# Flushing Bay CSO/Flood Storage Tunnel Project

## *LONG-TERM CONTROL PLAN (LTCP)*

*Consent Order Modification Update*
*Public Meeting*

**December 16, 2025**

NYC Environmental Protection

# Introductions

**DEP Team:**

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**Agenda**

- What is a Combined Sewer Overflow (CSO)?
- Long Term Control Plans (LTCPs) and Harbor Water Quality
- Approved Flushing Bay LTCP
- Flushing Bay LTCP Modifications
- Projected CSO Discharges and Water Quality Attainment
- Proposed Project Scope, Cost, and Schedule
- Q&A

# What is a Combined Sewer Overflow (CSO)?

## NYC Sewer History

**1660s:** First sewer in NYC constructed—an open trench that sent wastewater directly into the East River

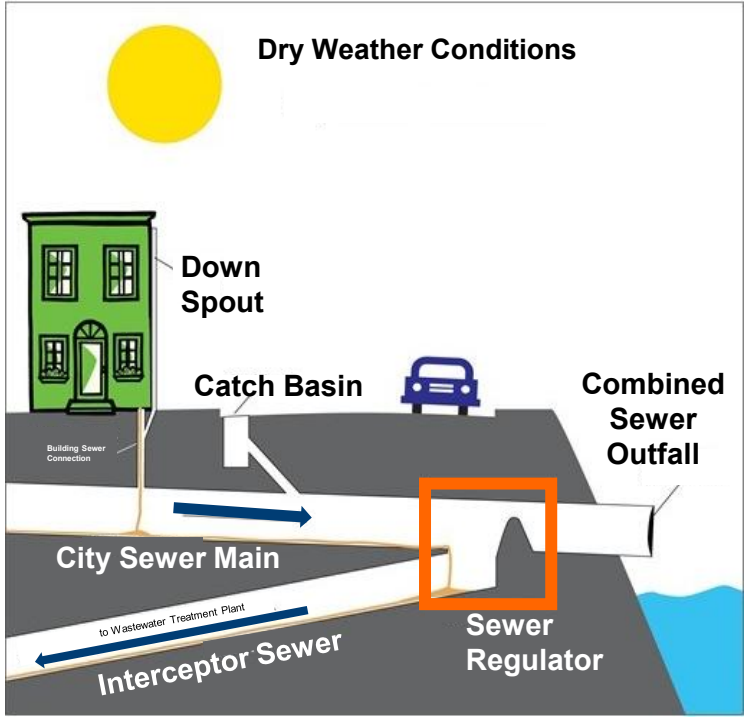
**1849:** NYC constructs a more modern sewer system, prompted by cholera outbreaks, but still sends wastewater directly into surrounding waterbodies

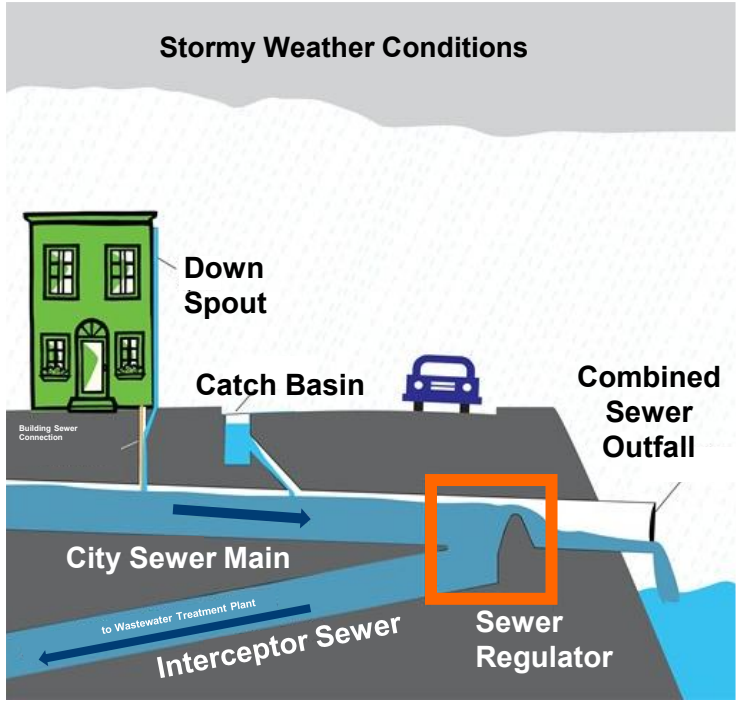
**1890s:** First wastewater treatment plants are constructed to divert wastewater and a portion of stormwater to plants to be cleaned before being discharged into harbor

**Today:** NYC's sewer system is approximately 60% combined, which means it is used to convey both wastewater and stormwater to treatment plants

## Combined Sewer Overflow

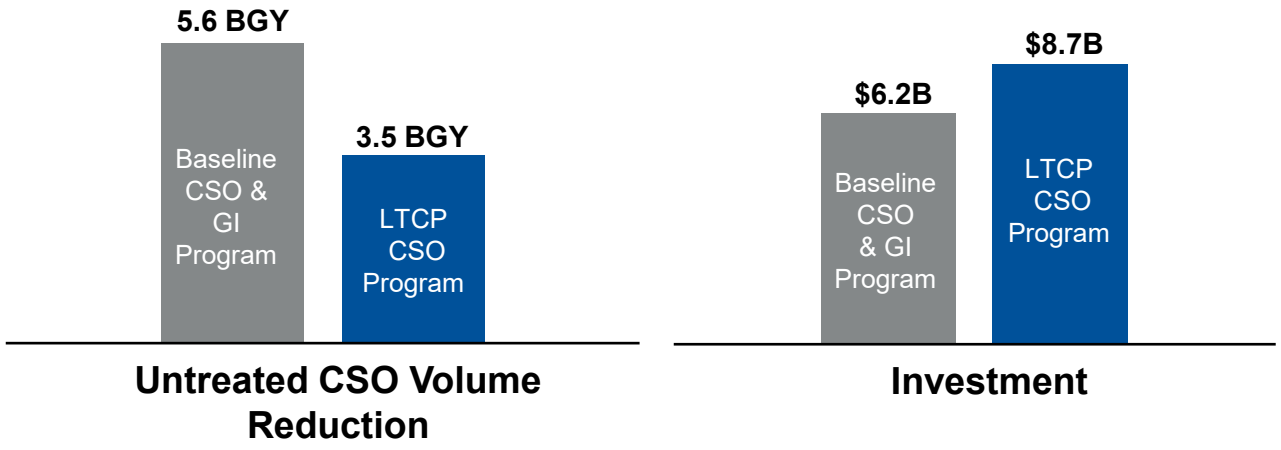
Treatment plants can handle double the capacity of a dry weather day. However, intense rainfall can push the combined sewer system over capacity and if this happens, a diluted mixture of rainwater and sewage may be released into local waterways. **This is called a combined sewer overflow (CSO) and is intended to prevent flooding and sewer backups into homes.**



# Combined Sewer Overflow Long-Term Control Plans (LTCP)

- In 2012, a groundbreaking consent order between NYC DEP and NYS DEC initiated development of 11 comprehensive plans aimed at reducing CSOs and improving harbor water quality.
- LTCPs included $2.7B in grey infrastructure projects (completed) and $8.7B in new LTCP projects (~$1.2B completed).
- DEP committed an additional $3.5B to Green Infrastructure projects citywide (~$1.4B completed).



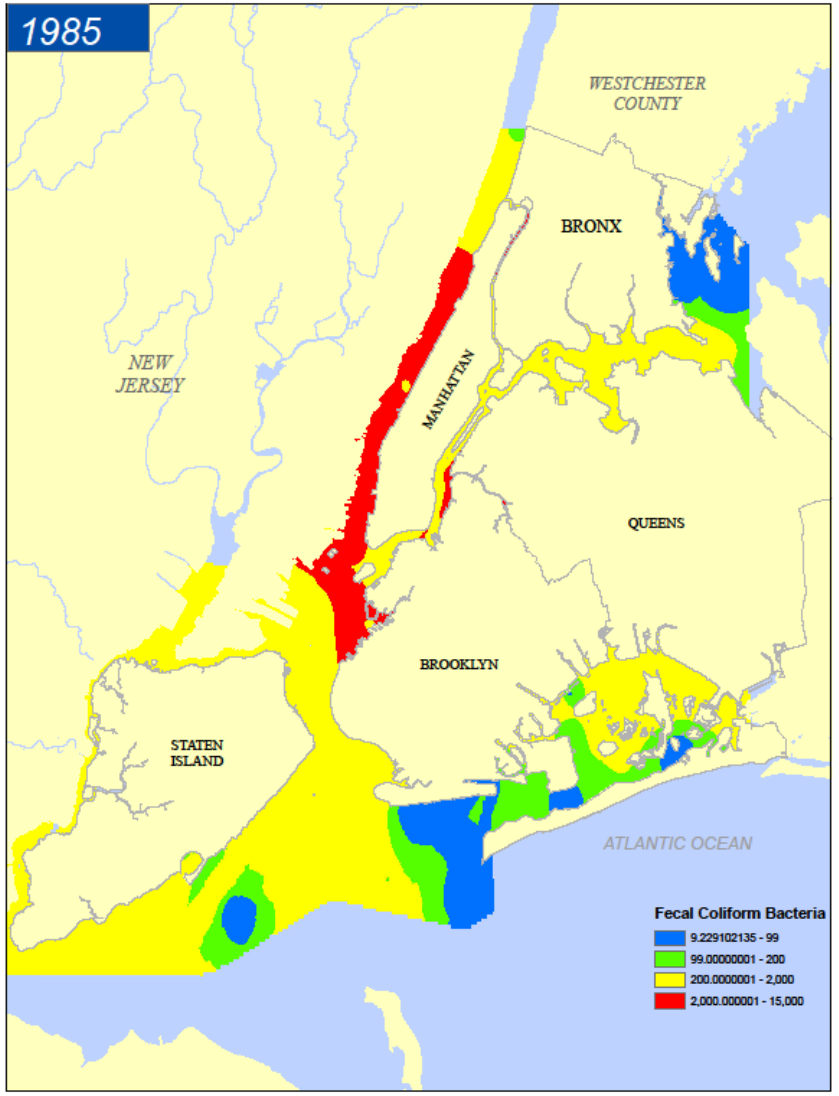

# Water Quality Improvements

DEP investments in both our treatment plants and CSO reduction efforts have resulted in **significantly improved water quality** for all waterbodies including the **Flushing Bay.**

| | |
|---|---|
| **1973-2011** | ~$40B to upgrade and construct 2 new *WRRFs |
| **1999-2022** | ~$1.2B to upgrade 8 plants for biological nitrogen removal |
| **1995-2024** | ~$5.3B spent to date on CSO & GI projects |
| **2025-2050** | ~$7.4B in future CSO spending |

**Wastewater Resource Recovery Facility*

## *Historical NYC Water Quality Improvement*





*DEP's Harbor Survey Program added Enterococcus to its sampling program in CY2003.*

# 2017 Approved Flushing Bay LTCP

After an extensive community engagement process, the LTCP for Flushing Bay was approved by NYS DEC in March 2017.

**The approved plan requires DEP to:**

1. Commit to baseline green and grey infrastructure projects for CSO reductions
   - ✓ Install green infrastructure in combined sewer areas (on-going)
   - ✓ Make improvements to Bowery Bay wastewater treatment plant (complete)
   - ✓ Complete regulator improvements to high-level interceptor (complete)
2. Construct a 25 million gallon CSO tunnel to capture CSO overflow from outfalls BB-006 and BB-008


*Original 25 MG CSO Storage Tunnel Alignment*

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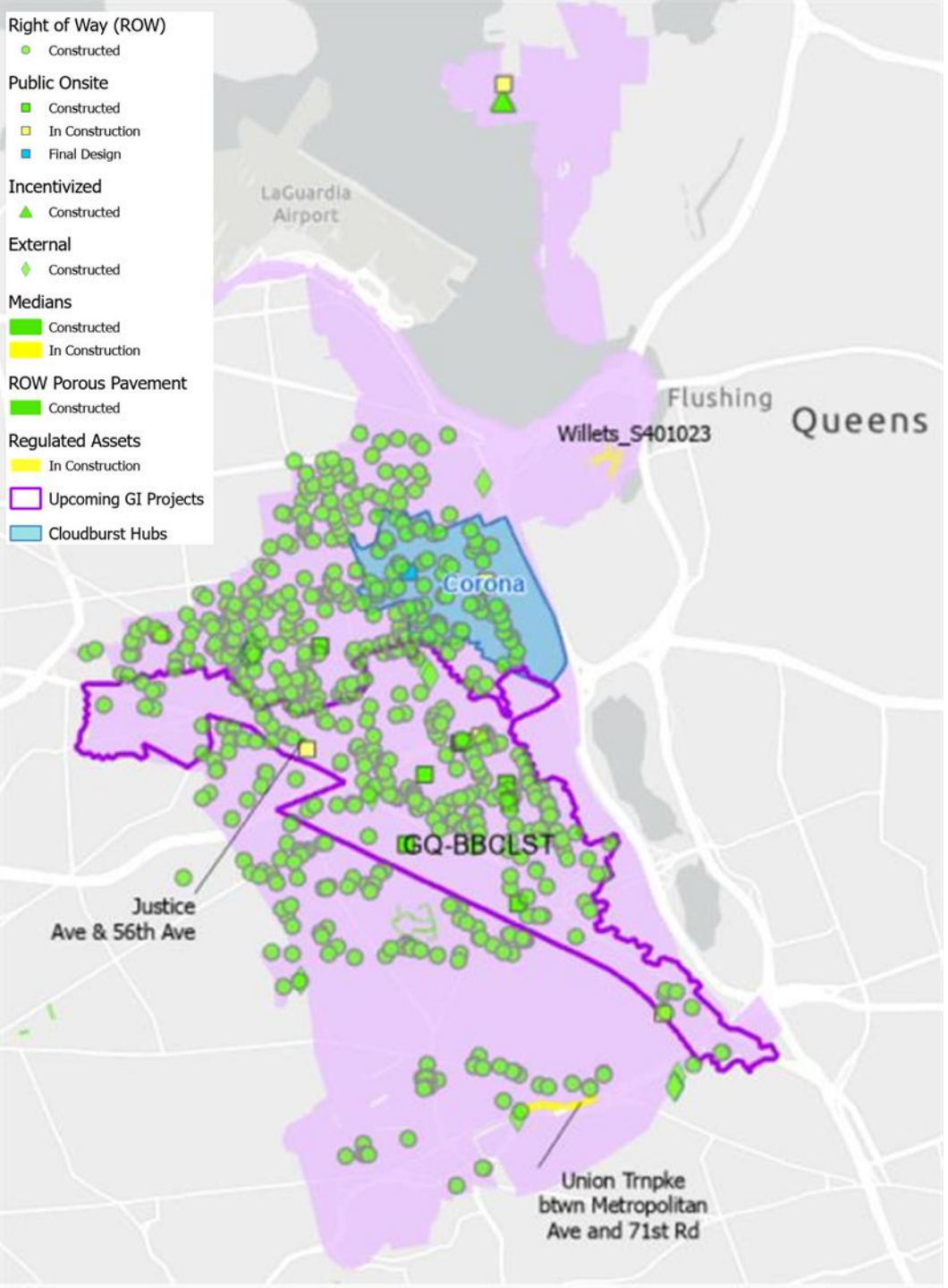



# Green Infrastructure in the Flushing Bay Watershed

- **Right of Way**
  - 750+ assets constructed including rain gardens, infiltration basins, and porous pavement
  - Upcoming contract to use new green infrastructure standards to add more rain gardens, infiltrations and porous pavement

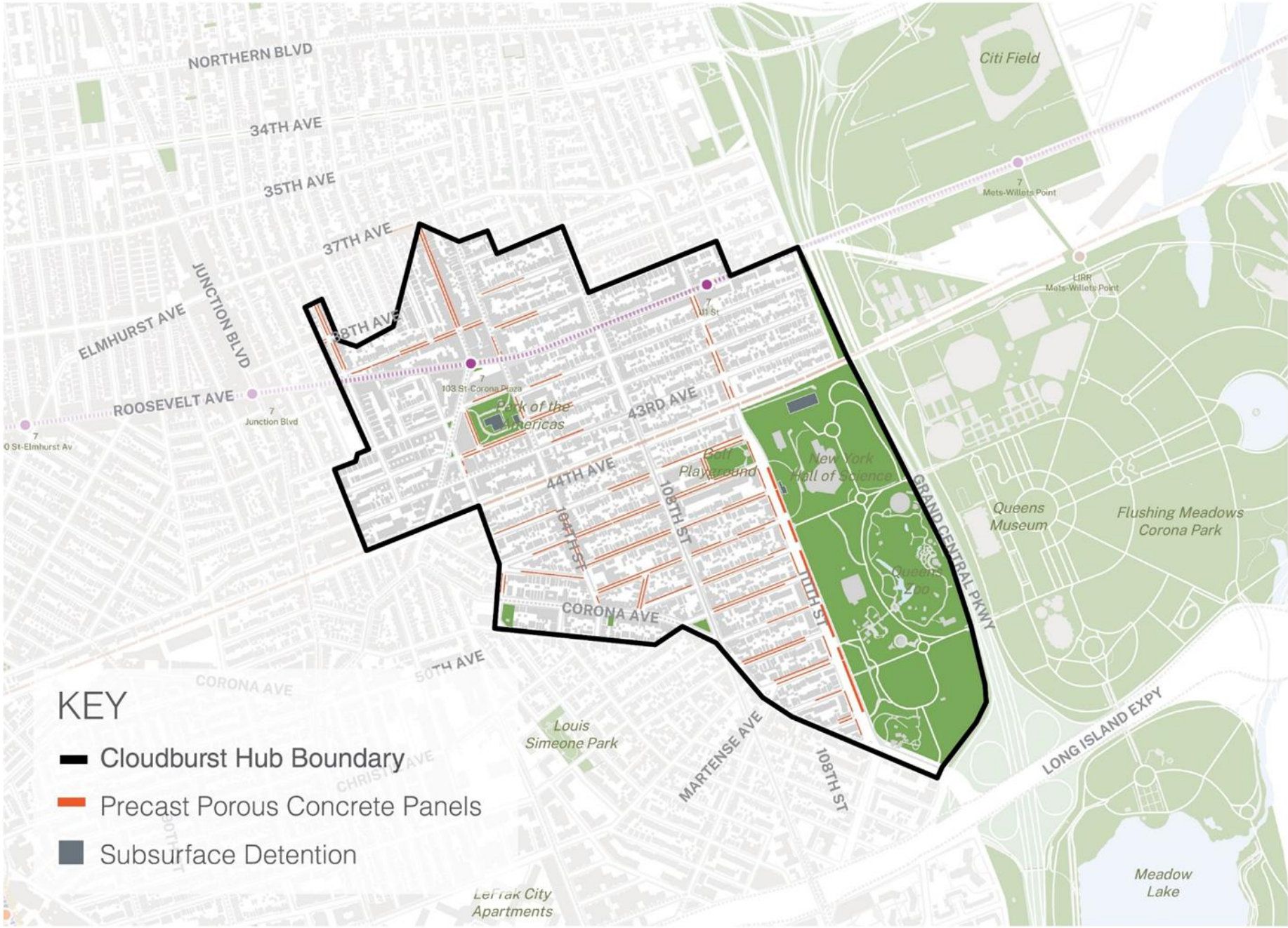
- **Large-Scale Medians**
  - Union Turnpike between Metropolitan Ave and 71st Rd – under construction
  - Justice Ave & 56th Ave – constructed

- **Public Partnerships**
  - 20+ projects constructed/in construction at parks and schools and one project upcoming

- **Stormwater Regulations**
  - Willets Point – under construction, includes rain gardens and infiltration basins

# Corona Cloudburst Hub

- Total of 2.9 acres of precast porous concrete pavement in parking lanes across the neighborhood.
- Three subsurface detention sites, including:
  - Park of the Americas
  - NYSCI front lawn
  - NYSCI parking lot
- In total, the green infrastructure storage is designed to reduce flood extents during a 10-year, 1hr storm by 14.2 acres, or 30% reduction.



# 2022 Flushing Bay LTCP Modifications

In consultation with NYS DEC, the Flushing Bay LTCP was modified in 2022 and commitments included:

1. Submit a Conceptual Engineering Report (CER) for 25 MG CSO Storage Tunnel to DEC in December 2023 (complete)

2. Undertake "State of Good Repair" projects at wastewater treatment plants (on-going)

More recently, DEP committed to NYS DEC to submit a modification request by December 31, 2025, that includes a revised CER with a new proposed scope and schedule (in progress)

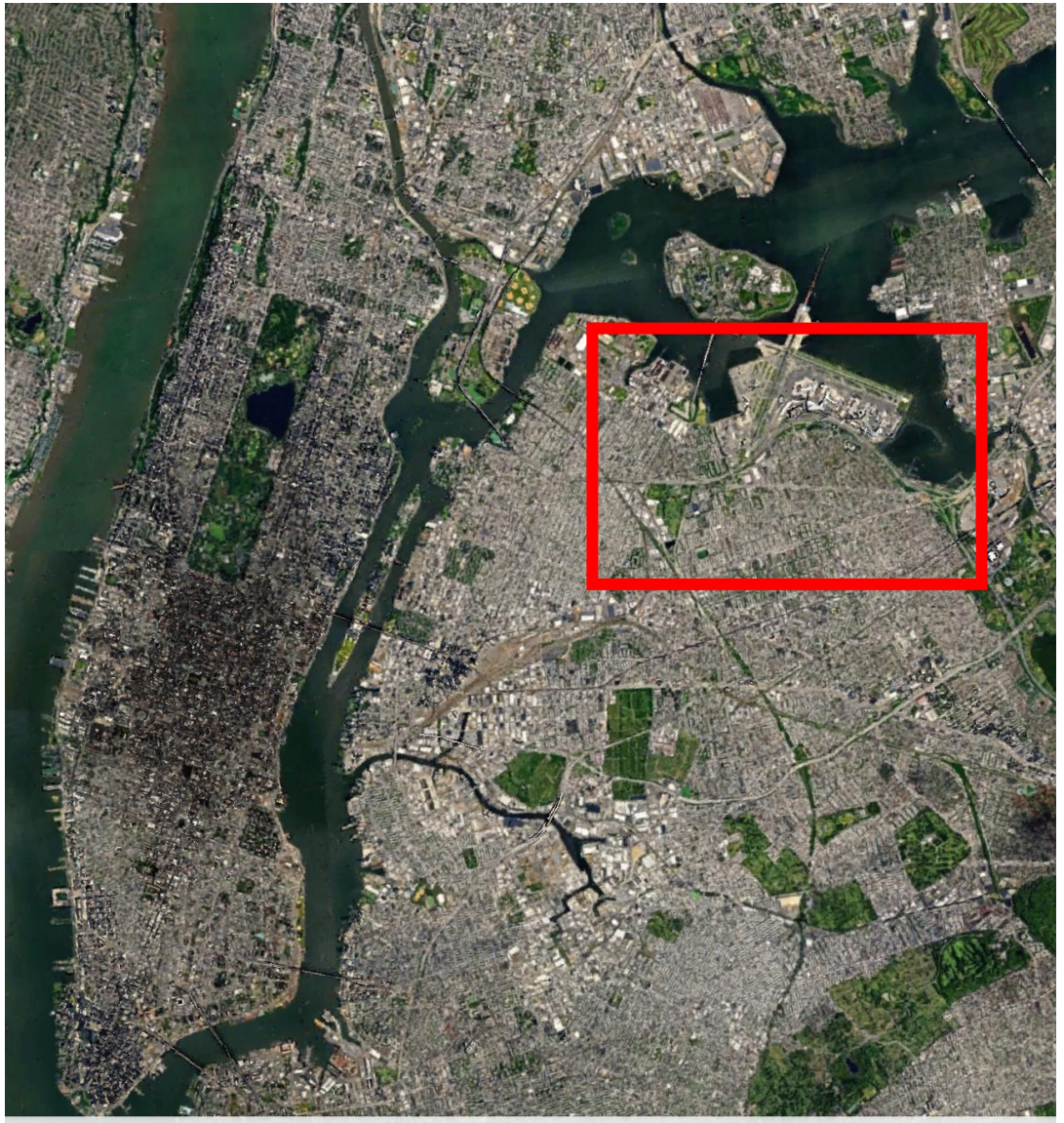
| Milestone | 2016 LTCP | 2023 CER |
|---|---|---|
| Design Start | July 2021 | January 2026 |
| Construction NTP | July 2026 | January 2035 |
| Construction Completion | June 2035 | February 2051 |
| **Construction Estimate** | **$683M** | **$2.4B** |

# 2025 Flushing Bay LTCP Modification Goals

After extensive engineering analysis and evaluation, DEP is seeking approval to further modify the LTCP to optimize the plan for Flushing Bay to:

- ✓ Meet or exceed consent order CSO reduction and water quality requirements
- ✓ Provide early CSO reduction benefit
- ✓ Provide multi-benefit and address flooding where practical
- ✓ Balance multiple large capital projects and state of good repair needs
- ✓ Coordinate with other capital projects to avoid overlap of tunneling activities and manage labor resources.
- ✓ Rate affordability

This proposed modification will also be subject to public review and comment.



*LTCP project area*

# 2025 Proposed Modification Details

1. **Deliver an earlier project** to provide 6.5 million gallons of in-line storage capacity
2. **Increase tunnel storage** capacity from 25 million gallons to 40 million gallons
3. **Modify tunnel alignment**

**PROS:**

✓ In-line storage will reduce CSO discharges by 252 million gallon per year from baseline conditions.

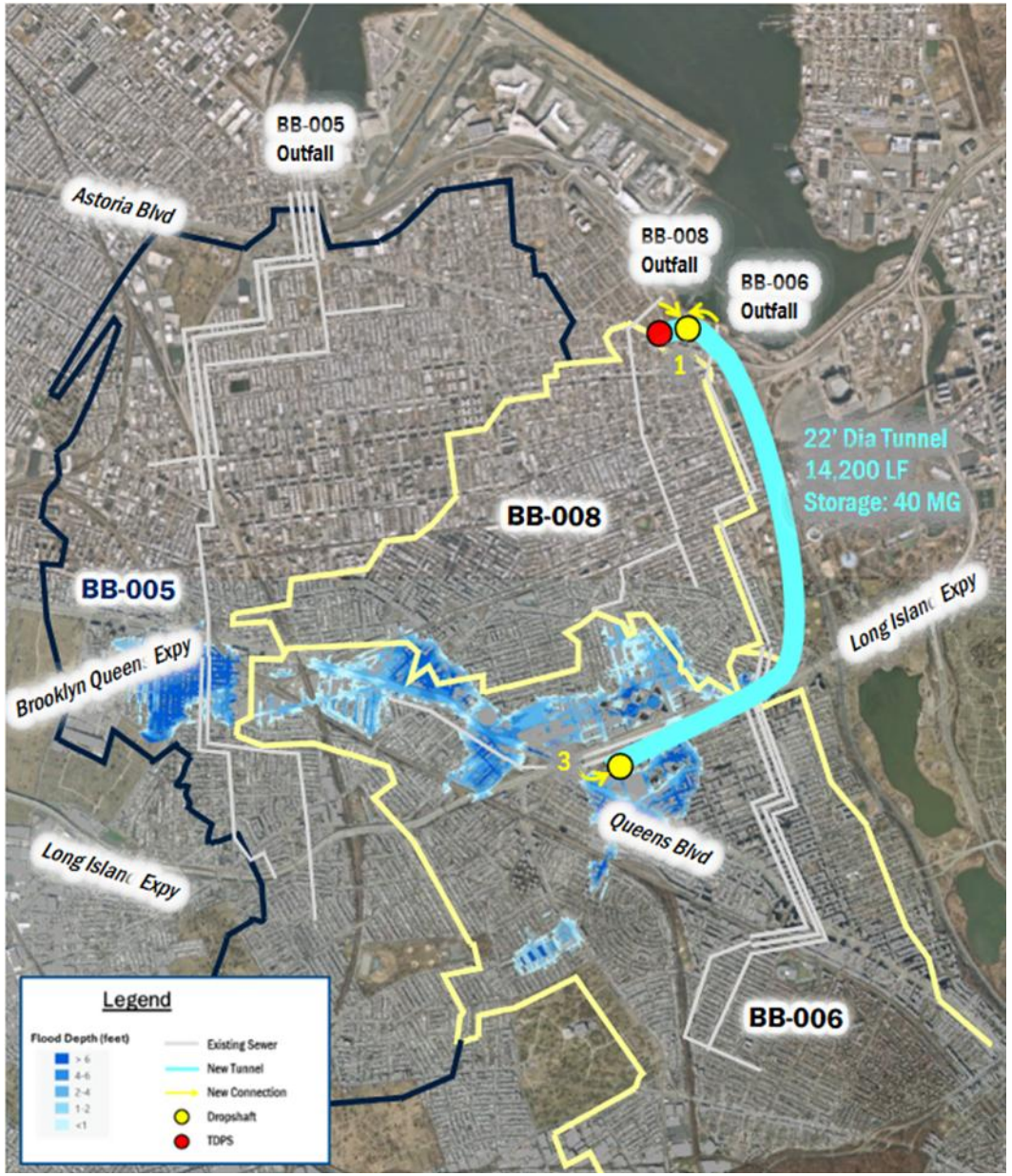
✓ In-line storage will provide reduction in floatable materials.

✓ Tunnel + in-line storage will reduce CSO discharges by 951 million gallons per year from baseline conditions, resulting in an additional 205 million gallons per year of CSO reductions beyond the approved LTCP.

✓ Mitigates flooding in high-risk areas of Lefrak City / Rego Park

**CONS:**

*X* Longer time frame and higher cost than approved LTCP



# Flushing Bay – Proposed Tunnel Alignment & Phasing

Phase 2 Improvements

Phase 1 Improvements


| Phase | CSO Storage Volume | Cumulative Annual CSO Reduction[2] | Flood Reduction[3] |
|---|---|---|---|
| 1: In-Line Storage | 6.5 MG[1] | 229 MG/year | 125 MG |
| 2: CSO / Flood Storage Tunnel | 46.5 MG (+40) | 928 MG/year | 974 MG |

**1: CSO storage volume assumes a 10% factor of safety as detailed survey information has not been collected to confirm storage volume**
**2: Cumulative total from baseline with the 2008 Hydrologic Year**
**3: Flood volume reduction in Hurricane Ida from existing conditions**

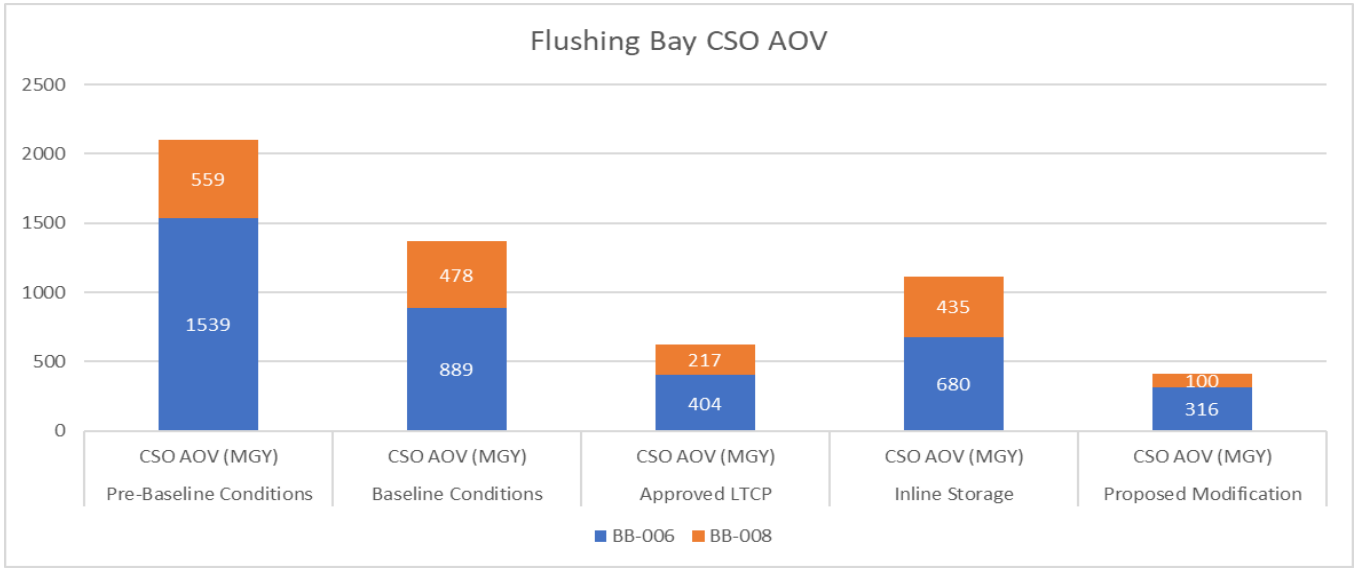
# Projected CSO Reductions

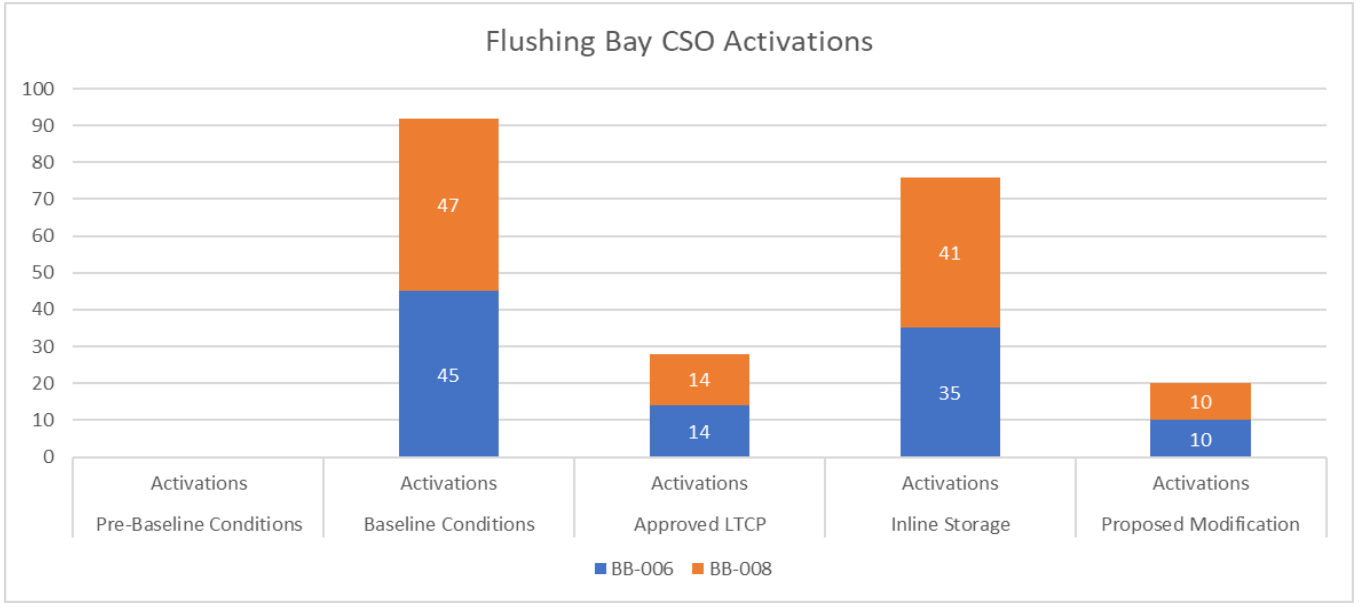
Improvements from Baseline:

- ✓ Inline Storage reduces CSO AOV by 252 MGY and overflow events by 16 per year
- ✓ Inline Storage + Tunnel reduces CSO by 951 MGY and overflow events by 72 per year.

Improvements from Approved LTCP:

- ✓ Inline Storage + Tunnel reduces CSO by 205 MGY and overflow events by 8 per year.



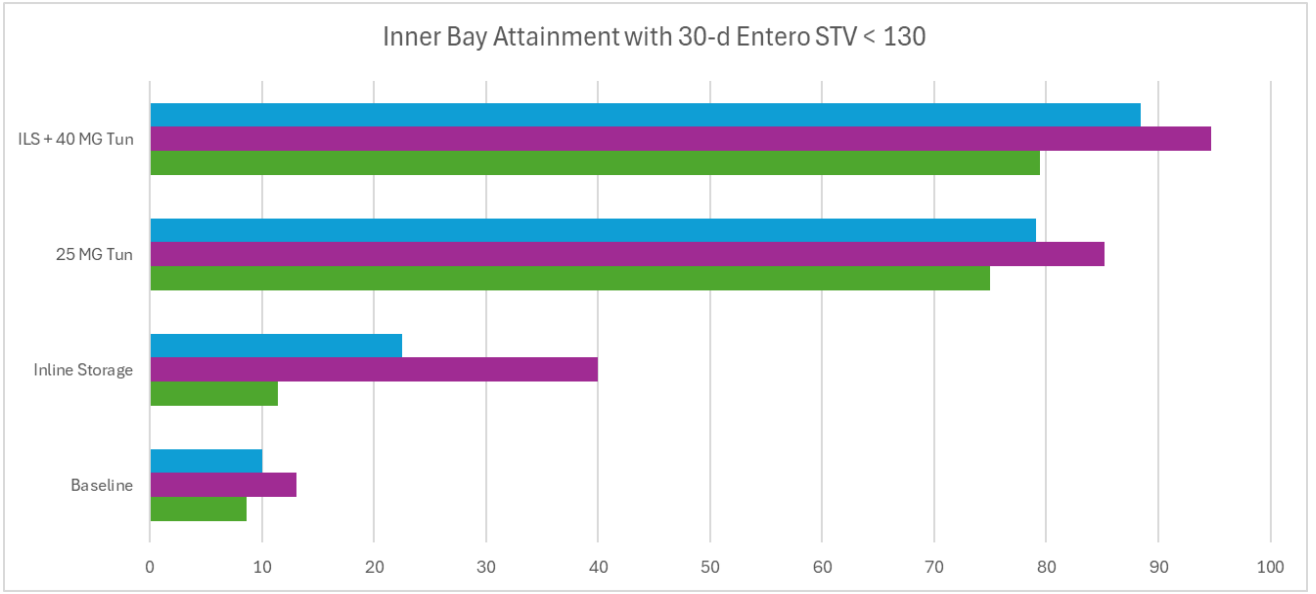
# Projected Water Quality Attainment

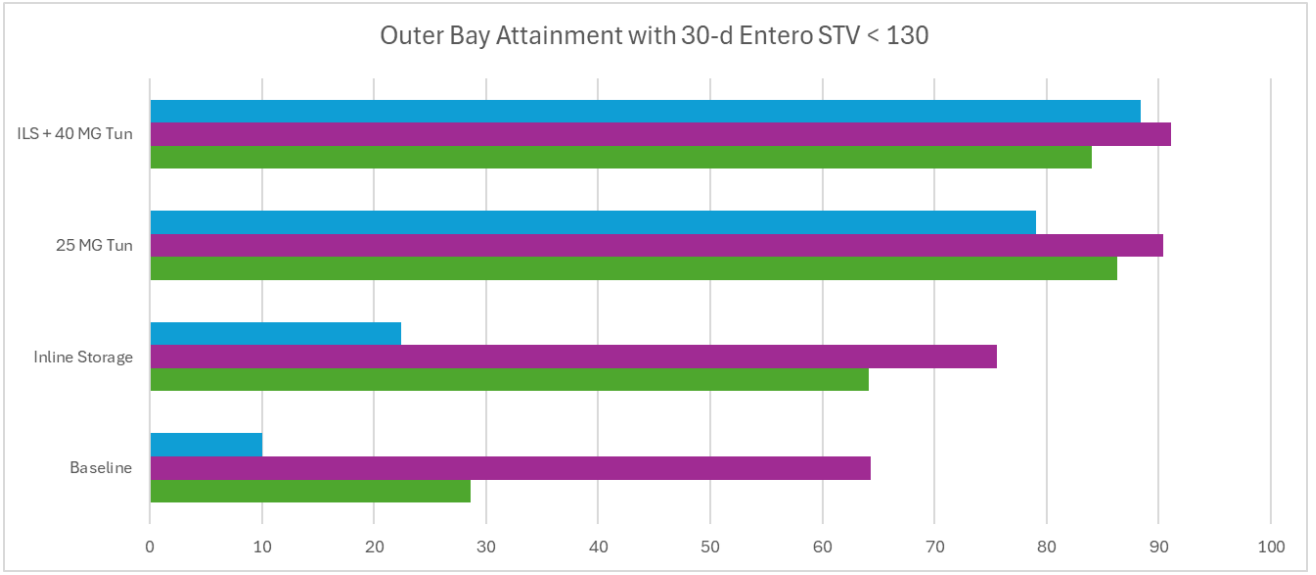
All Alternatives:

- ✓ Full attainment with Annual Fecal Monthly GM < 200 cfu/100 ml
- ✓ Full Attainment with Recreational Entero 30-d GM < 35 cfu/100 ml
- ✓ Full Attainment with Annual Entero 30-d GM < 72 cfu/100 ml

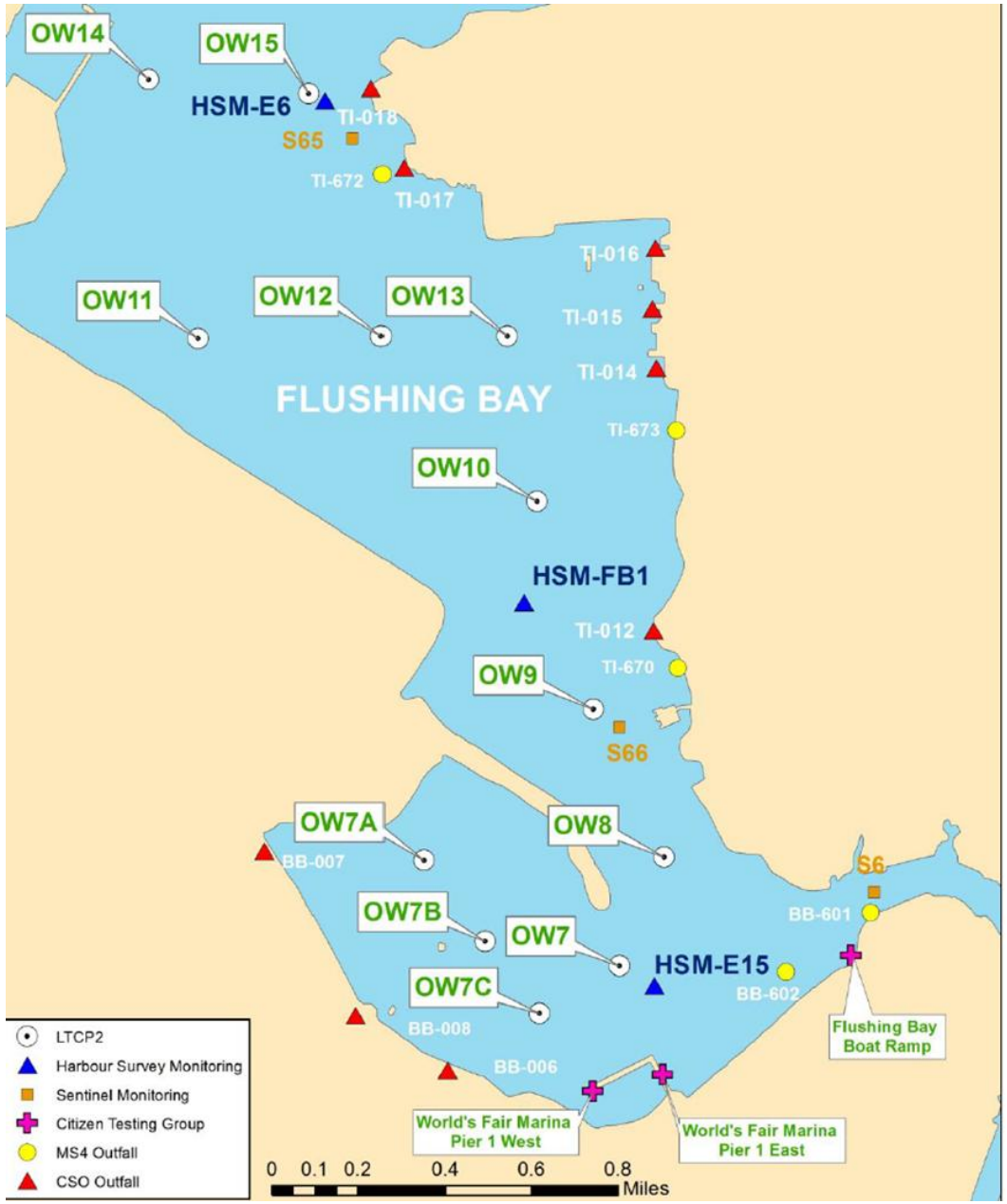
Improvements from Baseline:

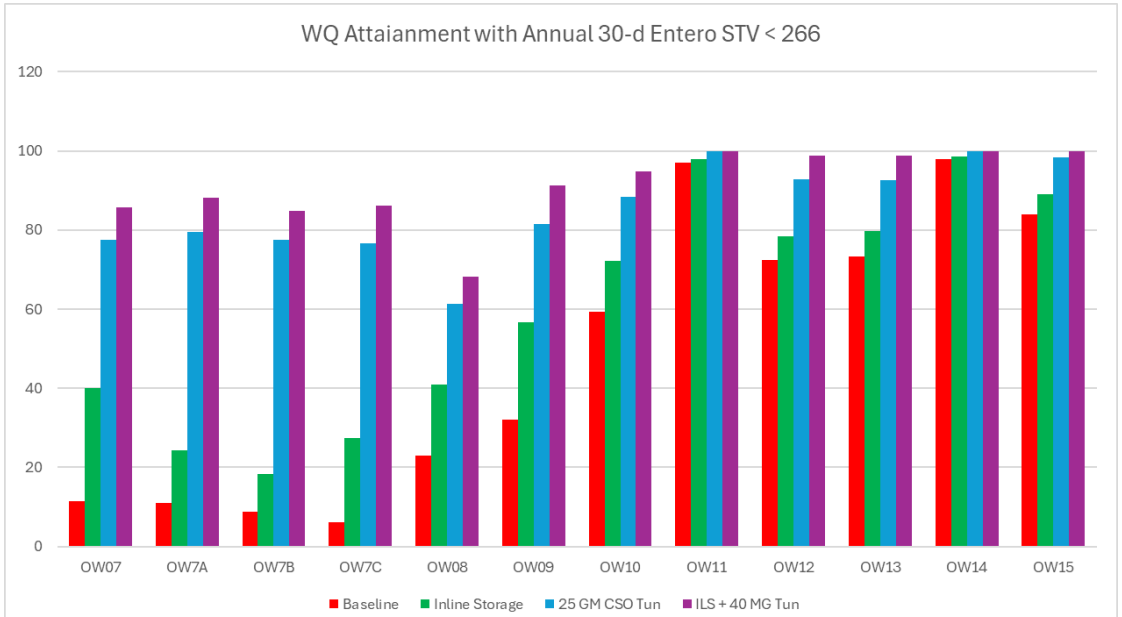
- ✓ In-line storage projected to increase attainment 12% in the bay
- ✓ ILS + 40 MG Tunnel projected to increase attainment by almost 80% in the inner bay

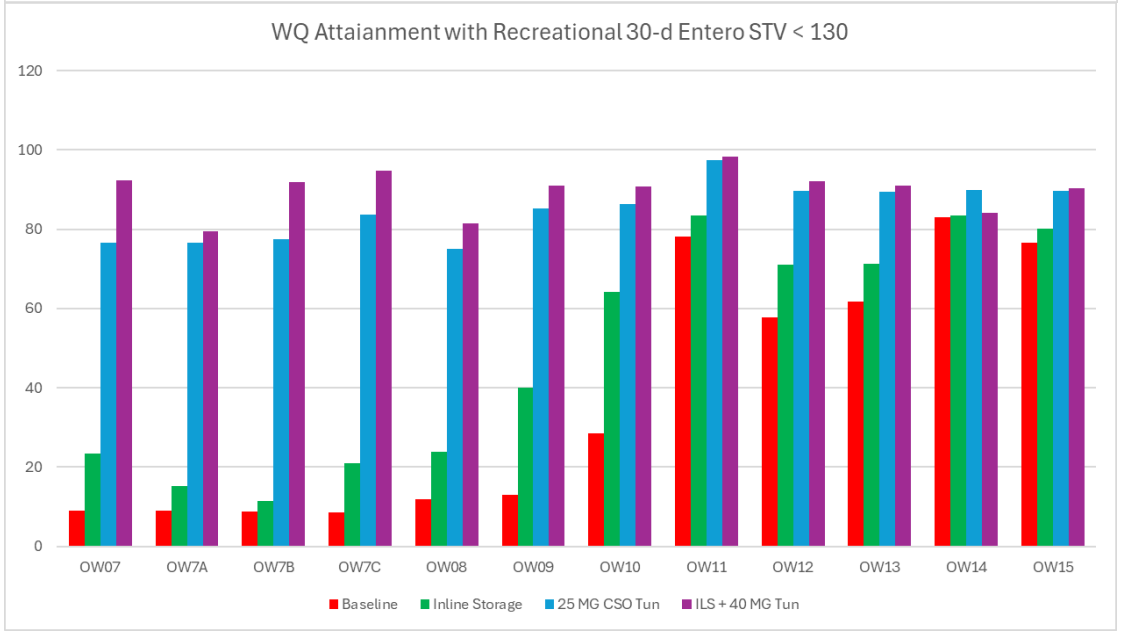


# Projected Water Quality Attainment



# Proposed Project Scope

## Phases:

### 1. In-Line Storage (ILS)

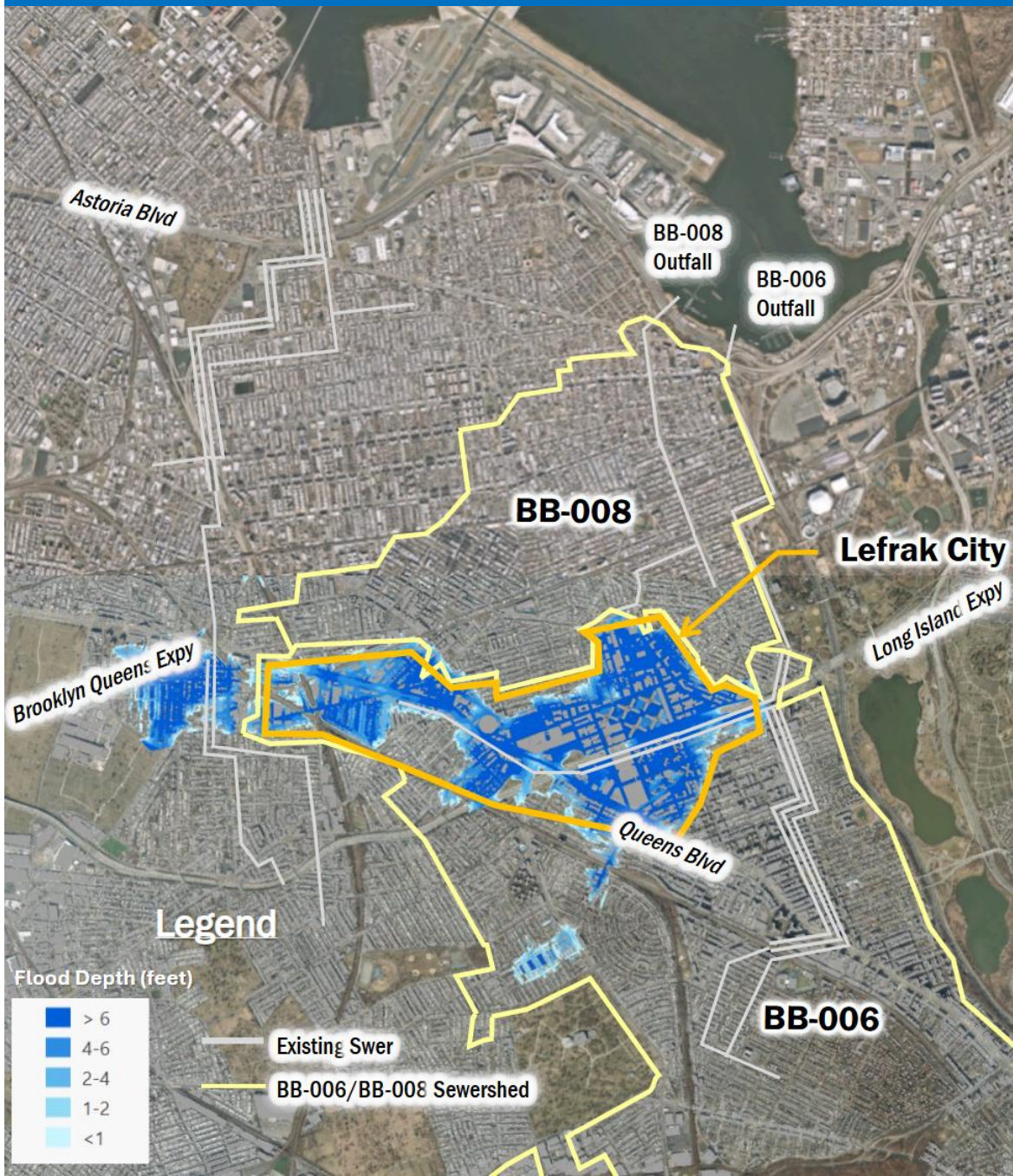
- Construct new diversion structures on outfalls BB-006 and BB-008 with floatable controls.
- Use outfall barrels to provide 6.5 million gallon in-line storage capacity.
- Eliminate a hydraulic restriction identified in lower barrel to improve drainage.

### 2. CSO/Flood Storage Tunnel

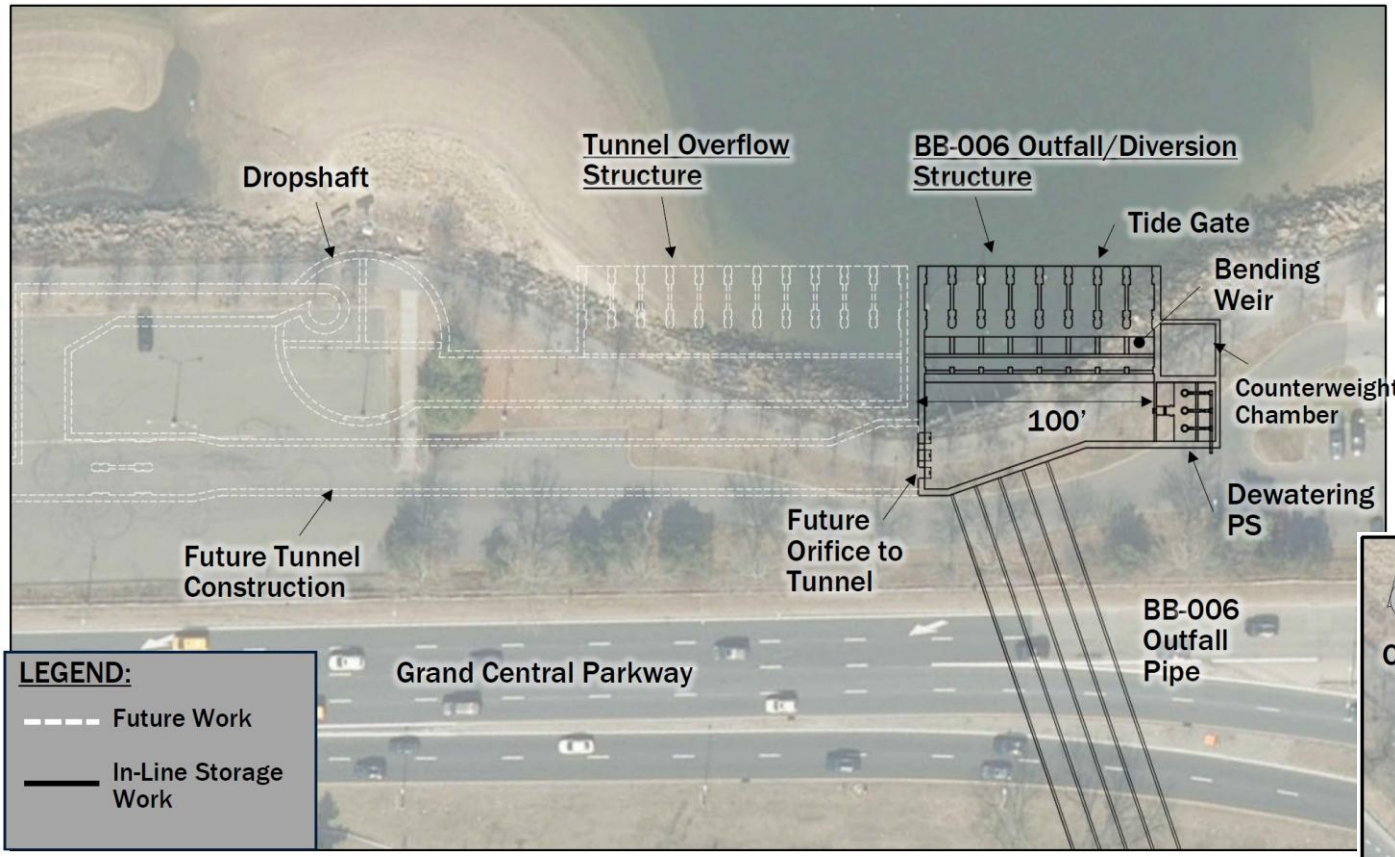
- 3 mile long, 22 foot diameter tunnel with 40 million gallon storage capacity
- Allows for Lefrak City/Rego Park area sewer flow to be diverted into the tunnel during a storm event to mitigate flooding
- Dewatering pump station will pump stored CSO/stormwater from the tunnel to Bowery Bay for treatment after the storm event.

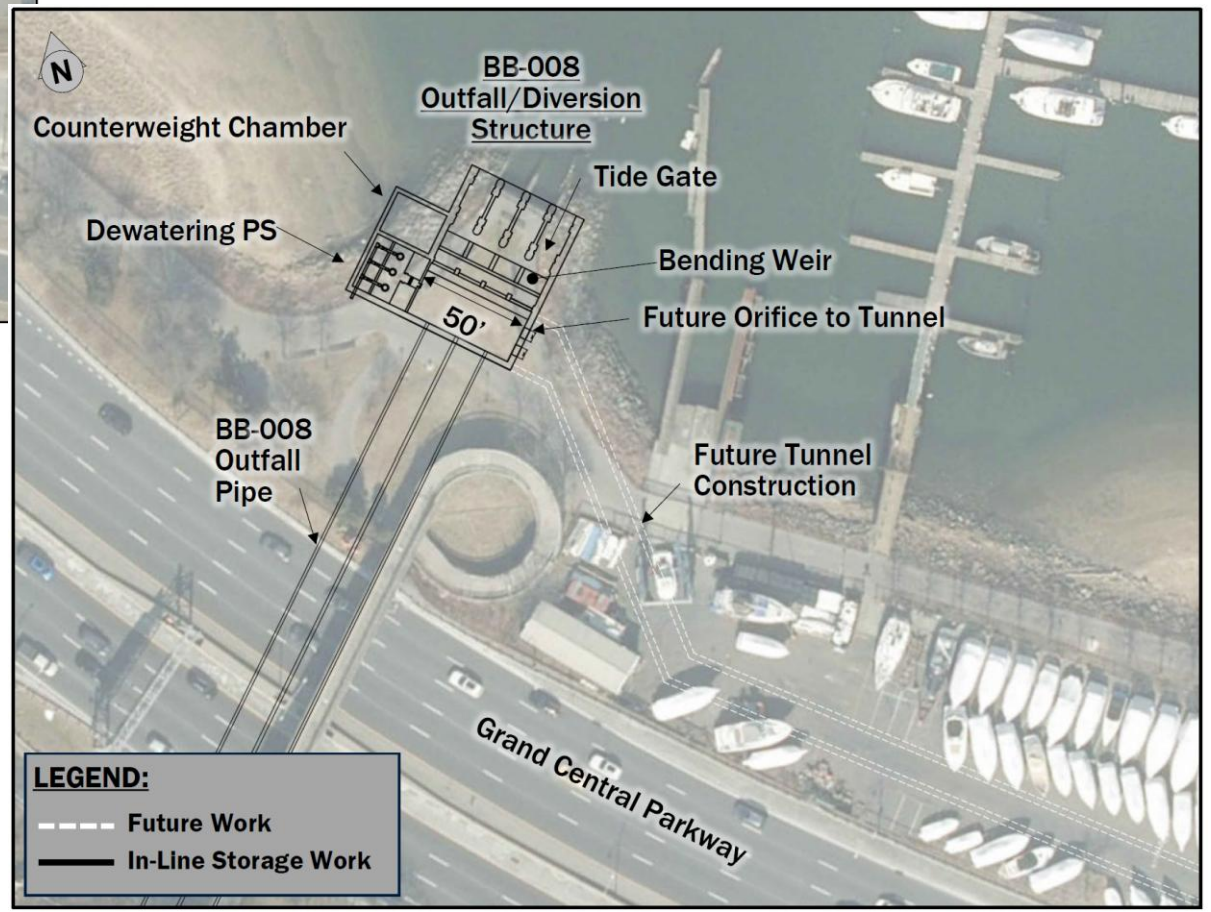


**Hurricane Ida Flooding Condition**



# Phase 1 Components



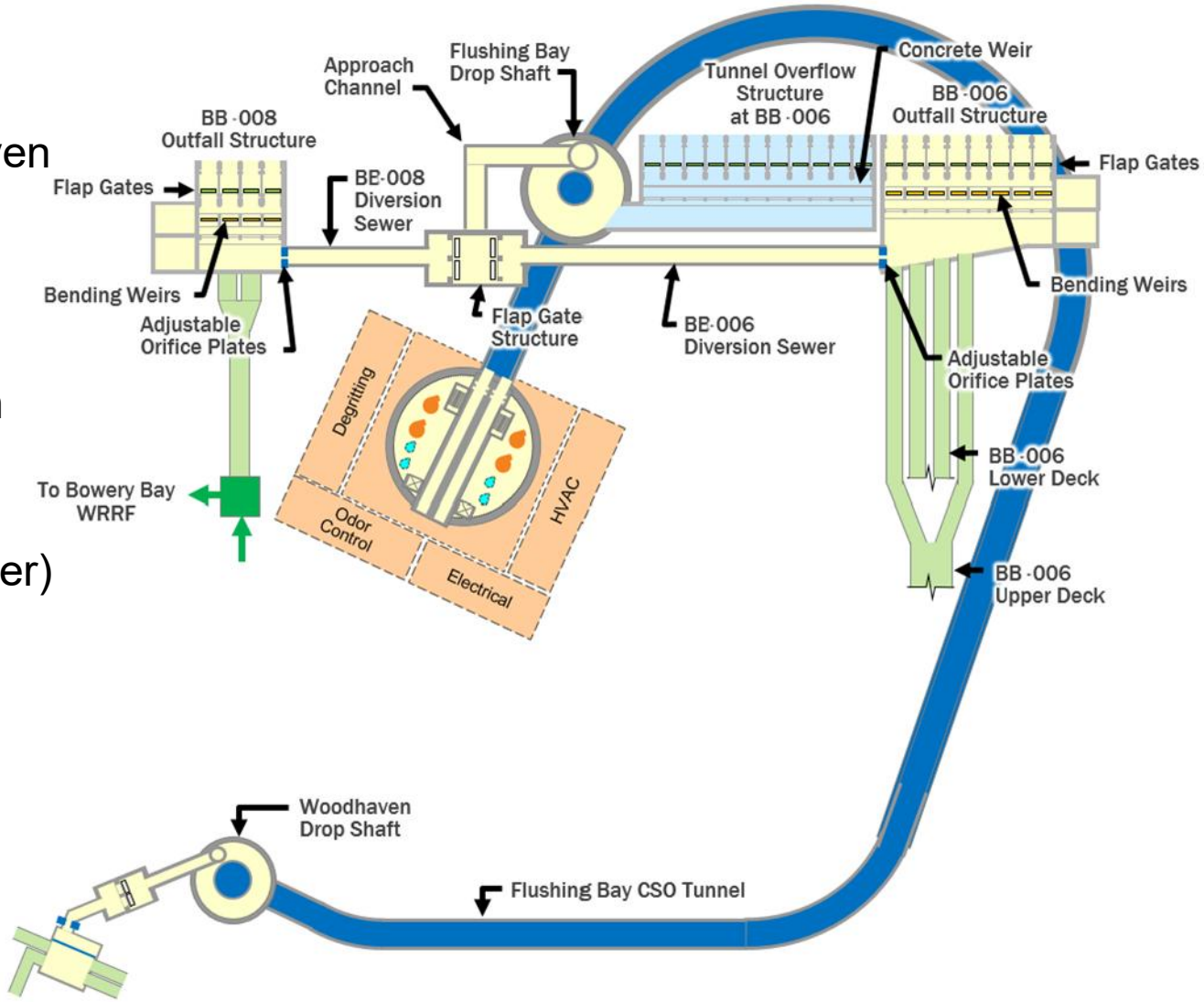




**Main Features:**

- Bending Weir
- Bar Rack (increased floatable control)
- Tide Gates

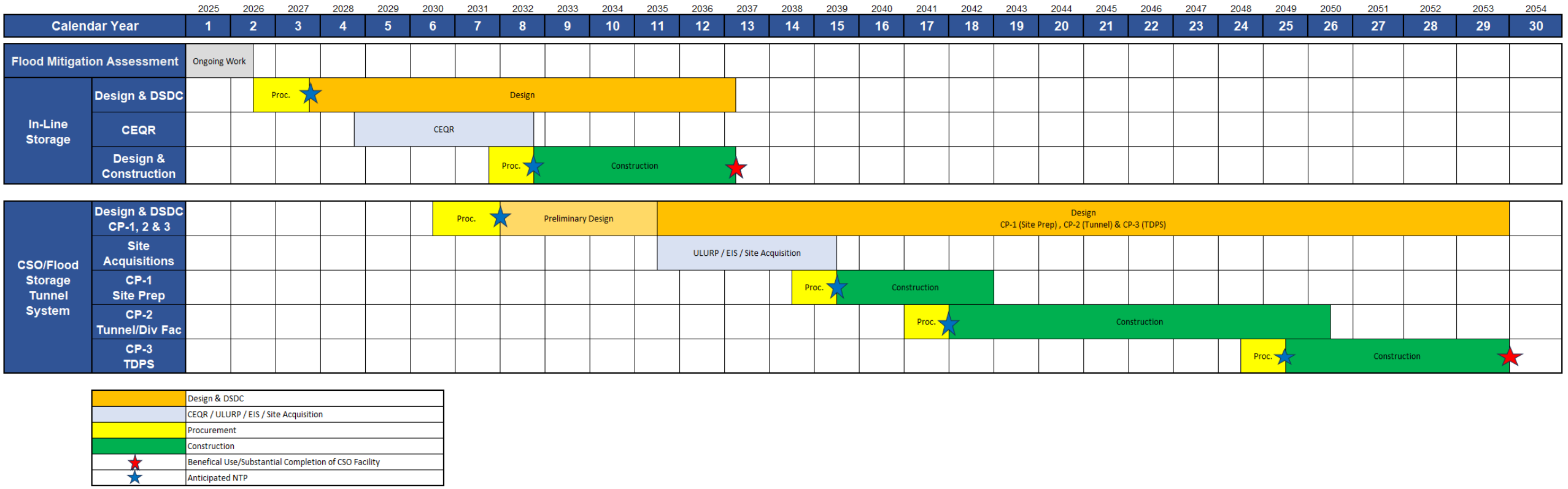
# Phase 2 Components

- ~ 3 miles (14,100 LF), 22-foot diameter tunnel spanning from World's Fair Marina area to Woodhaven Blvd.
- Mining in soft ground.
- 3 Shafts:
  - 1 large Shaft (~120 ft diameter) for TBM launch and Tunnel Dewatering Pump Station (TDPS)
  - 1 drop Shaft in the marina (~65 ft diameter)
  - 1 drop Shaft at Woodhaven Blvd (~50 ft diameter)
- Diversion facilities.
- Tunnel Dewatering Pump Station houses all the equipment necessary to pump the stored CSO to Bowery Bay for treatment after the storm event.



# Project Implementation Schedule

**CSO/Flood Storage Tunnel Schedule (P80 estimate)**




| | |
|---|---|
| | Design & DSDC |
| | CEQR / ULURP / EIS / Site Acquisition |
| | Procurement |
| | Construction |
| ★ | Benefical Use/Substantial Completion of CSO Facility |
| ★ | Anticipated NTP |

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# Project Cost - In-Line Storage

| Components | Cost |
|---|---|
| In-Line Storage Facility | $267M |
| **Total Construction Cost** | **$267M** |
| Engineering/Design | $16M |
| Design Services During Construction | $11M |
| Construction Management | $32M |
| **Subtotal – Other Project Costs** | **$59M** |
| **Project Total** | **$326M** |

*Note: Costs escalated based on midpoint of construction.*

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# Project Cost – CSO/Flood Storage Tunnel

| Components | Cost |
|---|---|
| CP-1 Site Preparation | $123M |
| CP-2 Tunnel and Shafts | $1.659B |
| CP-3 Tunnel Dewatering Pump Station | $606M |
| **Subtotal Construction Cost** | **$2.388B** |
| Engineering/Design | $143M |
| Design Services During Construction | $95M |
| Construction Management | $287M |
| Land Acquisition | $185M |
| **Subtotal Engineering/Acquisition Cost** | **$710M** |
| **Subtotal Project Cost** | **$3.098B** |
| **Total with In-Line Storage** | **$3.424B** |

*Note: Costs escalated based on midpoint of construction for each contract package.*

# Comparison of Flushing Bay Project Schedules

| Milestone | 2016 LTCP Tunnel | 2023 CER Tunnel | 2025 Inline Storage | 2025 CSO/Flood Tunnel |
|---|---|---|---|---|
| Design Start | July 2021 | January 2026 | Q4 of 2027 | Q1 of 2032 |
| Construction NTP | July 2026 | January 2035 | Q4 of 2032 | Q3 of 2039 |
| Construction Completion | June 2035 | February 2051 | Q2 of 2037 | Q4 of 2053 |
| **Construction Estimate** | **$683M** | **$2.4B** | **$267M** | **$3.098B** |

# Next Steps

- NYC DEP to submit final modification request with an updated Conceptual Engineering Report on or before December 31, 2025.
- Pending NYS DEC review, NYS DEC will publish this modification request for 30-days in the Environmental News Bulletin for public review
- Preliminary Schedule:

| Milestone | Proposed Date |
|---|---|
| In-Line Storage Design NTP | Q4, 2027 |
| In-Line Storage Construction NTP | Q4, 2032 |
| In-Line Storage Construction Completion | Q2, 2037 |
| CSO/Flood Mitigation Tunnel Design NTP | Q1, 2032 |
| CSO/Flood Mitigation Tunnel Construction NTP | Q3, 2039 |
| CSO/Flood Mitigation Tunnel Construction Completion | Q4, 2053 |

# Questions?