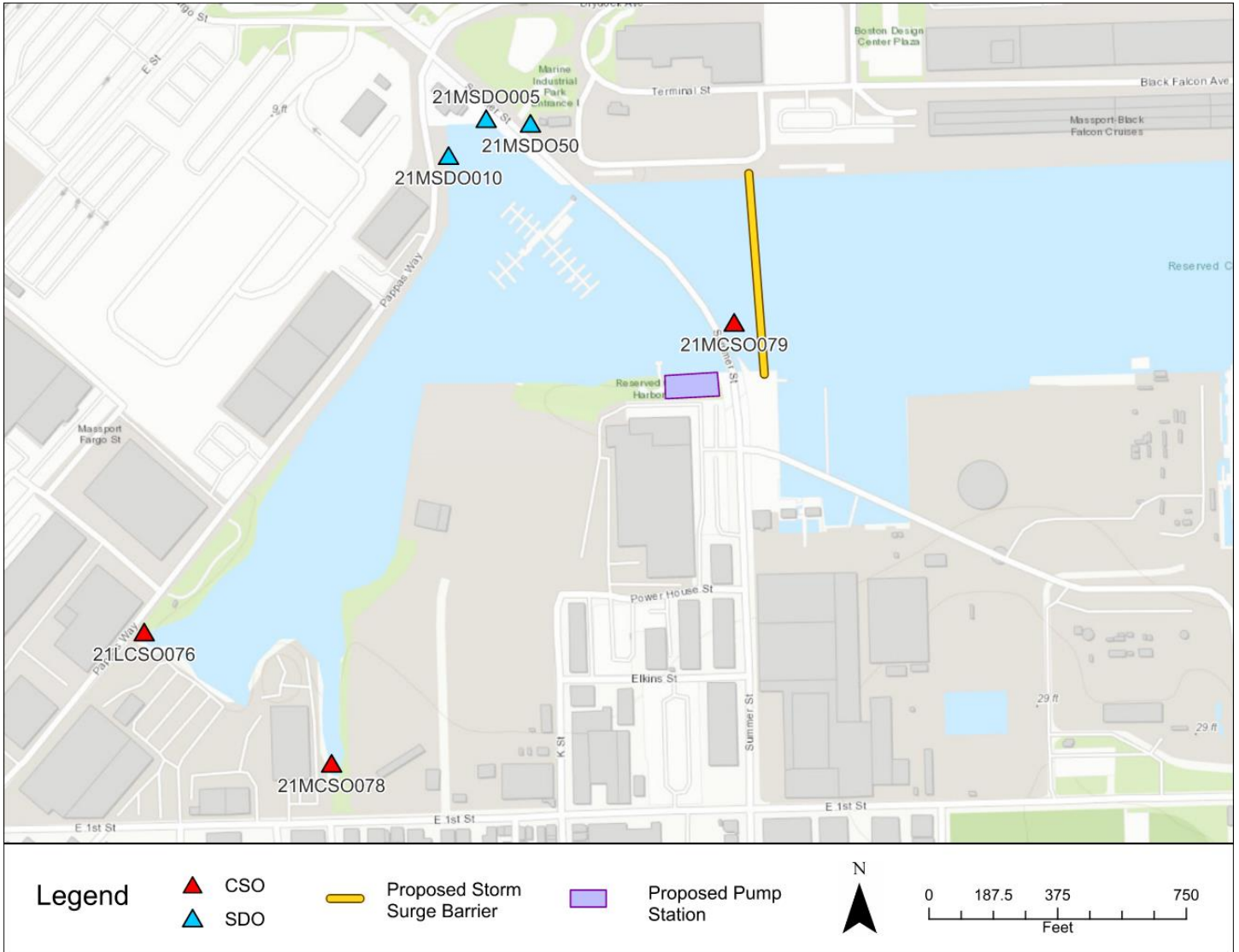


Outfall 30JSDO30
No CRB Project Identified, Charlestown
CRB Implementation Date: N/A

- Existing Conditions and Recommendations:**
- CRB project type: N/A
 - 48-inch outfall serves a 32.3-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Shoreline elevation and a pump station may be required to prevent flooding and facilitate stormwater discharge in the future

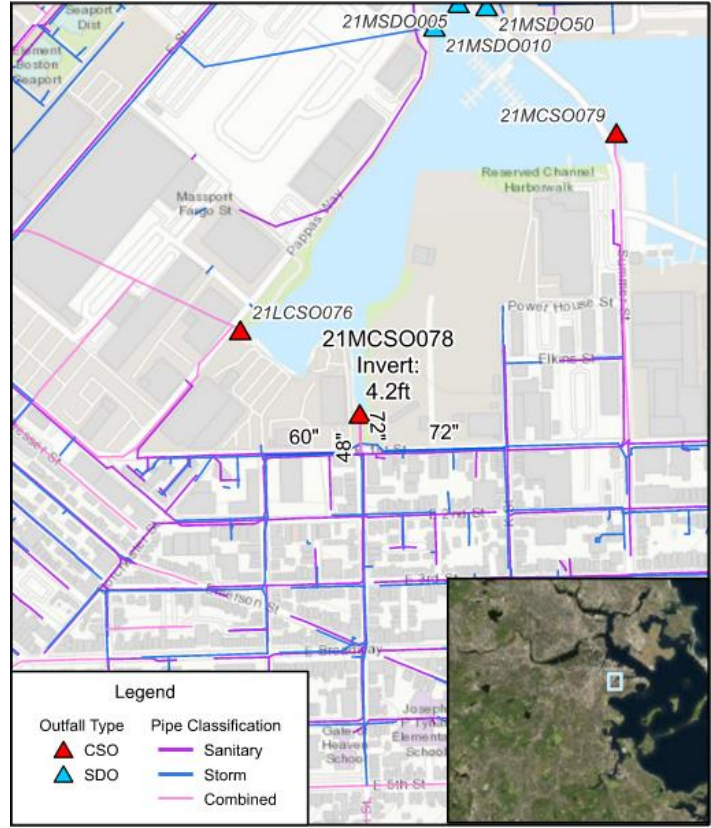


Summer Street Storm Surge Barrier and Pump Station



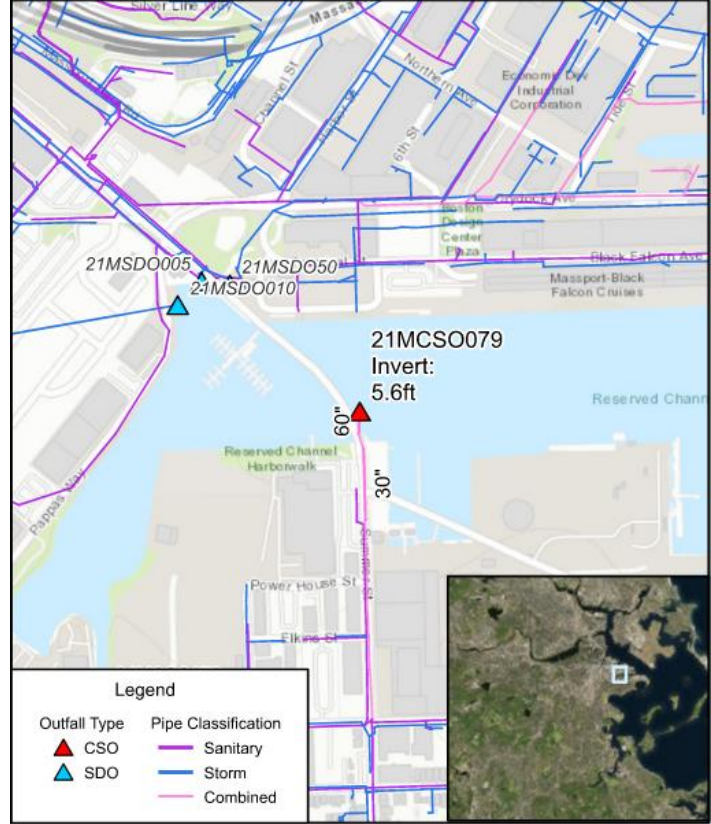
Outfall 21MCSO078
Reserved Channel, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 72-inch outfall serves a 45.1-acre tributary area
 - Possible stormwater management opportunity on adjacent, privately owned open space
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near Summer Street could be considered to protect multiple outfalls



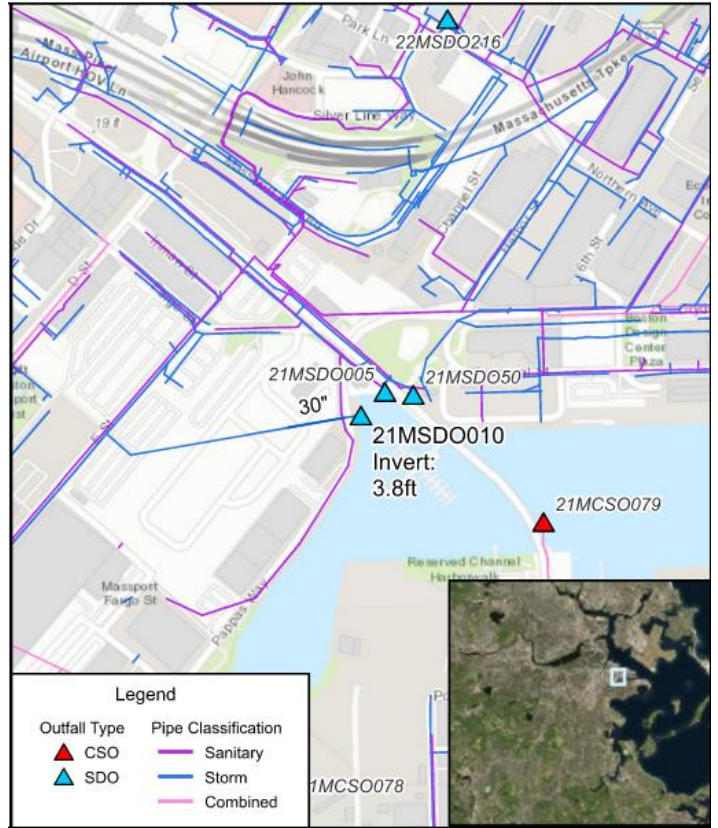
Outfall 21MCSO079
Reserved Channel, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms.
 - 72-inch outfall serves a 35.7-acre tributary area
 - Possible stormwater management opportunity on adjacent, privately owned open space
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near Summer Street could be considered to protect multiple outfalls



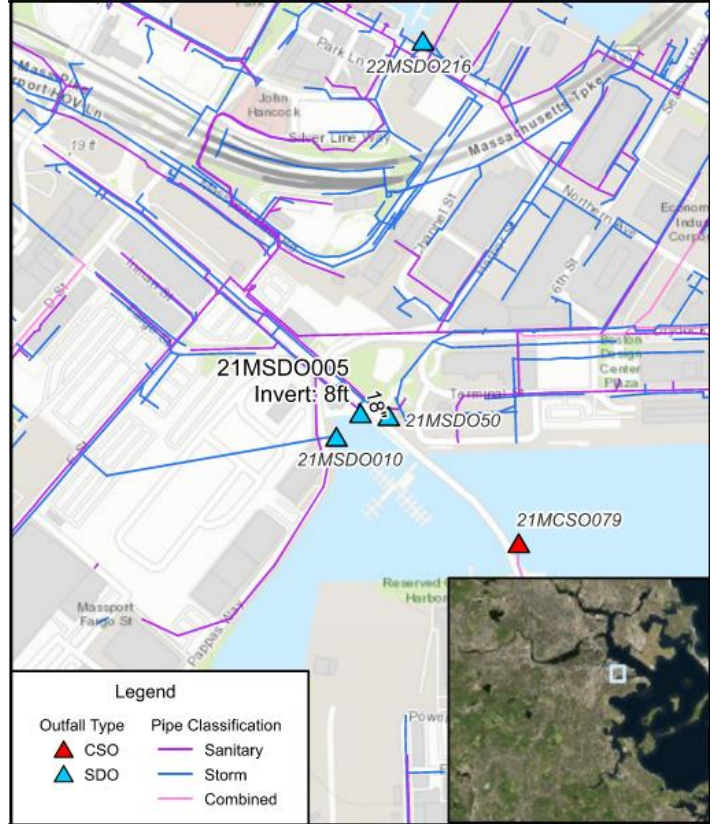
Outfall 21MSDO010
Reserved Channel, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms.
 - 30-inch outfall serves a 29.1-acre tributary area
 - Possible stormwater management opportunity on adjacent Mass Port owned land
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near Summer Street could be considered to protect multiple outfalls



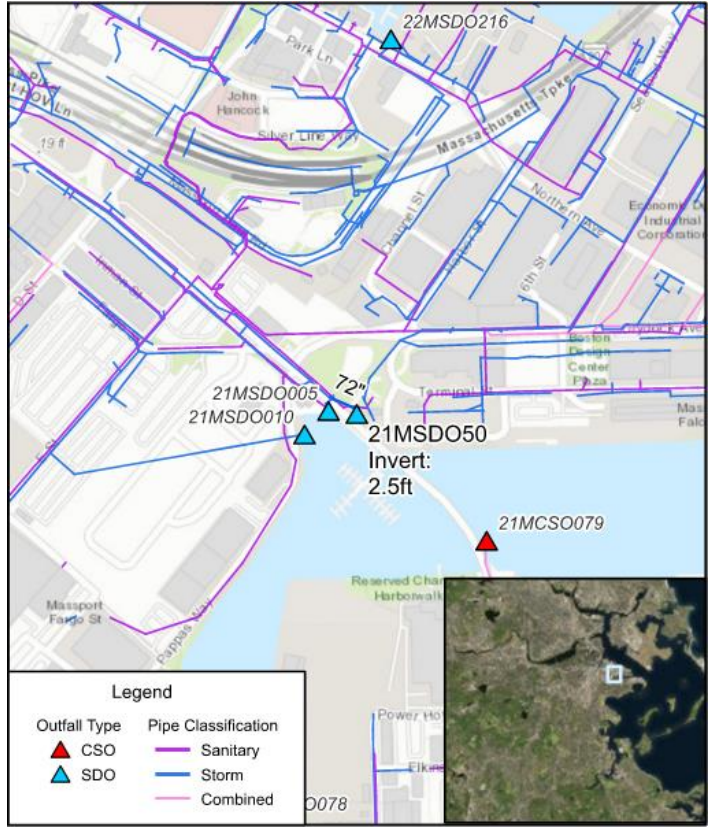
Outfall 21MSDO005
Reserved Channel, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms.
 - 18-inch outfall serves a 9.2-acre tributary area (shared with Outfall 21MSDO50)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near Summer Street could be considered to protect multiple outfalls



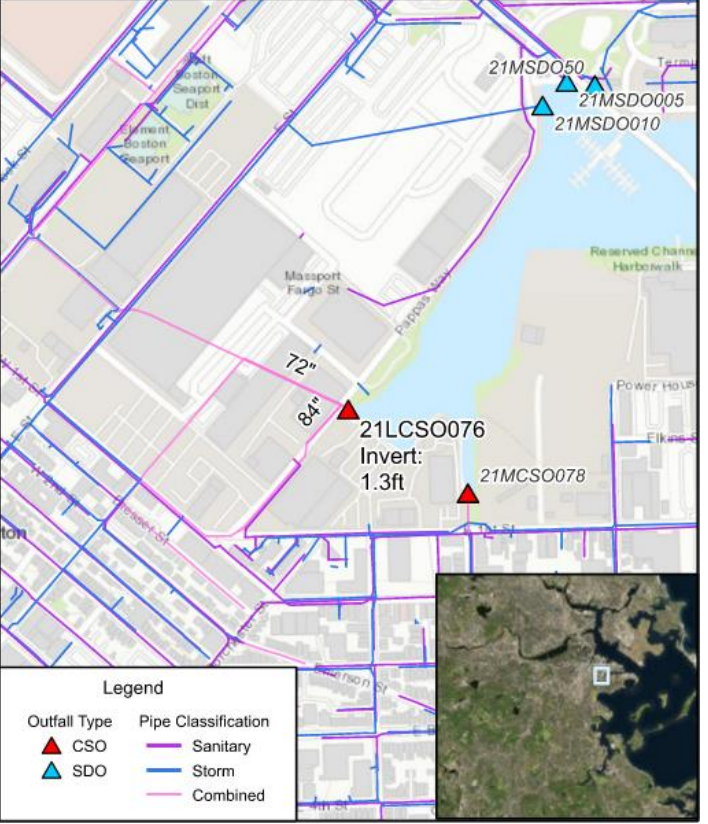
Outfall 21MSDO50
Reserved Channel, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms.
 - 72-inch outfall serves a 9.2-acre tributary area (shared with Outfall 21MSDO005)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near Summer Street could be considered to protect multiple outfalls

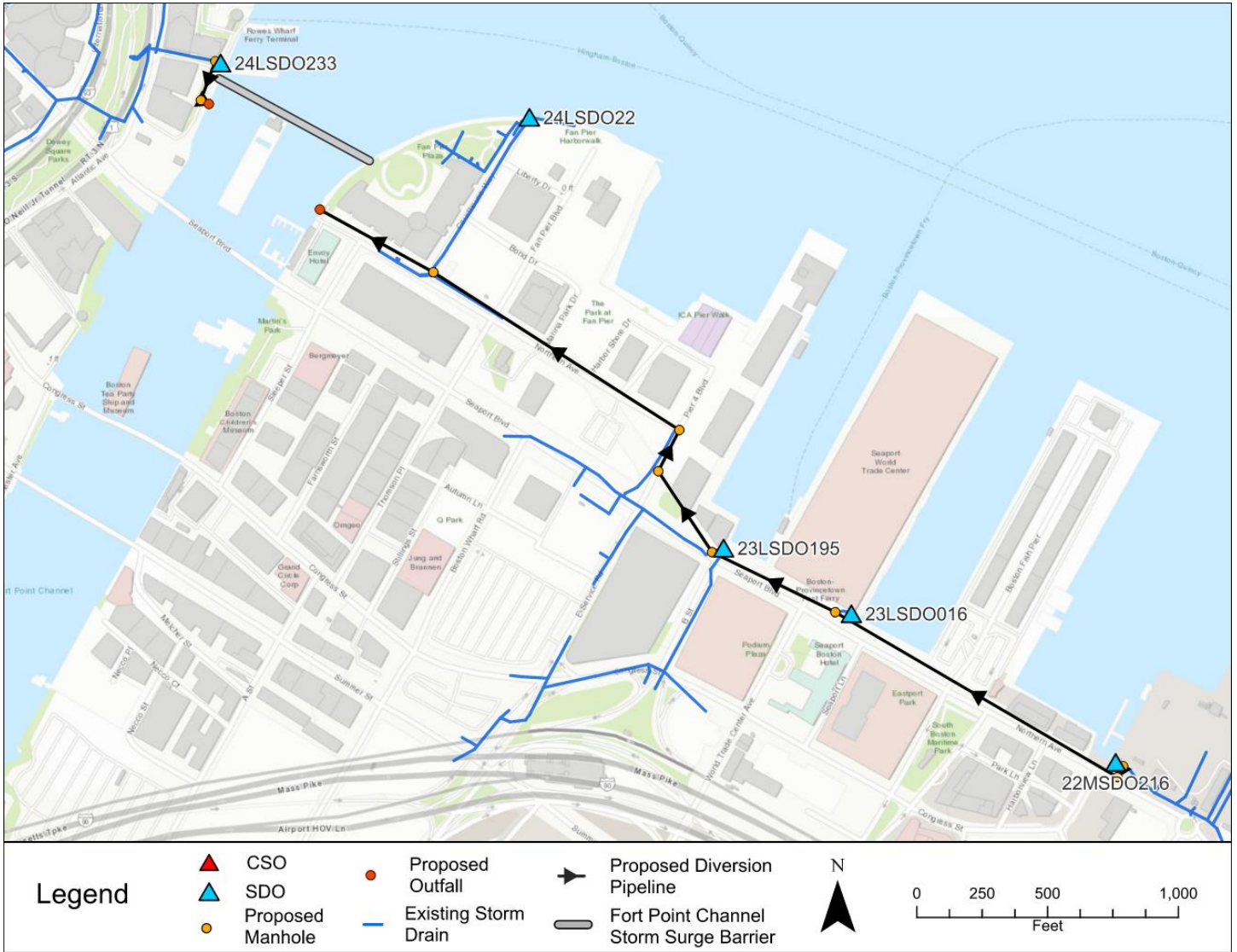


Outfall 21LCSO076
Reserved Channel, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 72-inch outfall serves a 43.2-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near Summer Street could be considered to protect multiple outfalls

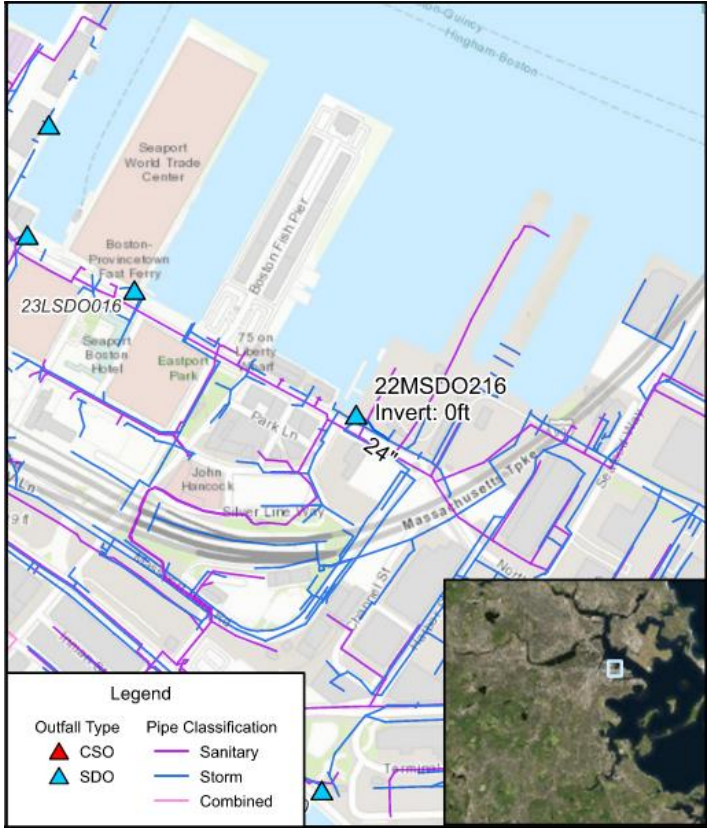


Fort Point Channel SSB Outfall Diversion



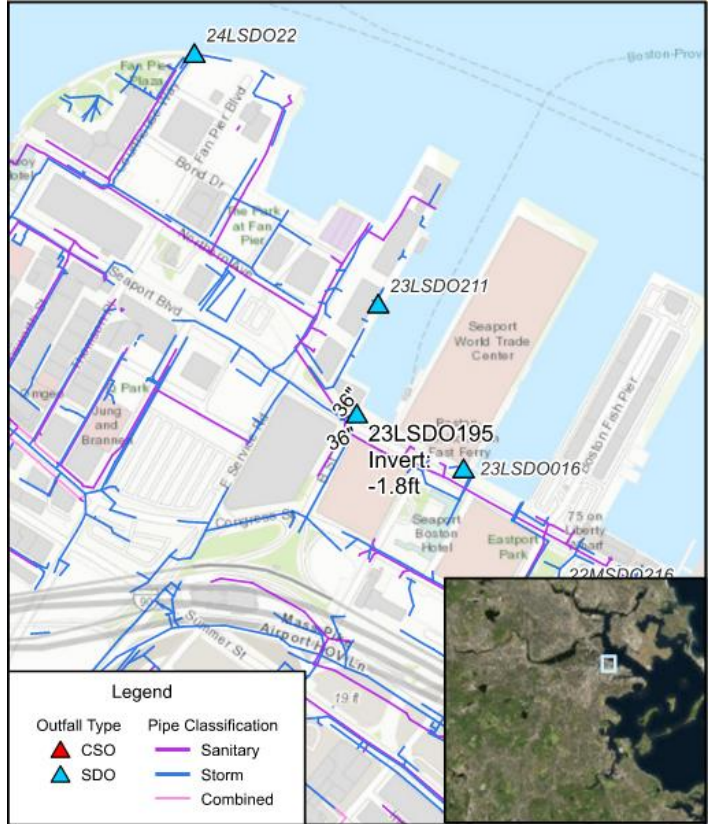
Outfall 22MSDO216
Seaport Boulevard, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated roadways and floodwalls
 - 24-inch outfall serves a 14.5-acre tributary area
 - Lack of open space limits the feasibility of construction at this location
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls using a new conduit to redirect flow to a new outfall located behind potential future Fort Point Channel storm surge barrier



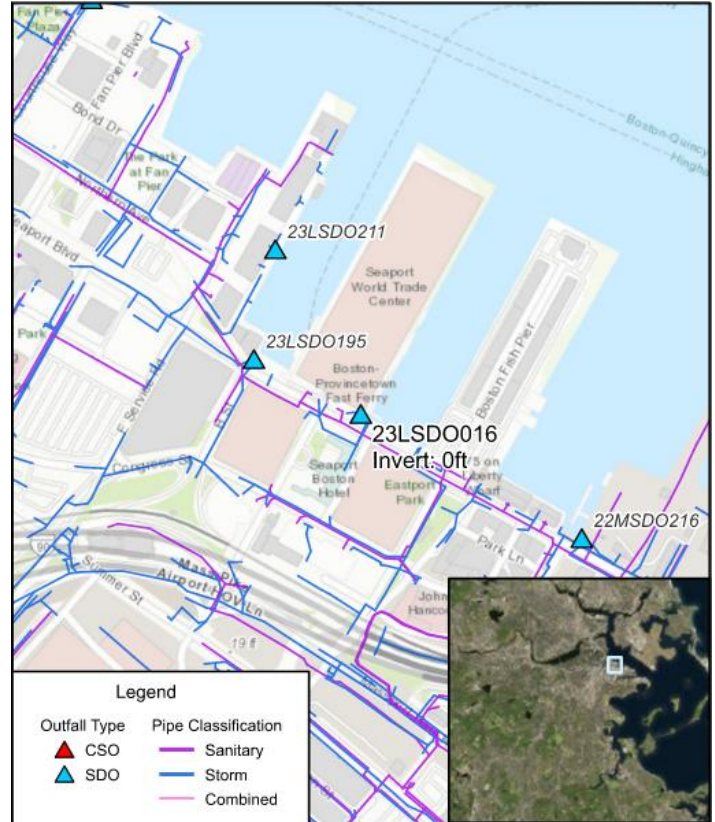
Outfall 23LSDO195
Seaport Boulevard, South Boston Waterfront
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Elevated roadways and floodwalls
 - 36-inch outfall serves a 7.8-acre tributary area
 - Lack of open space limits the feasibility of construction at this location
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls using a new conduit to redirect flow to a new outfall located behind potential future Fort Point Channel storm surge barrier



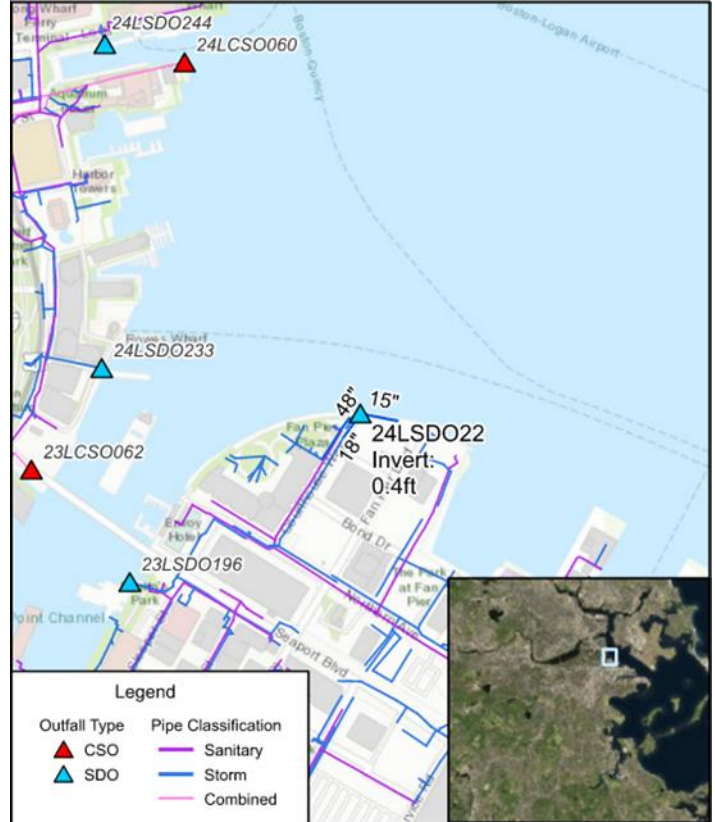
**Outfall 23LSDO016
Seaport Boulevard, South Boston Waterfront
CRB Implementation Date: 2050**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated roadways and floodwalls
 - Outfall serves a 3.3-acre tributary area
 - Lack of open space limits the feasibility of construction at this location
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls using a new conduit to redirect flow to a new outfall located behind potential Fort Point Channel storm surge barrier



**Outfall 24LSDO22
South Boston Waterfront
CRB Implementation Date: 2050**

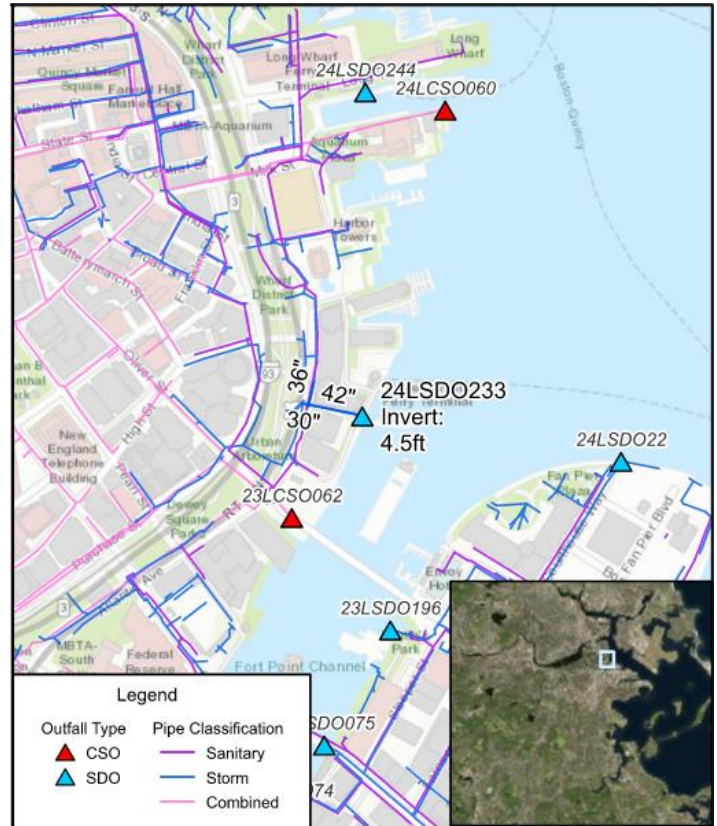
- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 48-inch outfall serves an 8.0-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidation with adjacent outfalls using a new conduit to redirect flow to a new outfall located behind potential Fort Point Channel storm surge barrier



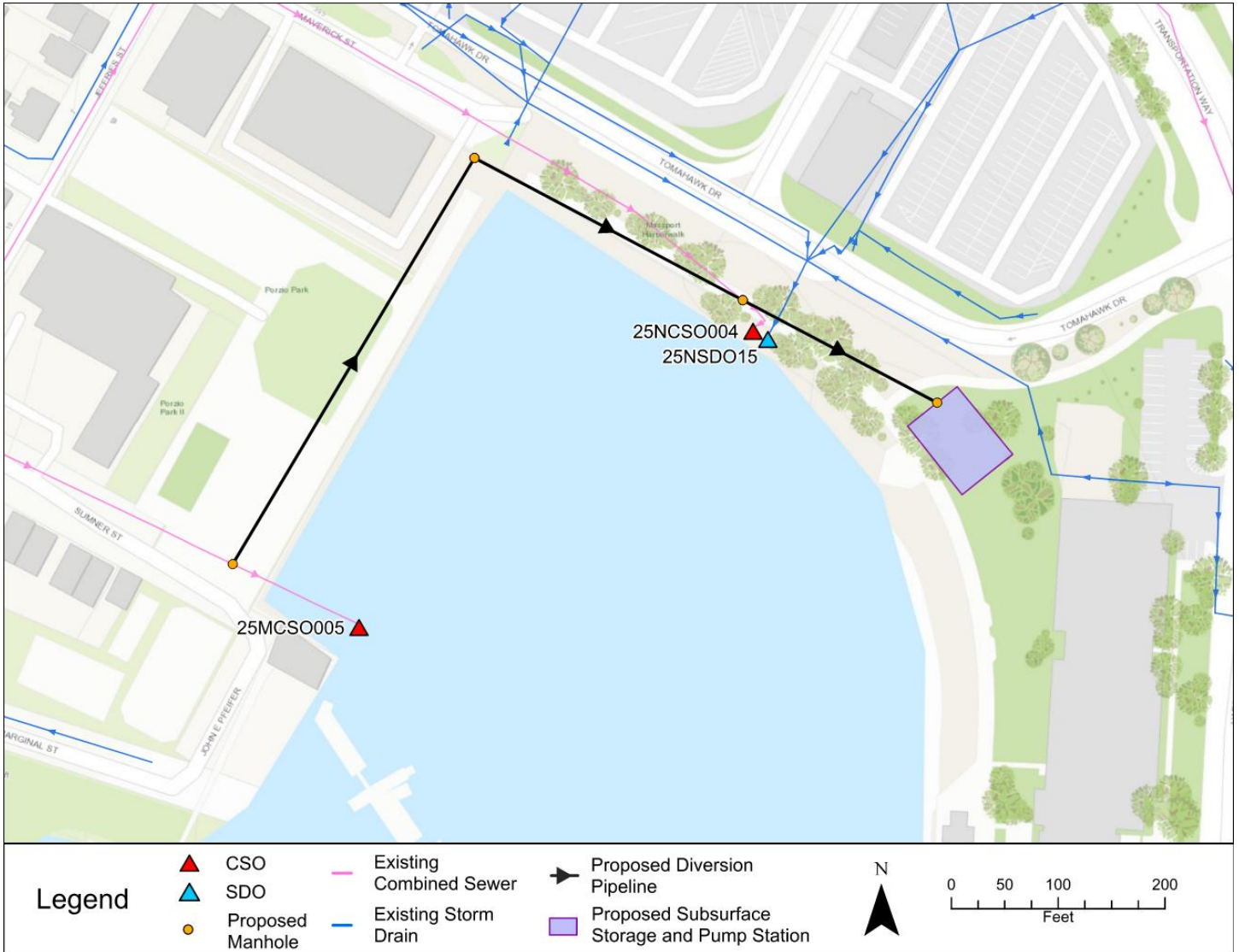
**Outfall 24LSDO233
Rowes Wharf, Downtown
CRB Implementation Date: 2070**

Existing Conditions and Recommendations:

- CRB project type: Raised harborwalk
- 42-inch outfall serves a 19.7-acre tributary area
- Lack of open space limits the feasibility of construction at this location
- Tide gate to prevent backflow during high tide conditions
- Redirect flow to new outfall located behind potential Fort Point Channel storm surge barrier

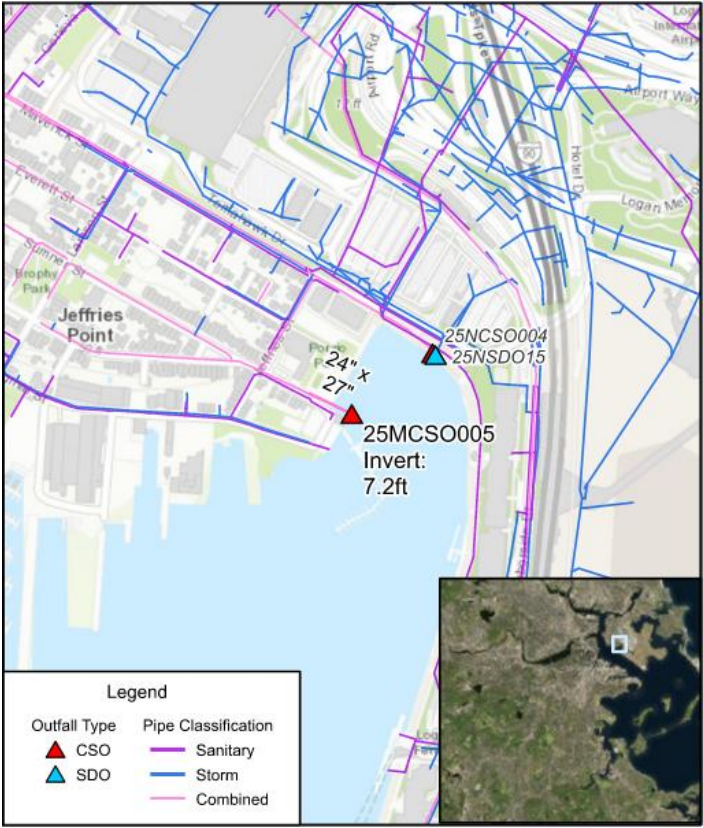


Porzio Park Consolidation and Pump Station



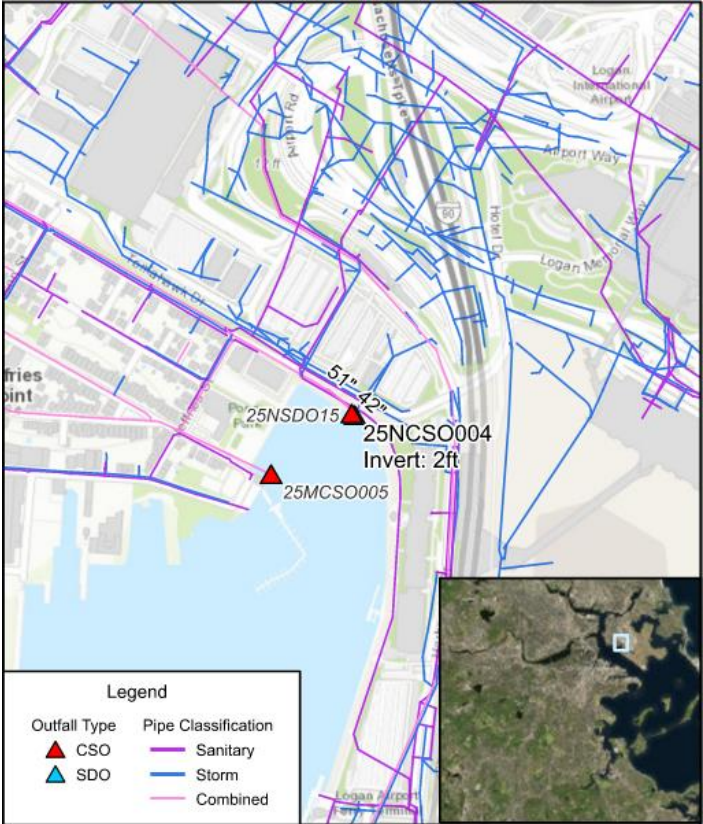
**Outfall 25MCSO005
Porzio Park, East Boston
CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: Elevated waterfront parks and berms
 - 24 by 27-inch outfall serves a 0.8-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Divert flow to possible pump station associated with outfall 24NCSO004

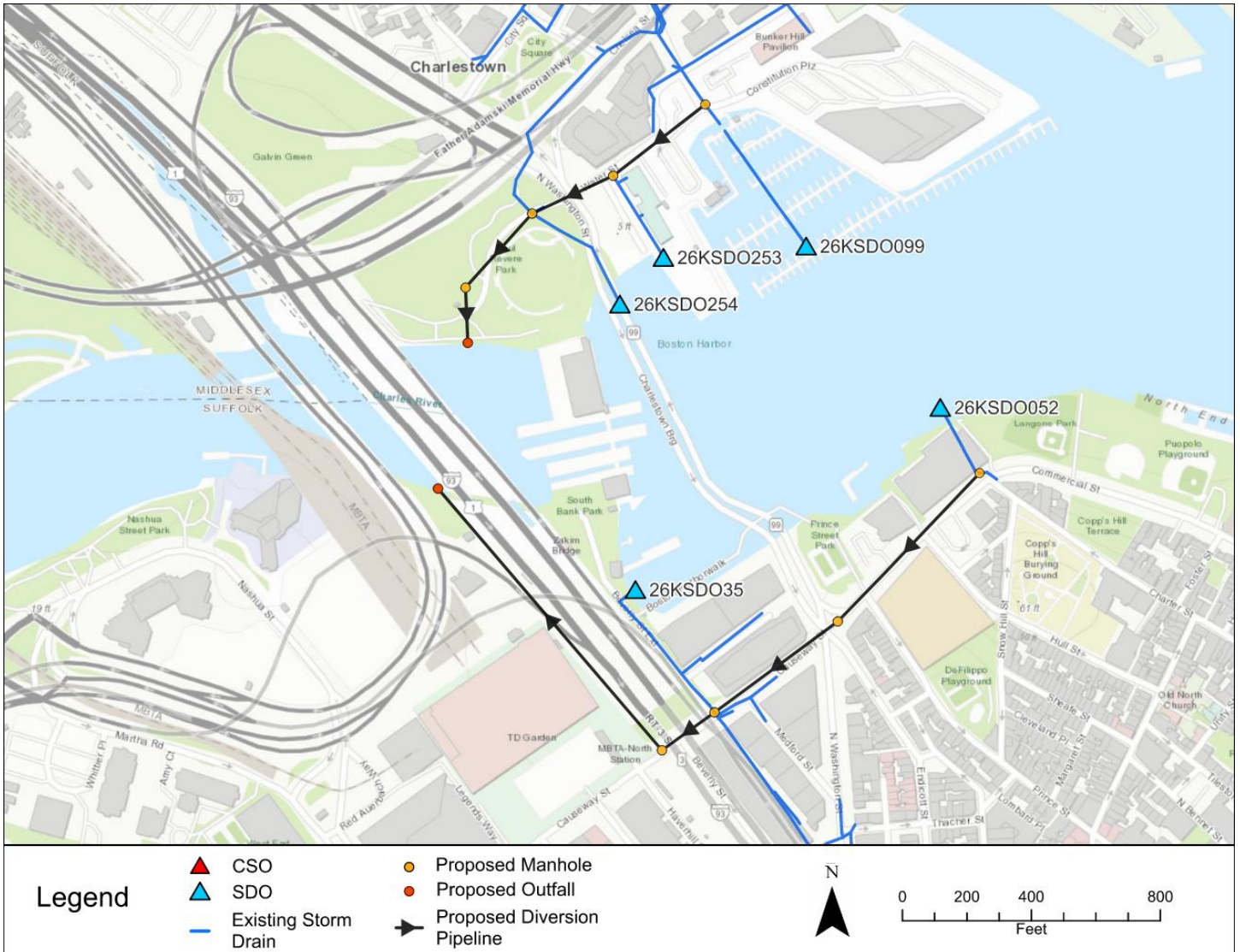


**Outfall 25NCSO004
East Boston
CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: TBD
 - 42-inch outfall serves a 14.3-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage facility and pump station with outfall 25NSDO15

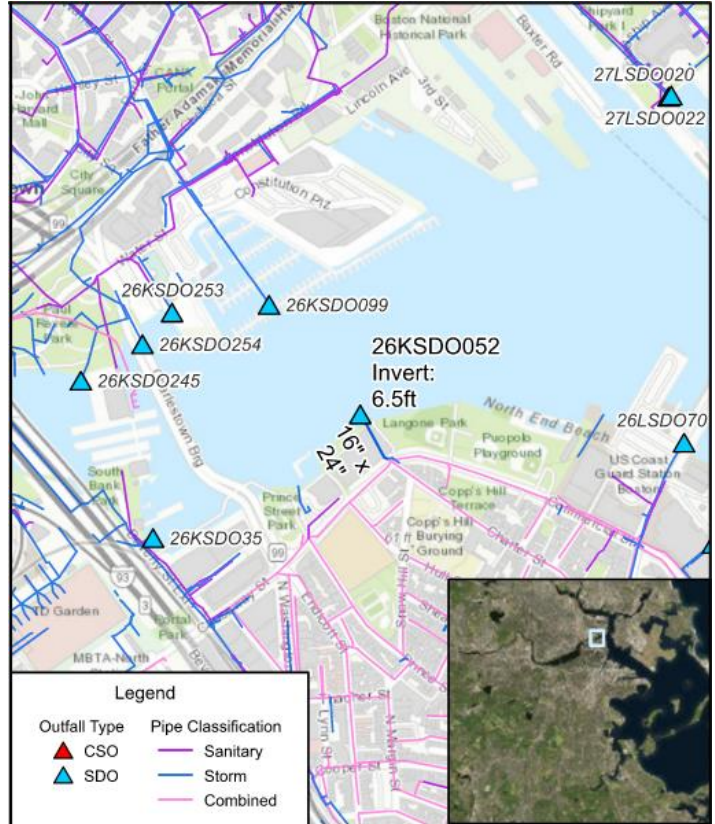


Outfall Diversion to Charles River Basin



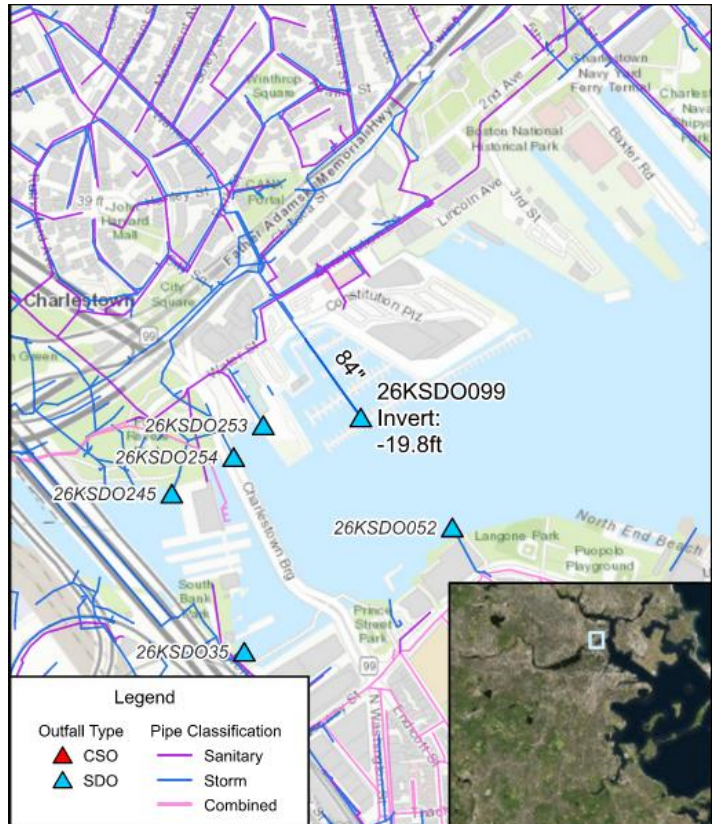
**Outfall 26KSDO052
Prince Park, North End
CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk.
 - 16 by 24-inch outfall serves an 8.8-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidate flow from this and nearby outfalls to discharge behind the Charles River Dam



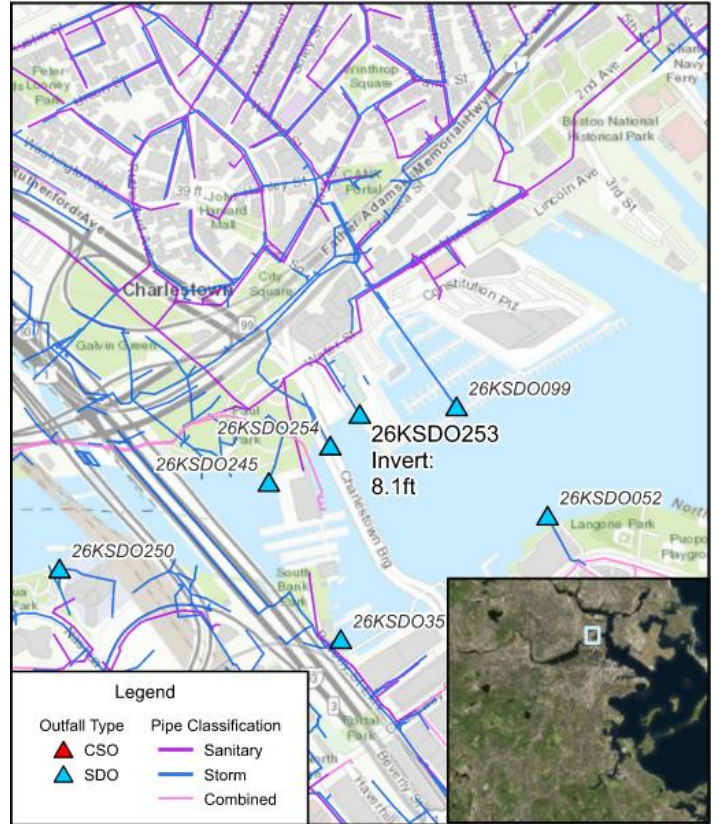
**Outfall 26KSDO099
Raised Harborwalk to Charles River Dam, Charlestown
CRB Implementation Date: 2050**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 84-inch outfall serves an 84.5-acre tributary area
 - Possible stormwater management opportunity on adjacent privately owned land or Mass Port owned land
 - Tide gate to prevent backflow during high tide conditions
 - Consolidate flow from this and nearby outfalls to discharge behind the Charles River Dam
 - Alternatively, a subsurface storage and pump station could be installed to facilitate discharge during high sea levels



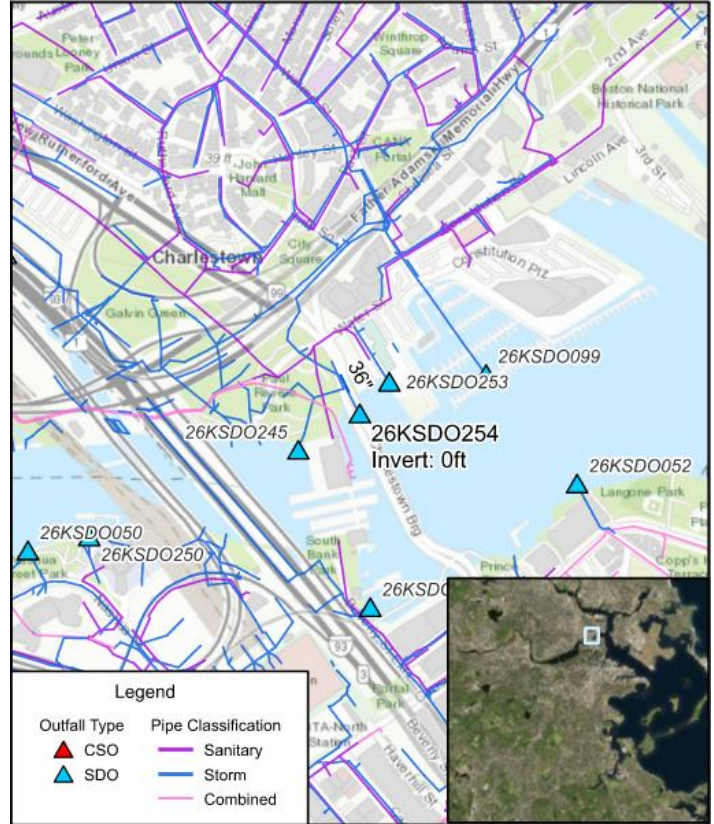
Outfall 26KSD0253
Raised Harborwalk to Charles River Dam, Charlestown
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - Outfall serves a small tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidate flow from this and nearby outfalls to discharge behind the Charles River Dam



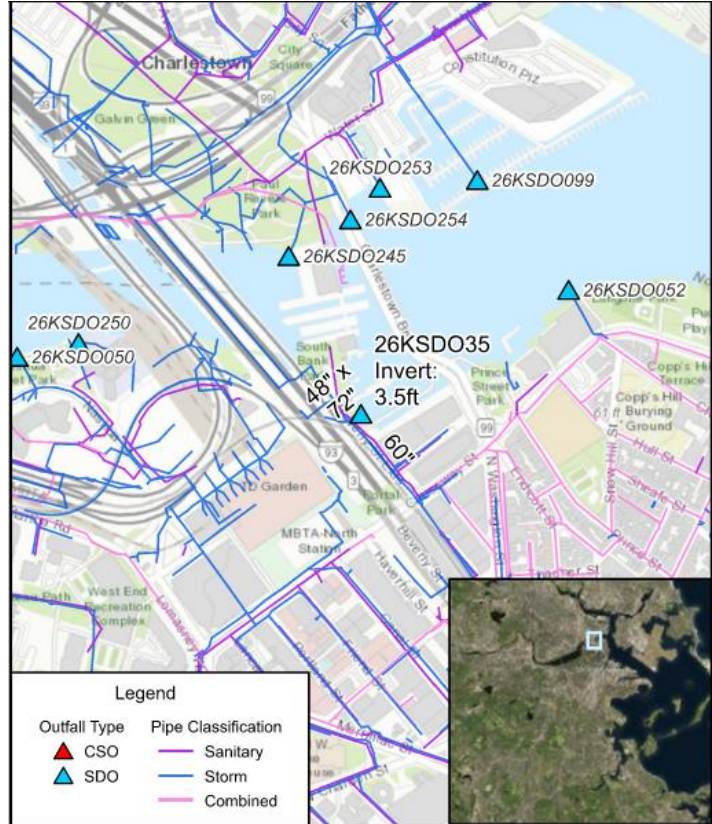
Outfall 26KSD0254
Raised Harborwalk to Charles River Dam, Charlestown
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 36-inch outfall serves a 2.1-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidate flow from this and nearby outfalls to discharge behind the Charles River Dam

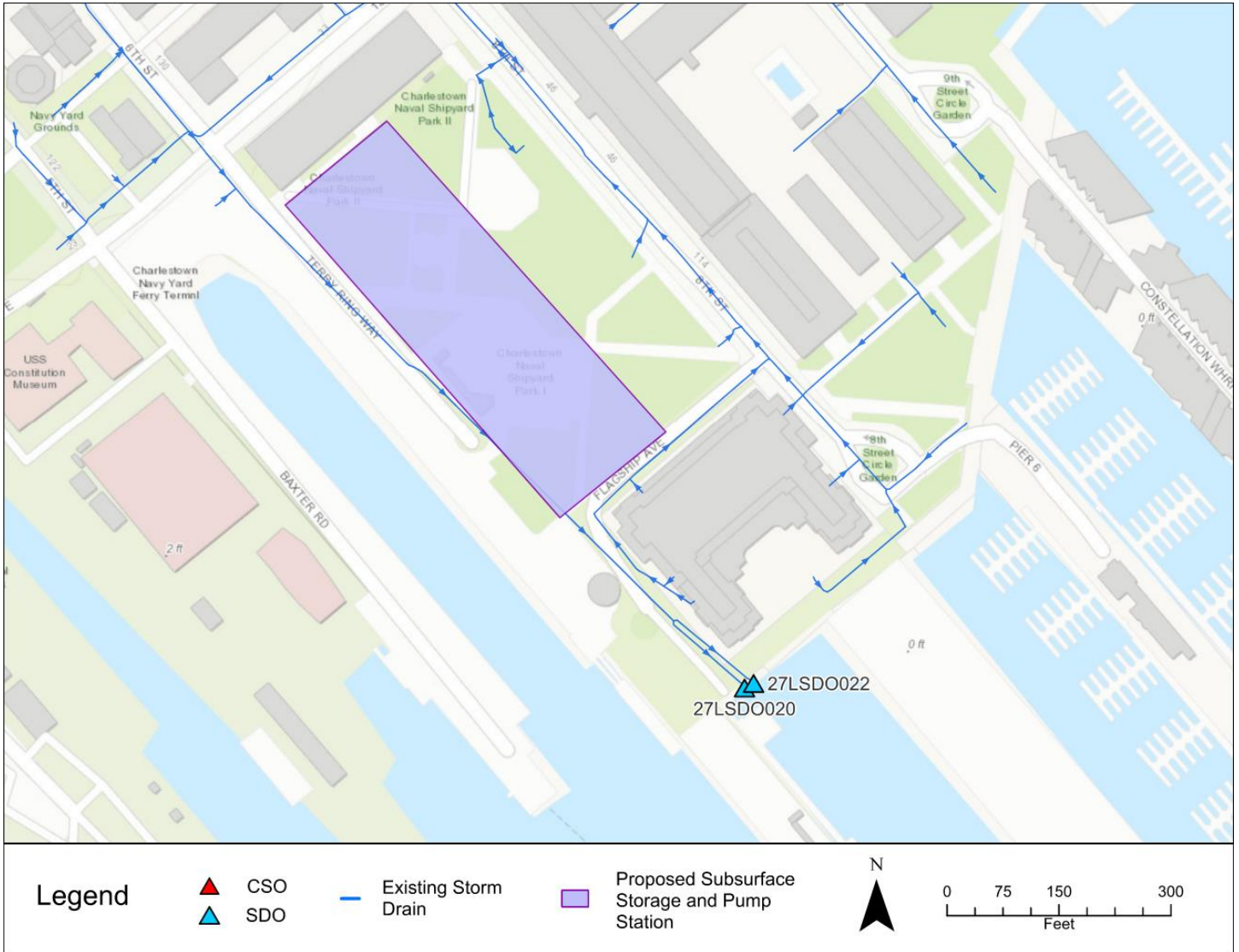


**Outfall 26KSDO35
New Charles Dam, West End
CRB Implementation Date: 2050**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk.
 - 48 by 72-inch outfall serves a 12.0-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Consolidate flow from this and nearby outfalls to discharge behind the Charles River Dam

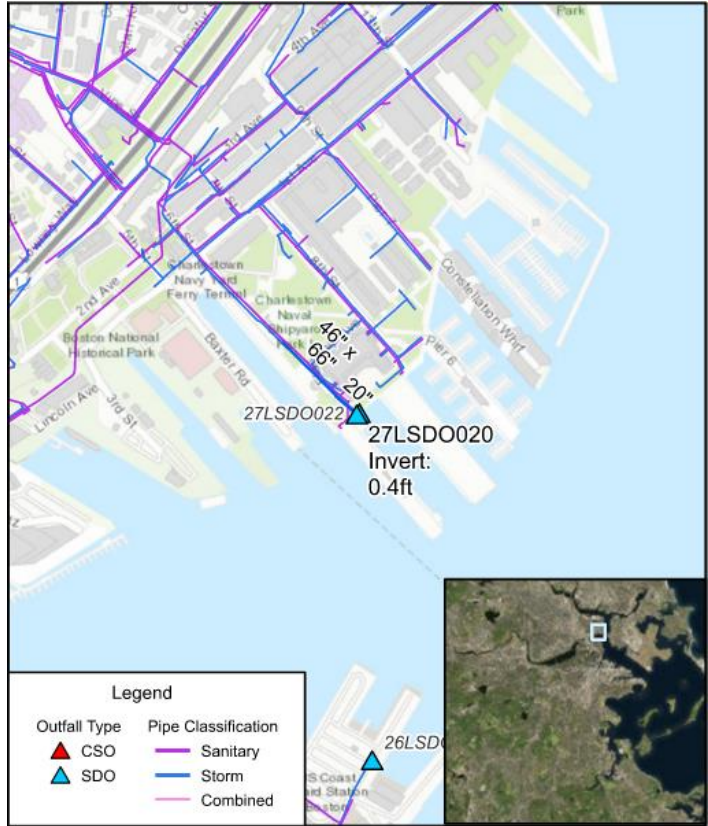


Charlestown Naval Shipyard Park Storage and Pump Station



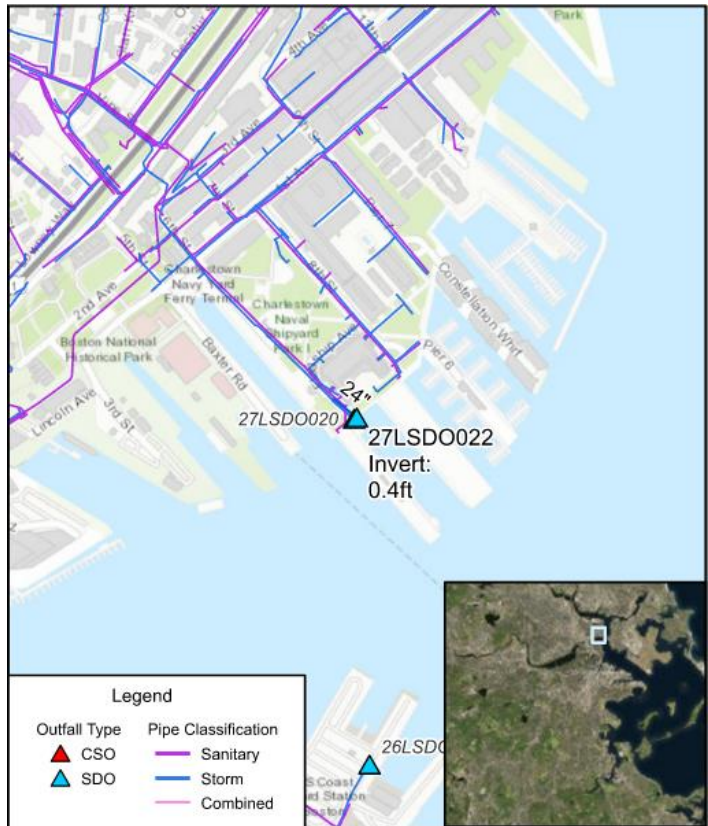
Outfall 27LSDO020
Raised Harborwalk to Cheslea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 20-inch outfall serves a 45.0-acre tributary area (shared with outfall 27LSDO022)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage facility and pump station could be installed in the Naval Shipyard to facilitate discharge during high sea levels

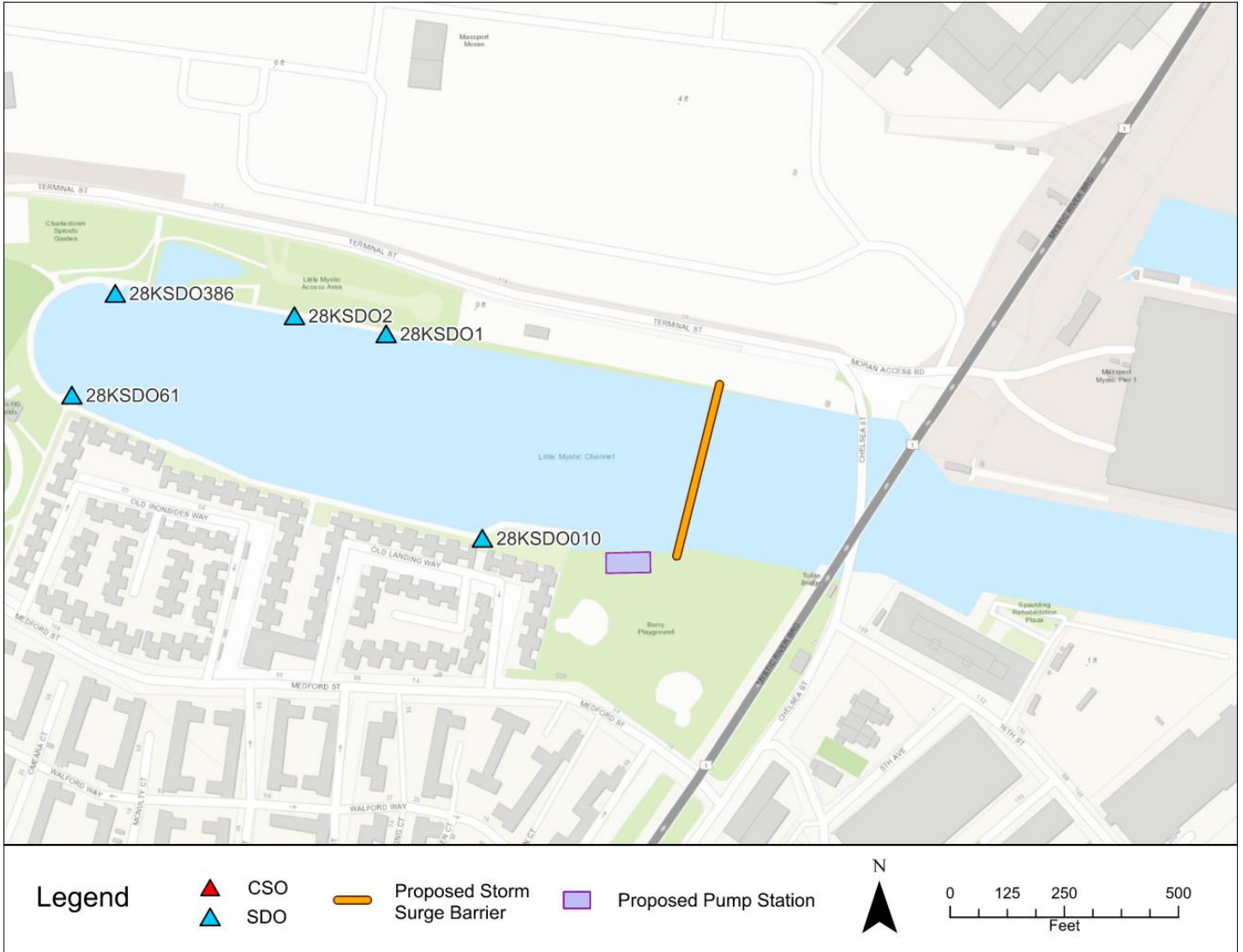


Outfall 27LSDO022
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk.
 - 24-inch outfall serves a 45.0-acre tributary area (shared with outfall 27LSDO020)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Subsurface storage facility and pump station could be installed in the Naval Shipyard to facilitate discharge during high sea levels

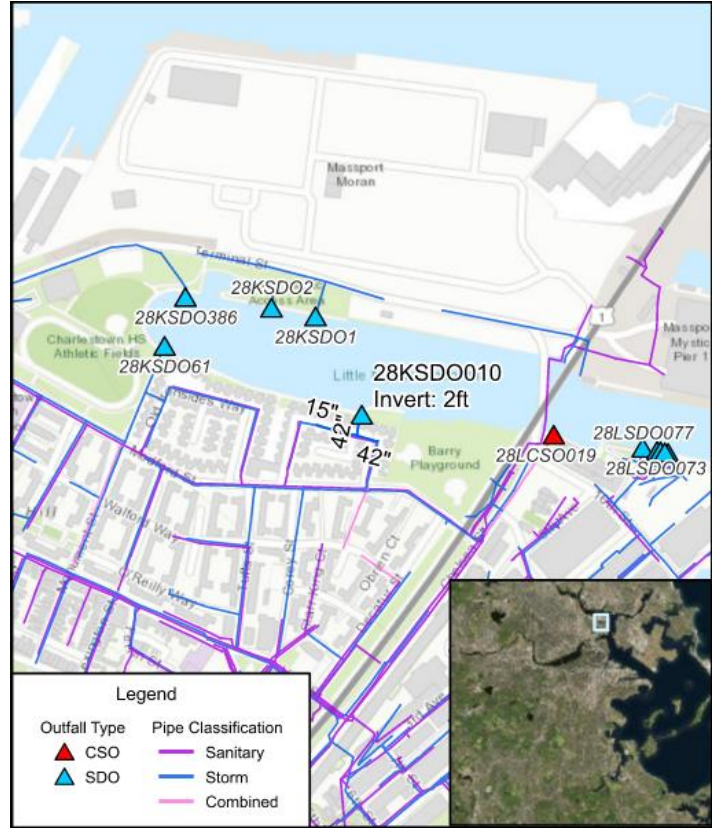


Little Mystic Channel Storm Surge Barrier and Pump Station



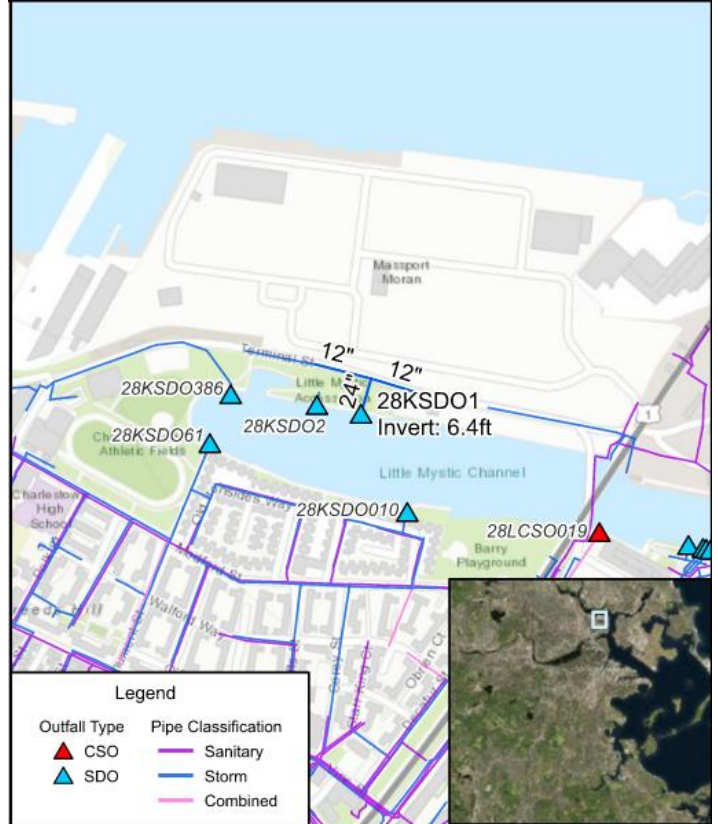
Outfall 28KSDO010
Raised Park South of Little Mystic, Charlestown
CRB Implementation Date: 2070

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 42-inch outfall serves a 24.0-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near the mouth of the Little Mystic Channel could be installed to protect multiple outfalls



Outfall 28KSDO1
Boston Autoport, Charlestown
CRB Implementation Date: 2050

- Existing Conditions and Recommendations:**
- CRB project type: Building/site scale adaptations
 - 24-inch outfall serves a small tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near the mouth of the Little Mystic Channel could be installed to protect multiple outfalls
 - Alternatively, a pump station and/or subsurface storage could be installed in the parking area to prevent surcharging during wet weather



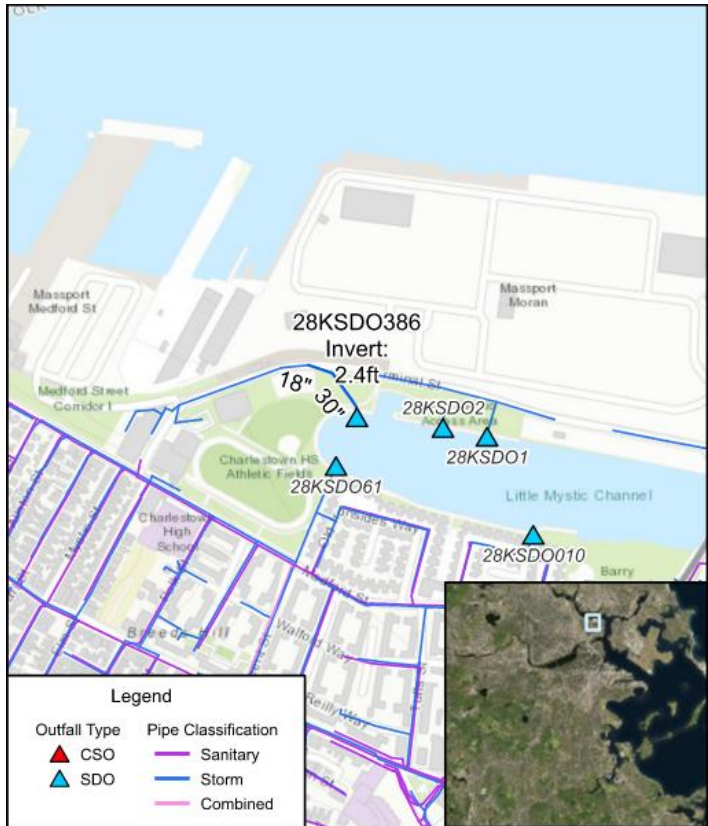
**Outfall 28KSDO2
Boston Autoport, Charlestown
CRB Implementation Date: 2050**

- Existing Conditions and Recommendations:**
- CRB project type: Building/site scale adaptations
 - 12-inch outfall serves a small tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate could be installed to prevent backflow during high tide conditions
 - Storm surge barrier and pump station near the mouth of the Little Mystic Channel could be installed to protect multiple outfalls



**Outfall 28KSDO386
Boston Autoport, Charlestown
CRB Implementation Date: 2050**

- Existing Conditions and Recommendations:**
- CRB project type: Building/site scale adaptations
 - 30-inch outfall serves a 2.6-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Storm surge barrier and pump station could be installed near the mouth of the Little Mystic Channel to protect multiple outfalls

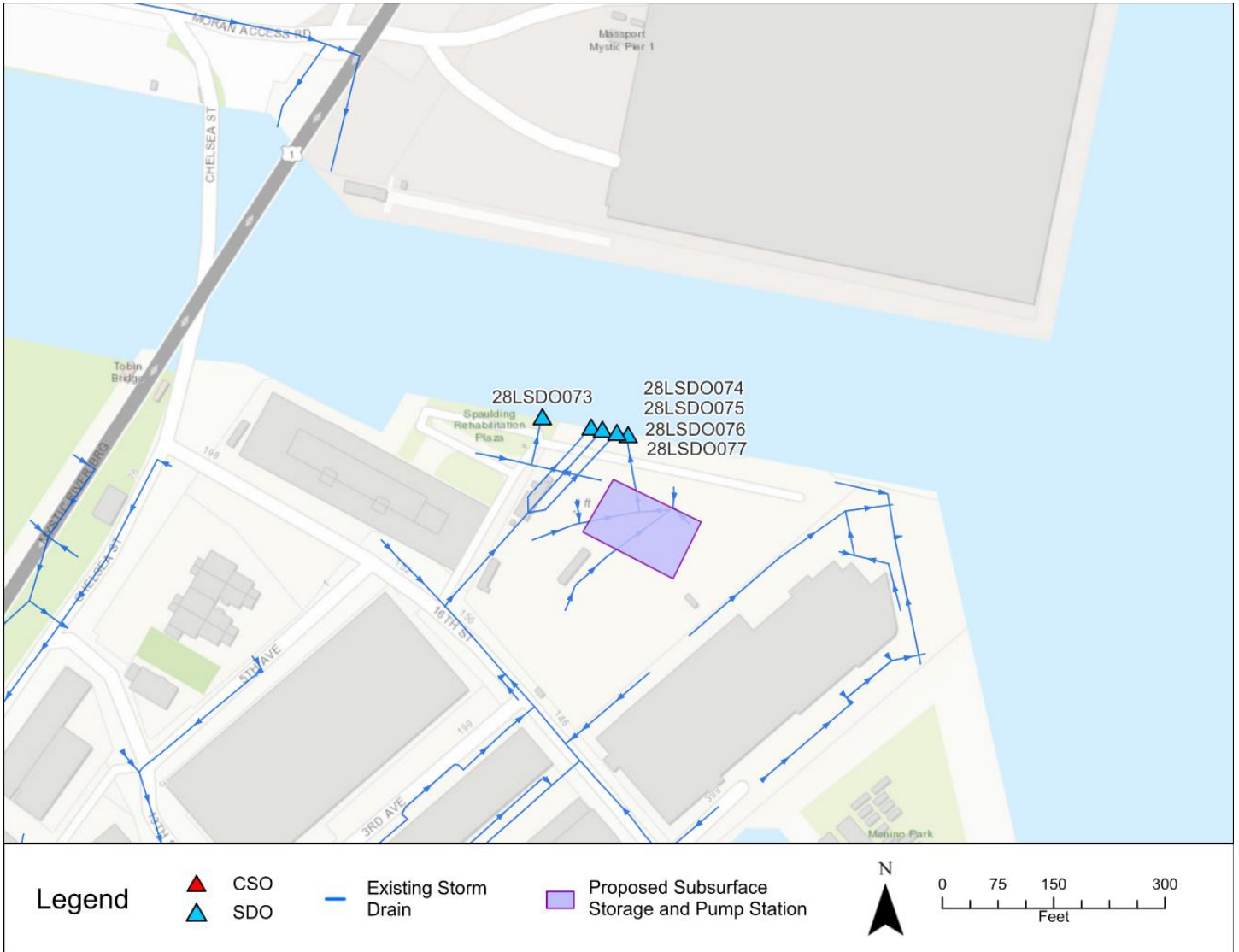


**Outfall 28KSDO61
 Raised Park South of Little Mystic, Charlestown
 CRB Implementation Date: 2070**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 42-inch outfall serves a 47.8-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate could be installed to prevent backflow during high tide conditions
 - Storm surge barrier and pump station could be installed near the mouth of the Little Mystic Channel to protect multiple outfalls

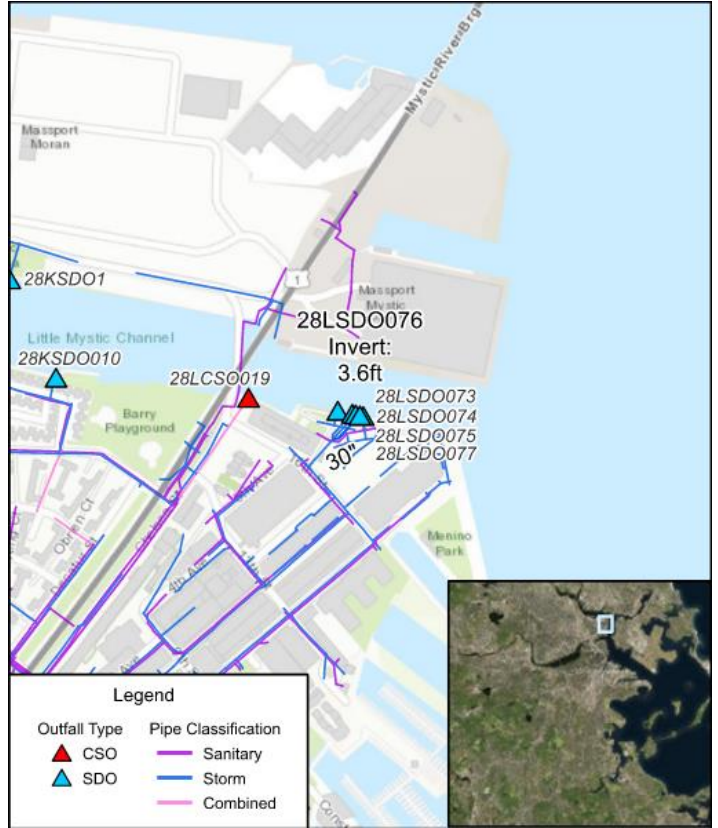


Little Mystic Channel Subsurface Storage and Pump Station



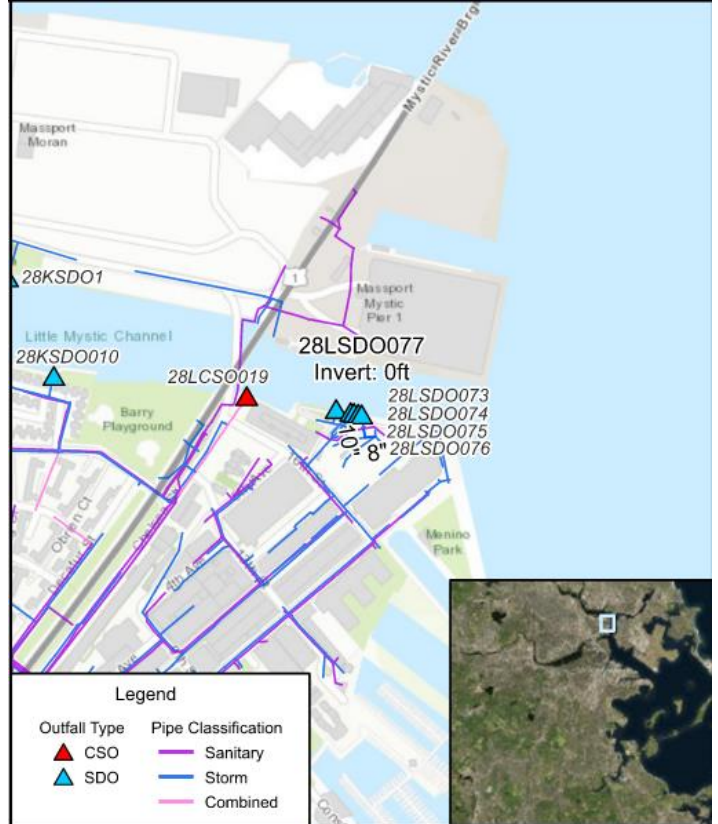
Outfall 28LSDO076
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 30-inch outfall serves a 46.9-acre tributary area (shared with outfalls 28LSDO074 and 28LSDO075)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - A subsurface storage and pump station could be installed to facilitate discharge from this and nearby outfalls during high sea levels



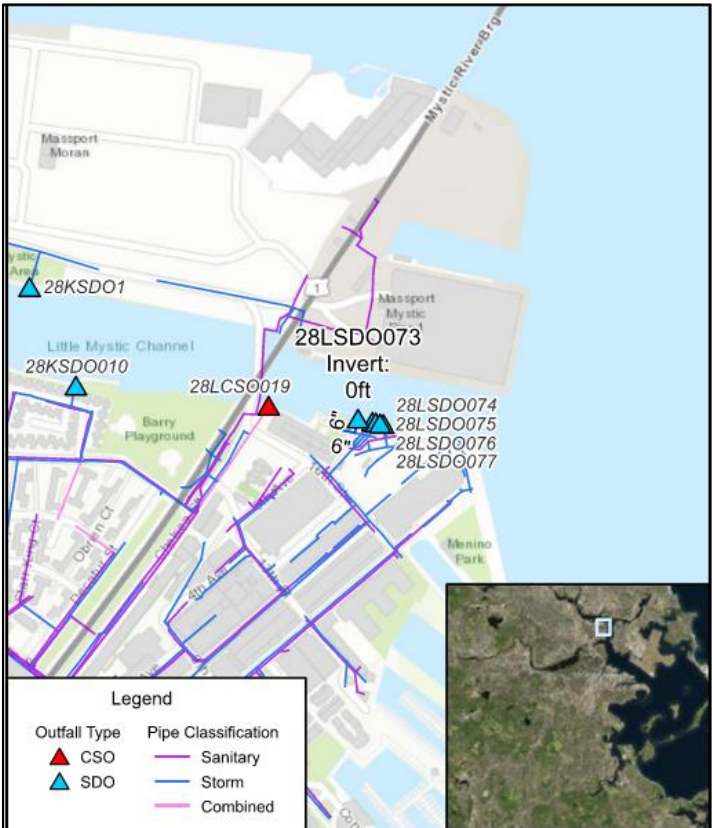
Outfall 28LSDO077
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 10-inch outfall serves a 0.9-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - A subsurface storage and pump station could be installed to facilitate discharge from this and nearby outfalls during high sea levels



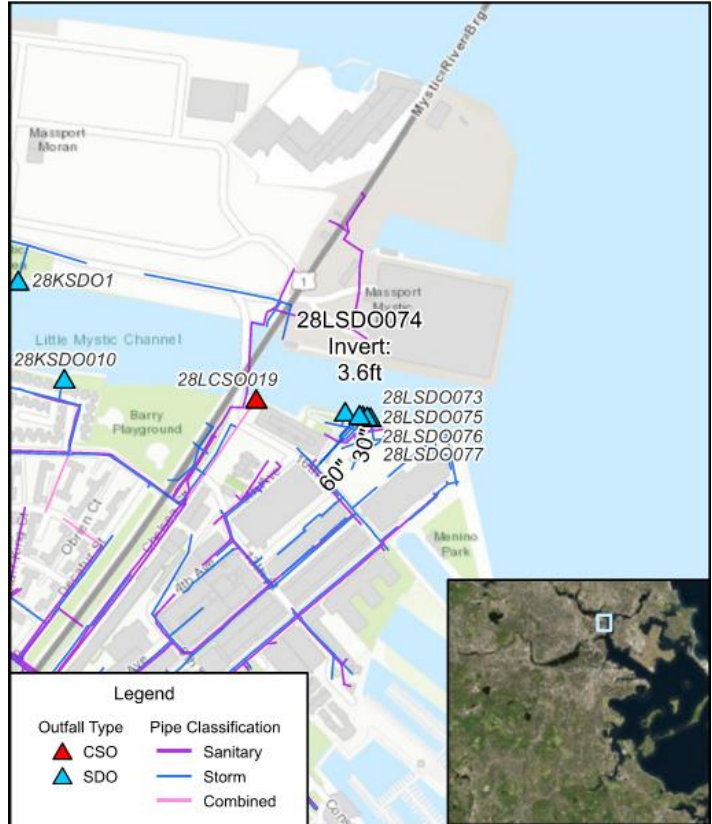
Outfall 28LSDO073
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 6-inch outfall serves a 0.4-acre tributary area
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - A subsurface storage and pump station could be installed to facilitate discharge from this and nearby outfalls during high sea levels



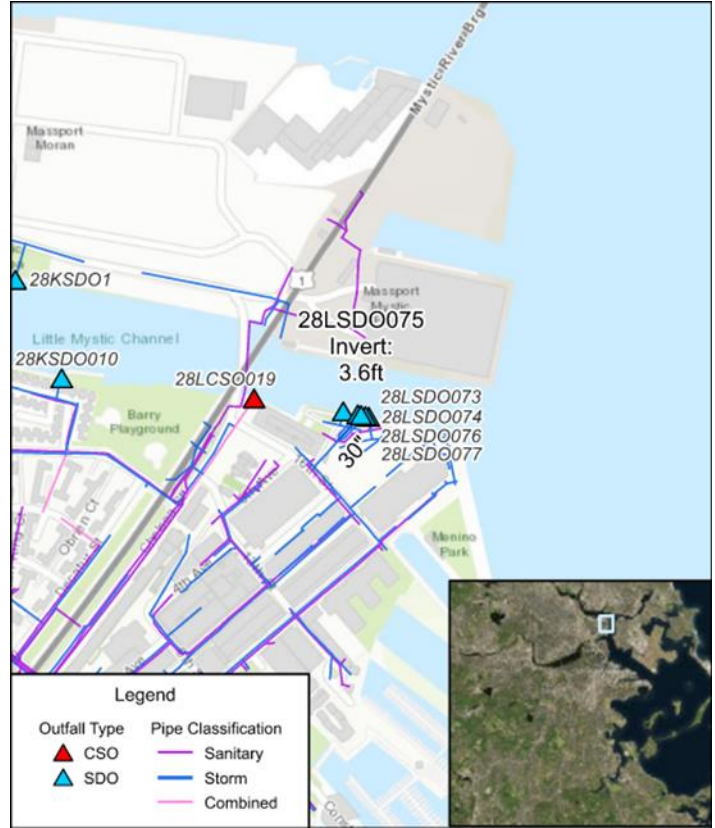
Outfall 28LSDO074
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 30-inch outfall serves a 46.9-acre tributary area (shared with outfalls 28LSDO075 and 28LSDO076)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - A subsurface storage and pump station could be installed to facilitate discharge from this and nearby outfalls during high sea levels

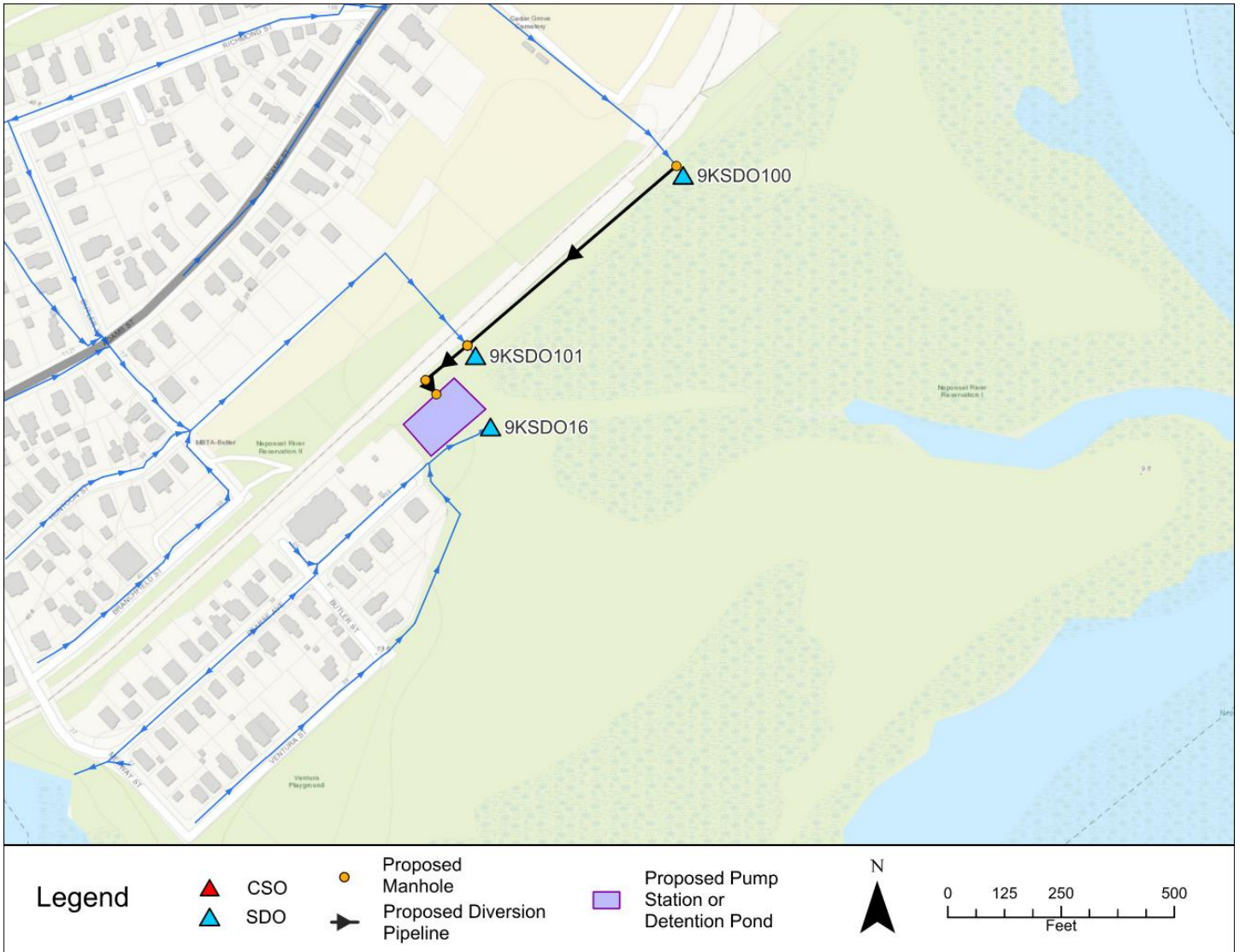


**Outfall 28LSDO075
Raised Harborwalk to Chelsea St Bridge, Charlestown
CRB Implementation Date: 2030**

- Existing Conditions and Recommendations:**
- CRB project type: Raised harborwalk
 - 30-inch outfall serves a 46.9-acre tributary area (shared with outfalls 28LSDO074 and 28LSDO076)
 - Publicly owned open space nearby provides opportunities for stormwater management
 - Tide gate to prevent backflow during high tide conditions
 - A subsurface storage and pump station could be installed to facilitate discharge from this and nearby outfalls during high sea levels

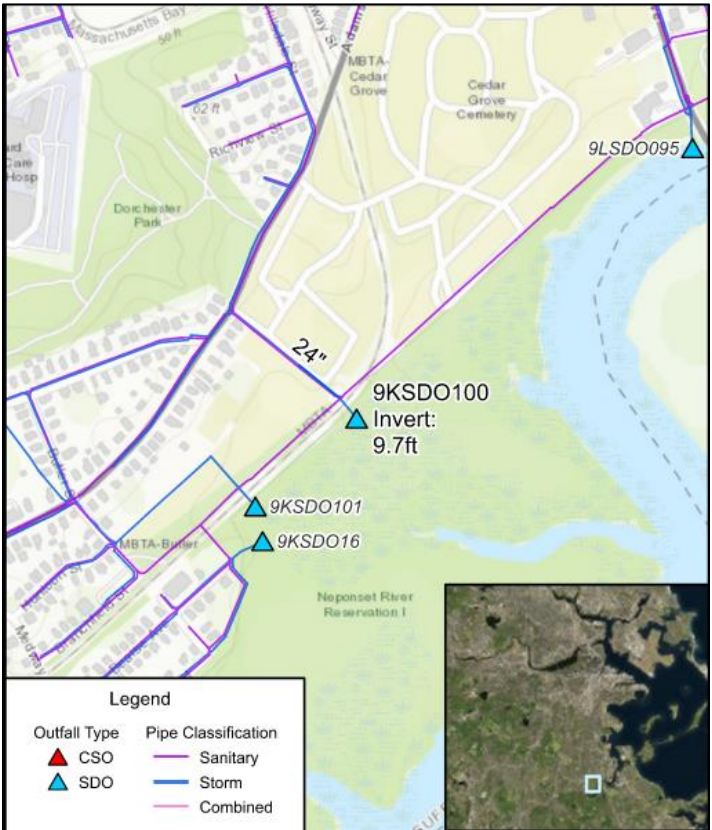


Bearse Avenue Pump Station / Detention Area



Outfall 9KSDO100
Neponset River State Reservation, Dorchester
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Nature based solutions
 - 24 by 34-inch outfall serves a 53.4-acre tributary area
 - Opportunity for storage in nearby reservation
 - Permitting challenges due to wetland
 - Tide gate to prevent backflow during high tide conditions
 - Small pump station or detention pond could be installed off Bearse Avenue accepting flow from nearby outfalls



Outfall 9KSDO101
Mattapan Trolley and Butler Station, Dorchester
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Elevated roadways
 - 24-inch outfall serves a 27.8-acre tributary area
 - Opportunity for storage in nearby reservation
 - Permitting challenges due to wetland
 - Tide gate to prevent backflow during high tide conditions
 - Small pump station or detention pond could be installed off Bearse Avenue accepting flow from nearby outfalls



Outfall 9KSDO16
Neponset River State Reservation, Dorchester
CRB Implementation Date: 2030

- Existing Conditions and Recommendations:**
- CRB project type: Nature based solutions
 - 15-inch outfall serves a 6.2-acre tributary area
 - Opportunity for storage in nearby reservation
 - Permitting challenges due to wetland
 - Tide gate to prevent backflow during high tide conditions
 - Small pump station or detention pond could be installed off Bearse Avenue accepting flow from nearby outfalls

