



Harlem River

Use Attainability Analysis Public Meeting



February 25, 2025



Agenda

- 01** Introductions
- 02** What Is A Water Quality Designation?
- 03** Overview of NYCDEP Combined Sewer Overflow (CSO) Program and Harbor Water Quality
- 04** DEP Use Attainability Analysis (UAA) Study
- 05** DEP's Proposed UAA and Reclassification
- 06** Questions and Survey Poll

01

Introductions



- Why are we here?
- Presentation Overview
- Question and Answers
- Follow Up Survey

About NYC DEP

WATER SUPPLY

- Deliver one billion gallons of water to nine million New Yorkers every day and maintain 7,000 miles of water mains
- Protect our 2,000 square mile watershed, including 19 reservoirs and three controlled lakes



WASTEWATER MANAGEMENT

- Treat 1.3 billion gallons of wastewater each day
- Operate and maintain 14 plants, 96 pumping stations, and 7,500 miles of sewers
- Robust Green Infrastructure Cloudburst, & CSO Mitigation Program



AIR, NOISE, AND HAZARDOUS WASTE

- Update and enforce the Air Code to reduce local emissions, and regulate hazardous waste and noise pollution



02

What Is A Water Quality Designation?

2023 NYSDEC Water Quality Standards Revisions
















In October 2023, DEC updated water quality criteria:

- Adopted new secondary contact bacterial indicator criteria using *Enterococcus*:
 - Based on EPA Beach Act epidemiological studies and water ingestion rates associated with kayaking.
- Added a **Wet Weather Limited Use designation** for primary contact waterbodies impacted by CSO (Classification SB-WW):
 - Will allow for **temporary excursions from bacterial criteria after certain wet weather events**.
- For waterbodies not projected to fully attain primary contact water quality standards **DEP will prepare and submit a Use Attainability Analysis (UAA)**:
 - A UAA is a scientific evaluation of the factors affecting the ability of a waterbody to attain a designated use.
 - DEP is anticipating submitting the following UAAs:

UAA Waterbodies	# of Segments	UAA Waterbodies	# of Segments
Harlem River*	2	Tribs of East River & WLIS	6
East River	4	Tribs of Jamaica Bay & Coney Island Creek	6
Newtown Creek	1	SI Kills & Tribs	3

* Harlem River UAA is due to the DEC by the end of March 2025.

Water Classification And Supported Activities

Classifications	Activities		
			
Class I			
Class SA			
Class SB/SC			
Class SD			

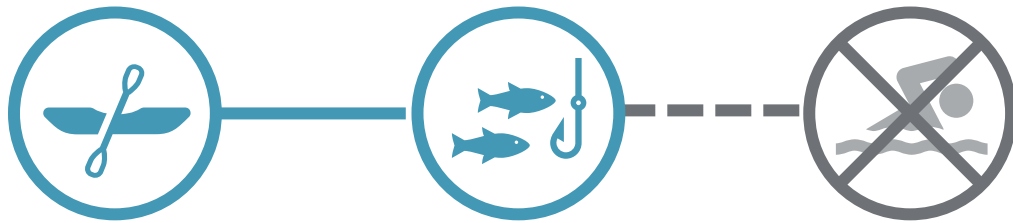


Waterbody Classification

Harlem River

Current – Class I

- Supports **recreation boating** and **fishing** but not swimming



What It Means For A Waterbody To Be Designated For Primary Contact

- Water quality criteria shall be suitable for primary contact activities such as swimming.
- The **key water quality criteria** to support primary contact is **complying with Fecal Coliform and Enterococcus limits**:
 - These are bacterial indicator organisms that could be associated with harmful viruses or pathogens
- Department of Health uses these bacterial indicators in permitting bathing beaches but also consider other factors such as:
 - Boat traffic and other hazards
 - Distance to a CSO Outfall
 - Bottom materials and slopes
 - Water currents less than 3 fps
 - Lifeguards and other safety requirements

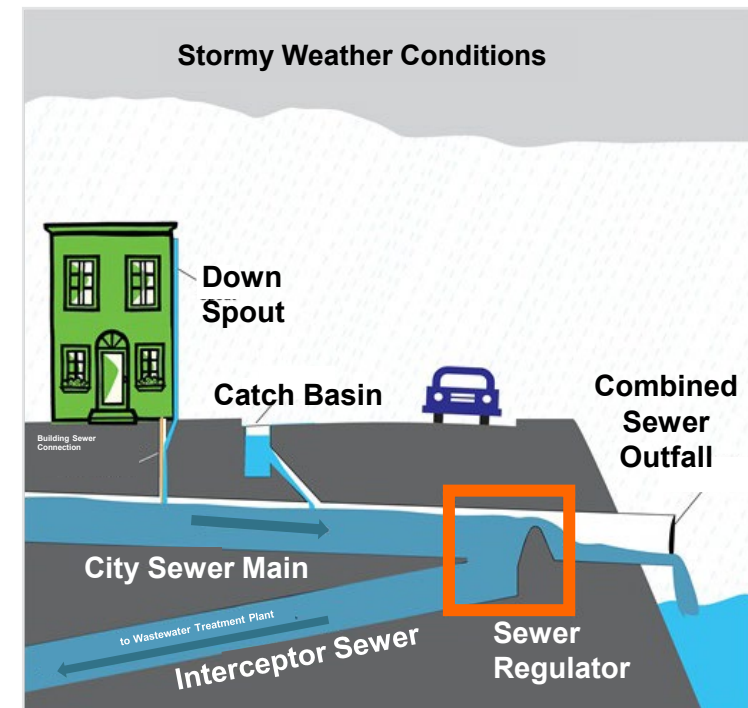
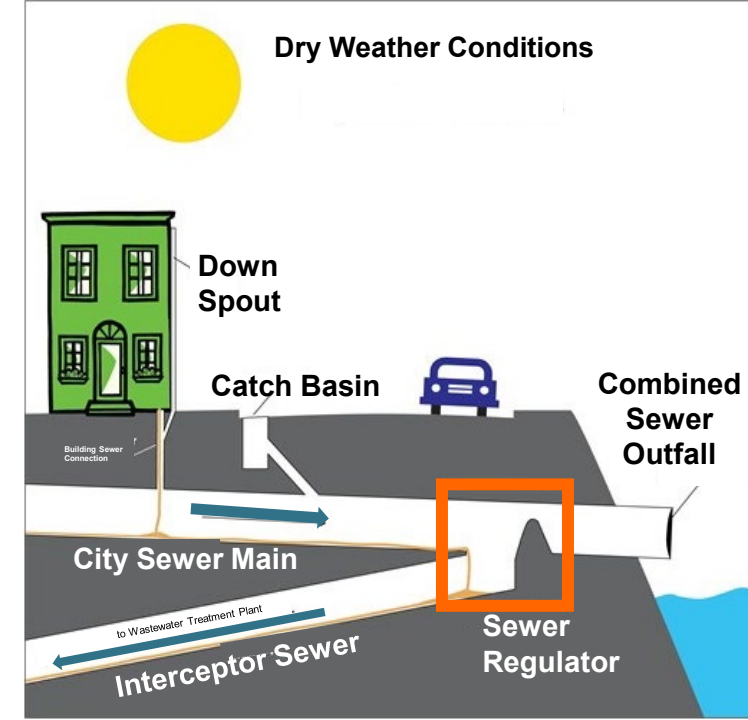


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Overview of CSO Program and Harbor Water Quality

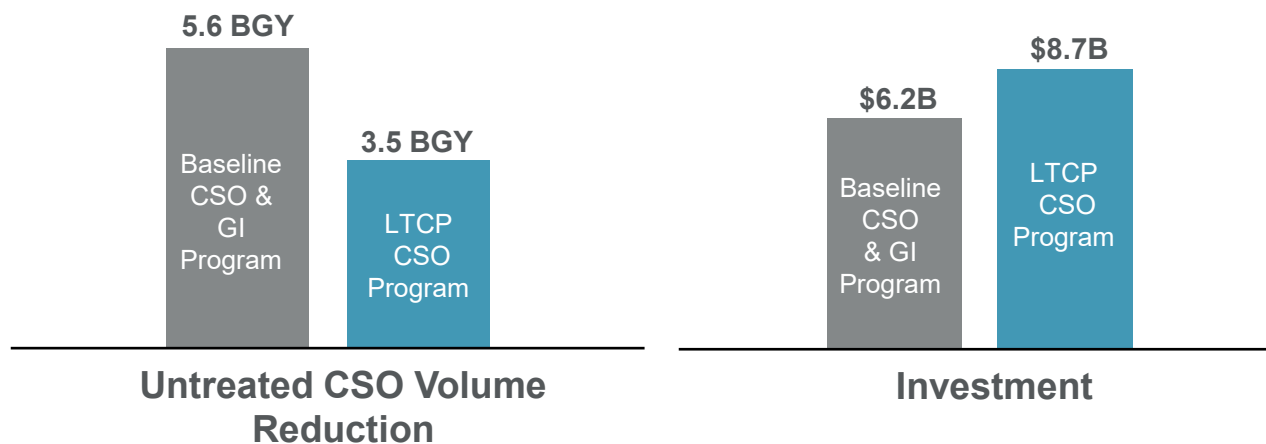
What is a Combined Sewer Overflow (CSO)?

- First sewer in NYC was constructed in the 1660s an open trench that conveyed sanitary waste to East River.
- A more modern sewer system started being constructed after 1849 due to cholera outbreaks that conveyed sanitary waste out of congested communities to adjacent waterbodies.
- It wasn't until the 1890s that NYC began constructing Wastewater Treatment Plants (WWTPs) in conjunction with regulators and interceptors to divert sanitary flow and portion of wet weather flow to the WWTPs for treatment.
- Today NYC's sewer system is approximately 60% combined, which means it is used to convey both sanitary and storm flows.
 - **When the combined sewer system is at full capacity, 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 mitigate inland flooding and sewer backups.**
 - On an annual basis about 65% to 90% of combined sanitary & storm flow is captured at treatment plants but remainder of flow is sent to the receiving waters as a CSO.



Combined Sewer Overflow Long-Term Control Plan (LTCP)

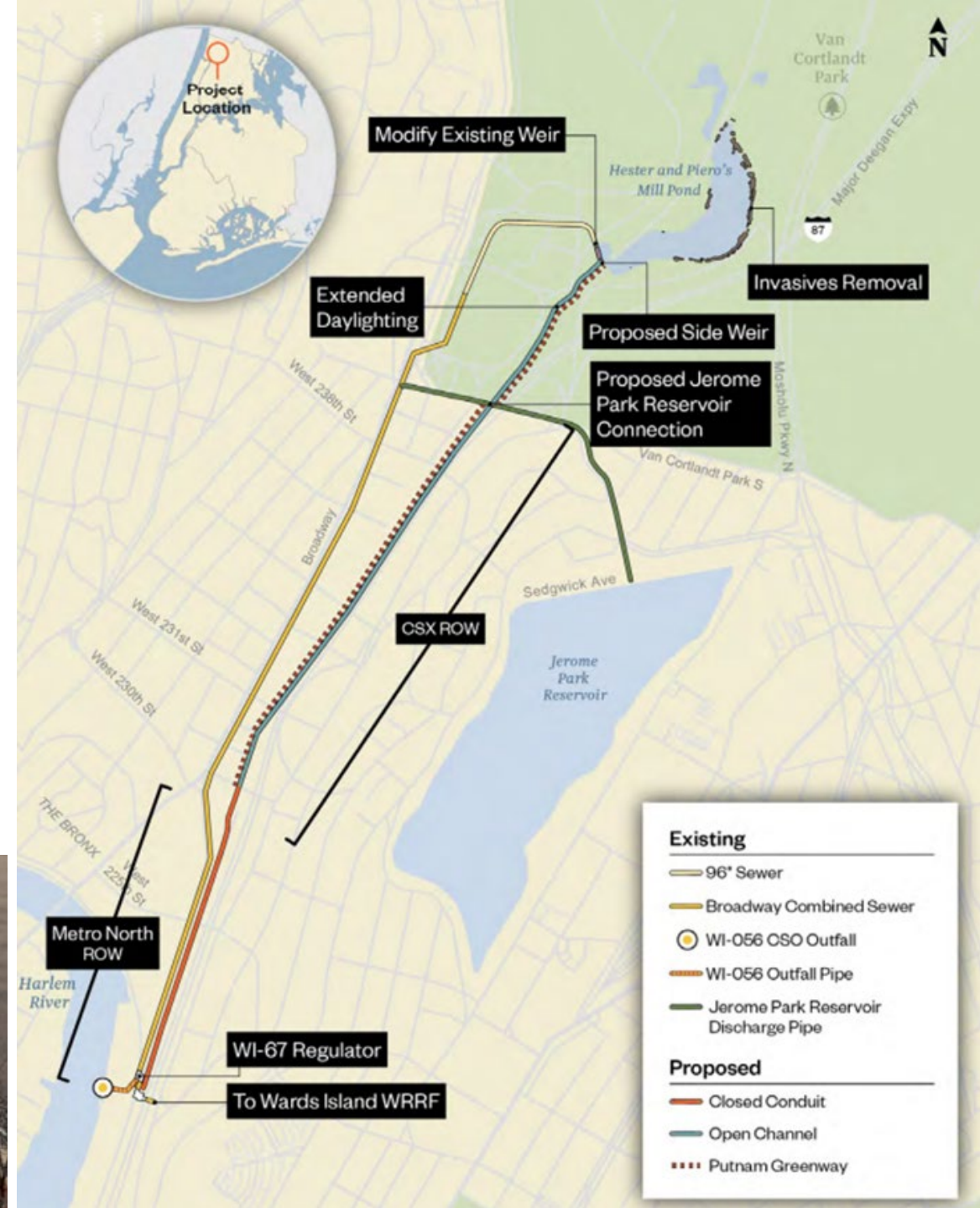
- DEP submitted eleven (11) LTCPs and all have been approved to date and these plans evaluated a range of options to select most cost-effective alternatives based on bacterial reduction and improvements in water quality attainment.
- The LTCPs included \$2.7B in baseline grey projects (completed), \$3.5B in Green Infrastructure (~\$1.3B completed), and \$8.7B in new projects (~\$1.2B completed).



*Wastewater Resource Recovery Facility

Harlem River CSO LTCP

- No additional Grey CSO projects recommended in LTCP.
- DEP is targeting 22 green infrastructure projects in this watershed.
- Daylighting of Tibbetts Brook is **one of the largest GI projects in the country.**
 - Currently in Design.
 - \$133 Million (includes Van Cortlandt lake Improvements).
 - Will remove roughly 4 to 5 million gallons of water from the sewer system each day, more on rainy days.
 - Will reduce CSO discharges by about 220 million gallons per year.



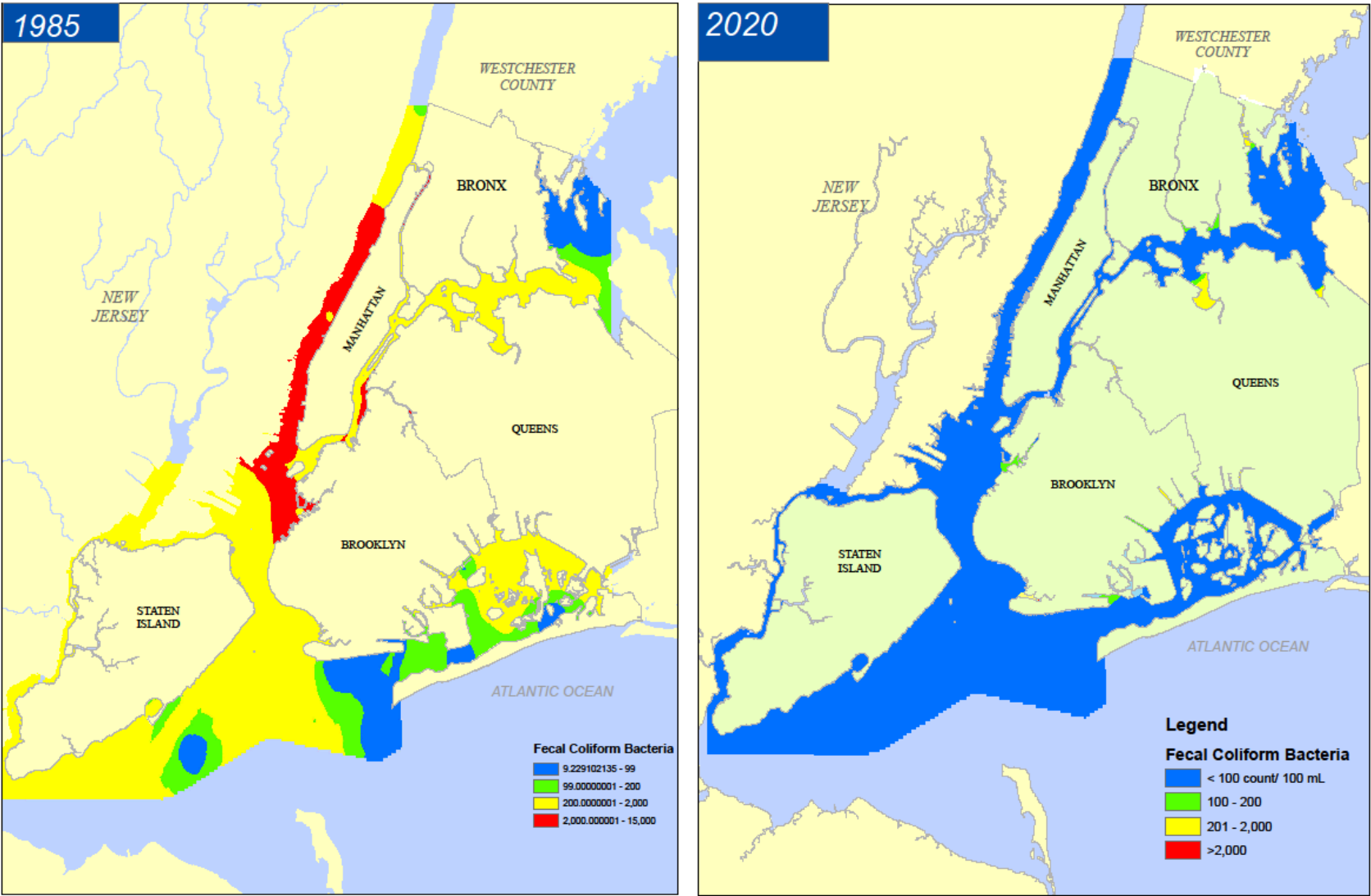
Water Quality Improvements

NYCDEP investments to date have resulted in **significantly improved water quality** for all water bodies including the **Harlem River**.

1973-2011	~\$40B to upgrade and construct 2 new *WRRFs
1999-2022	~\$1.2B to upgrade 8 WRRFs 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



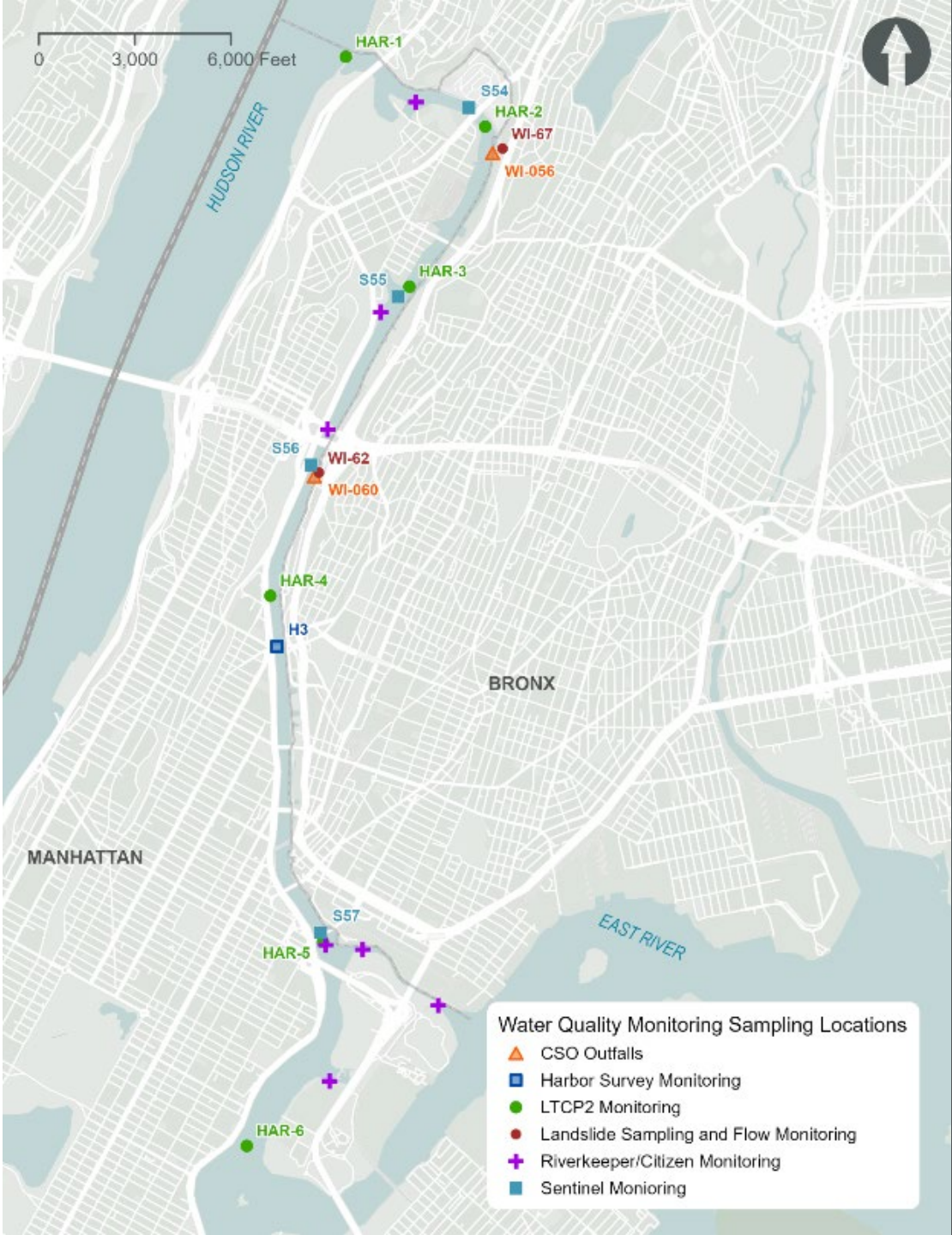
DEP's Harbor Survey Program added *Enterococcus* to its sampling program in CY2003.

Harlem River Projected Water Quality Attainment Post CSO LTCP

- Overall projected water quality is relatively good with full attainment projected with the Fecal Coliform Monthly Geometric Mean ≤ 200 cfu/100 ml and for the Enterococcus 30-d Geometric Mean ≤ 35 & 72 cfu/100 ml.
- The projected water quality is not able to fully attain the 30-d Statistical Threshold Value ≤ 130 & 266 cfu/100 ml.
 - A wet weather analysis was performed and if data was excluded a set number of hours after rain events greater than 0.5 inches of rain then the waterbody would be able to comply with the primary contact STV Value ≤ 130 cfu/100 ml.

Station	Recreation Seasons 30-Day Rolling GM ≤ 35 cfu/100mL	Full Years 30-Day Rolling GM ≤ 72 cfu/100mL	Recreation Seasons 30-Day Rolling STV ≤ 130 cfu/100mL *	Full Years 30-Day Rolling STV ≤ 266 cfu/100mL
Averages of 2002-2011 Annual Attainment Percentages (%)				
HAR-1	99.6	100.0	85.4	97.2
HAR-2	99.2	100.0	75.8	91.6
HAR-3	98.9	99.9	64.3	82.8
HAR-4	98.5	99.9	57.1	76.5
H3	98.4	99.9	56.4	74.9
HAR-5	98.6	99.9	56.2	76.7
HAR-6	99.3	100.0	69.3	91.2


* Post processed model outputs project 6-10% hours ≥ 130 cfu/100 ml during the recreational season including during rain events.



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DEP Use Attainability Analysis (UAA) Study

DEP Study: Use Attainability Analysis Overview Of The Harlem River

- DEP/DEC is conducting a Use Attainability Analysis (UAA) for the Harlem River
 - 1972 Clean Water Act has a goal of all waterbodies complying with primary contact standards.
 - A UAA is a scientific evaluation of the factors affecting the ability of a waterbody to attain a designated use.
 - These six factors to evaluate include 
- The Harlem River UAA focuses on impairments to water quality associated with:
 - Man-made conditions as this watershed is very urbanized and populated;
 - Historic alterations to the Harlem River that impact hydrological conditions; and
 - Economic impacts associated with additional CSO controls beyond the current \$15B committed to the CSO program and impacts that would have on future water rates.



Six factors to evaluate:

Naturally occurring pollutant concentrations

Natural, ephemeral, intermittent or low flow conditions of water levels

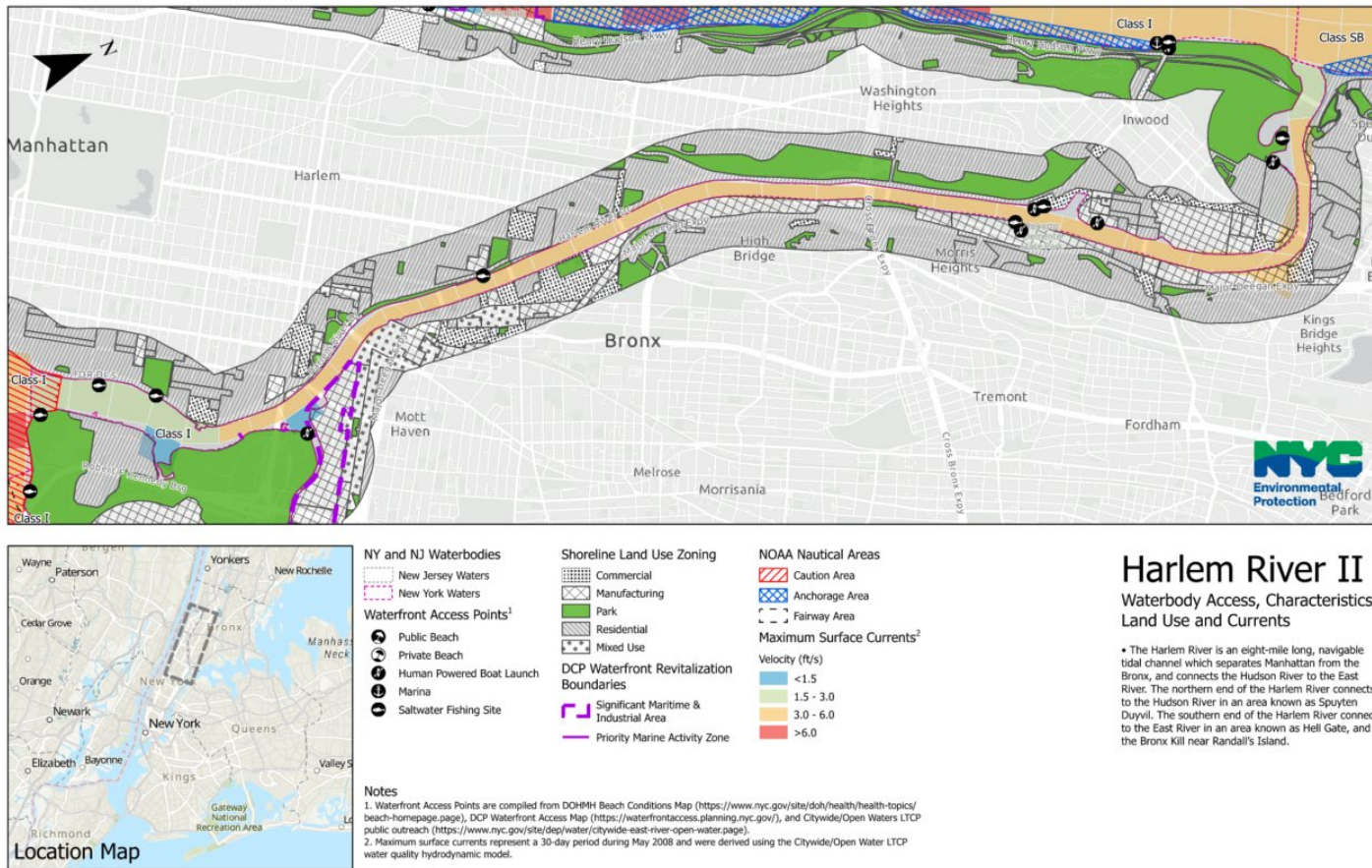
Human caused conditions that cannot be remediated or would cause more environmental damage to correct

Dams, diversions, or other types of hydrologic modifications

Physical conditions related to the natural features of the waterbody

Substantial and widespread economic and social impact

Adjacent Land Use and Water Currents



Harlem River riparian area is zoned:

- 43% residential
- 31% park
- 19% manufacturing

Modeled maximum surface water currents of 3-6 ft/s (Moderate to very strong) create unsafe swimming conditions

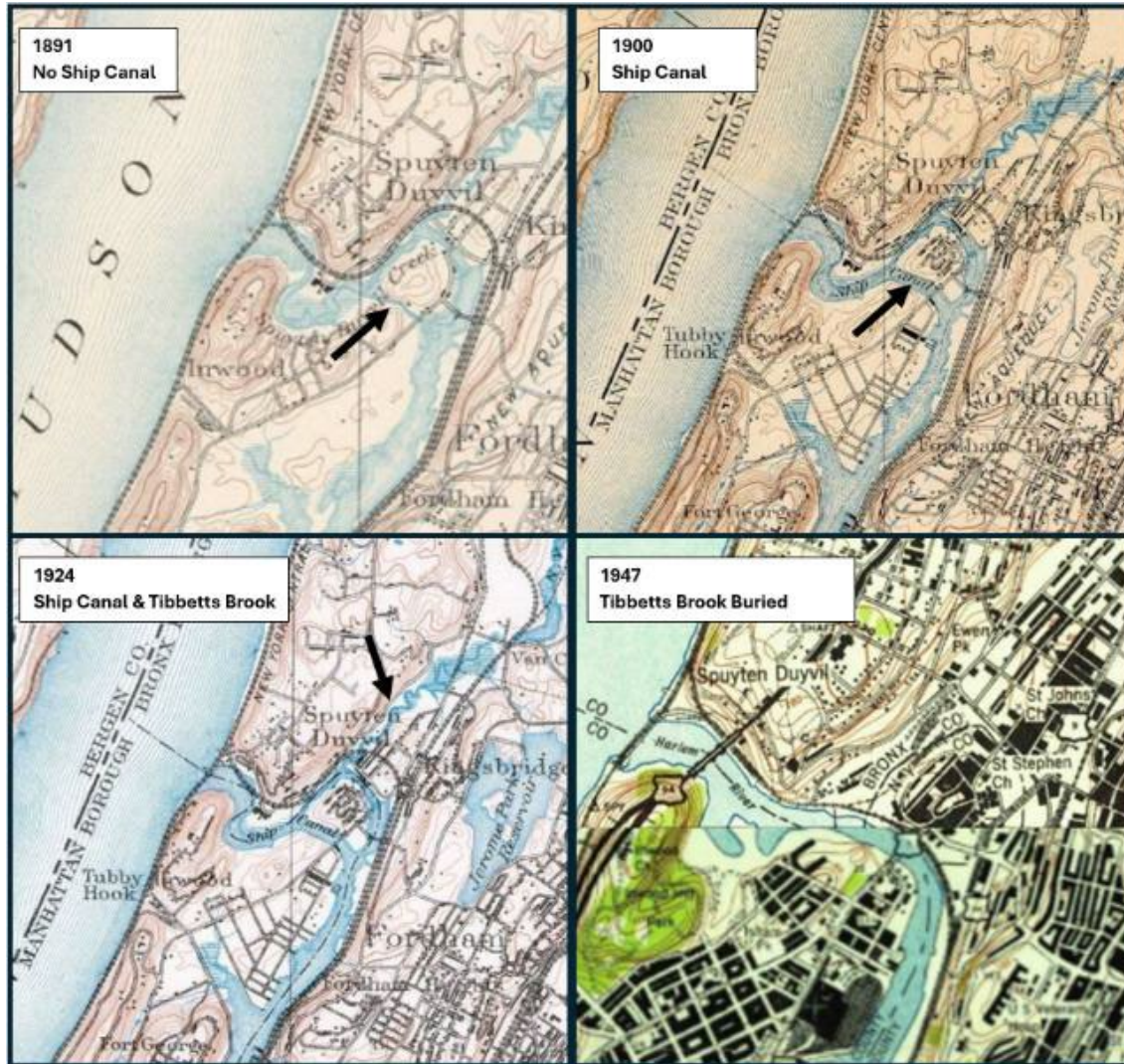
Limited waterfront access due to bulkhead height

Shoreline Characteristics and Public Access

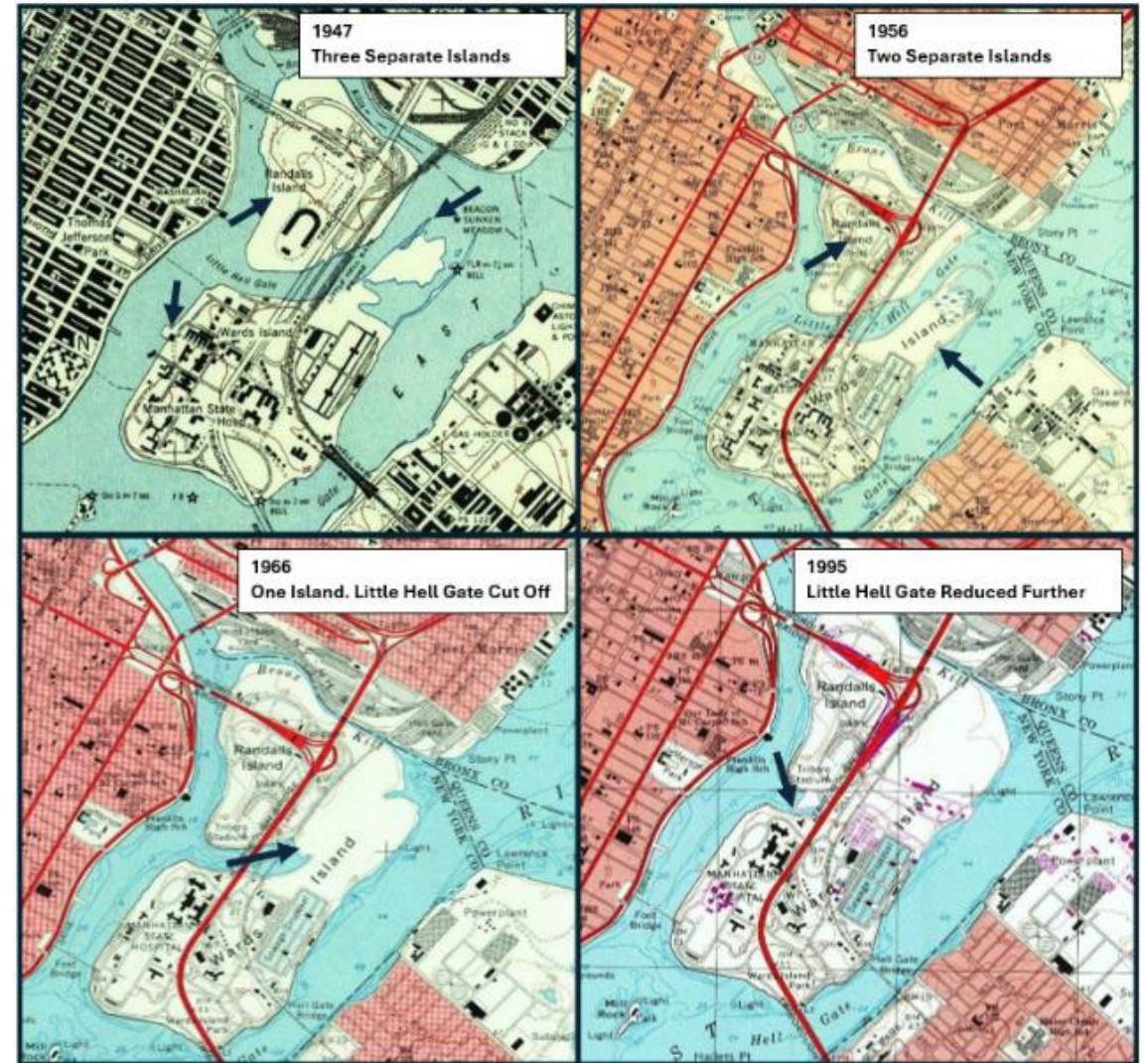


- Large bulkheaded portions of the River and rail and roadway corridors curtail access
- Access points include parks, walkways, boat launches, and fishing locations
- CSO outfalls are distributed over most shoreline areas

Physical Alterations to the Harlem River



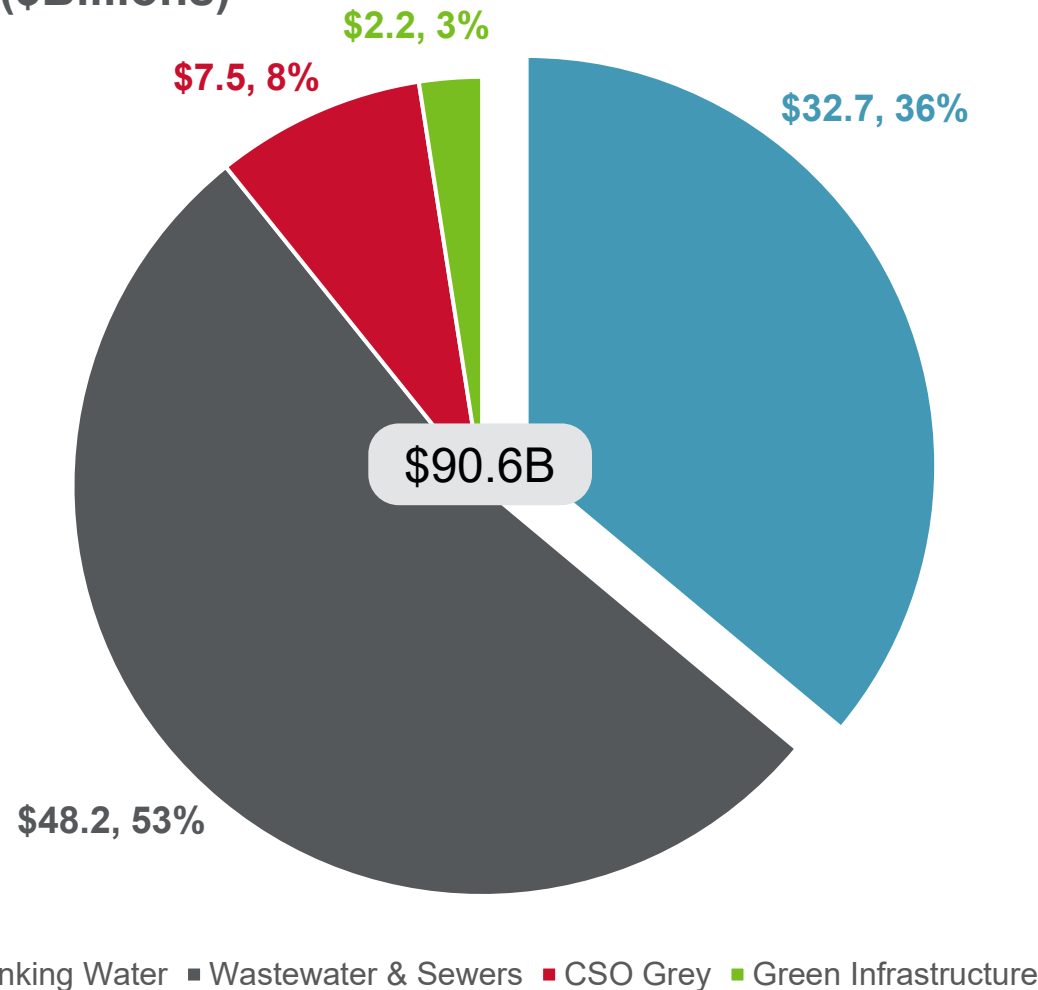
Historical Progression of the Harlem River Ship Canal and the filling of Tibbetts Brook



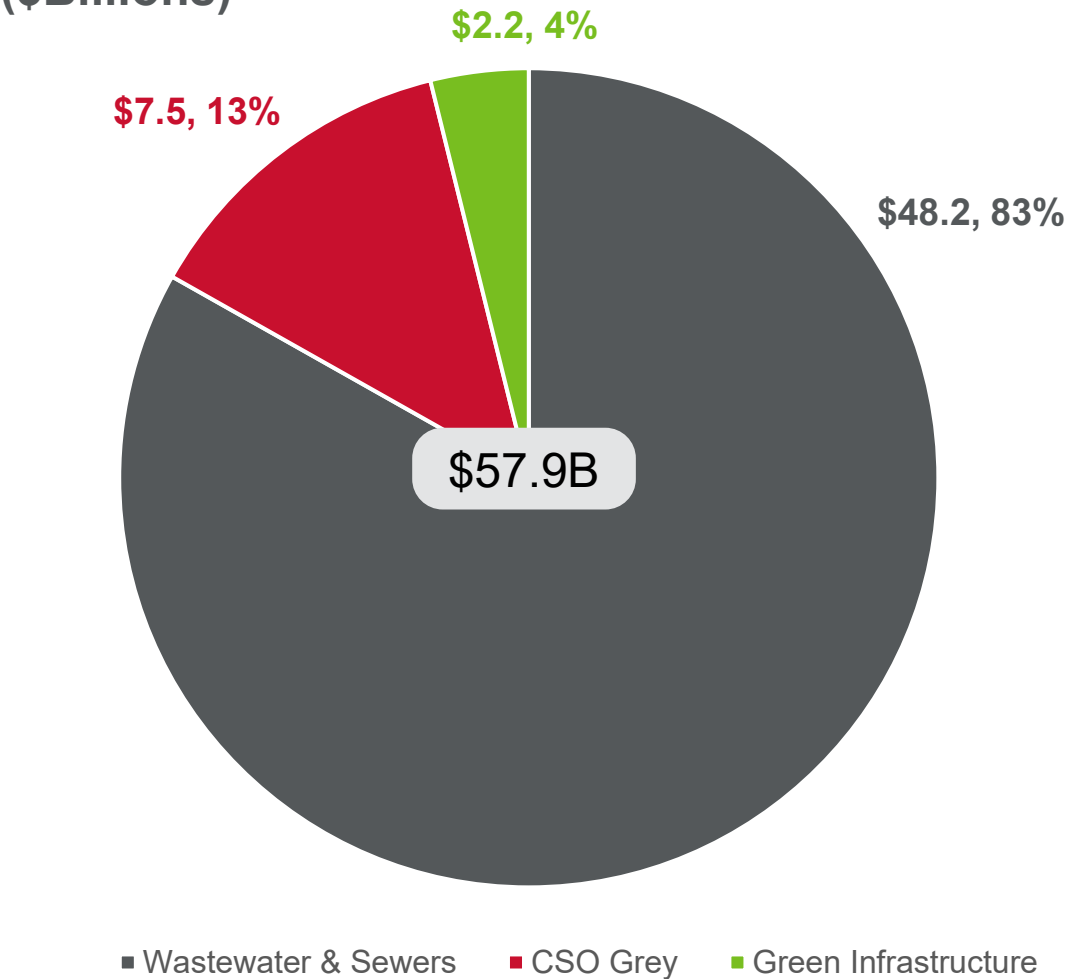
Historical Progression of the Conjoining of Islands and the infilling of Little Hell Gate

Projected 25 Year Capital Plan For DEP (September 2024 CIP)

Drinking Water & Wastewater / Drainage
(\$Billions)



Wastewater & Sewers
(\$Billions)

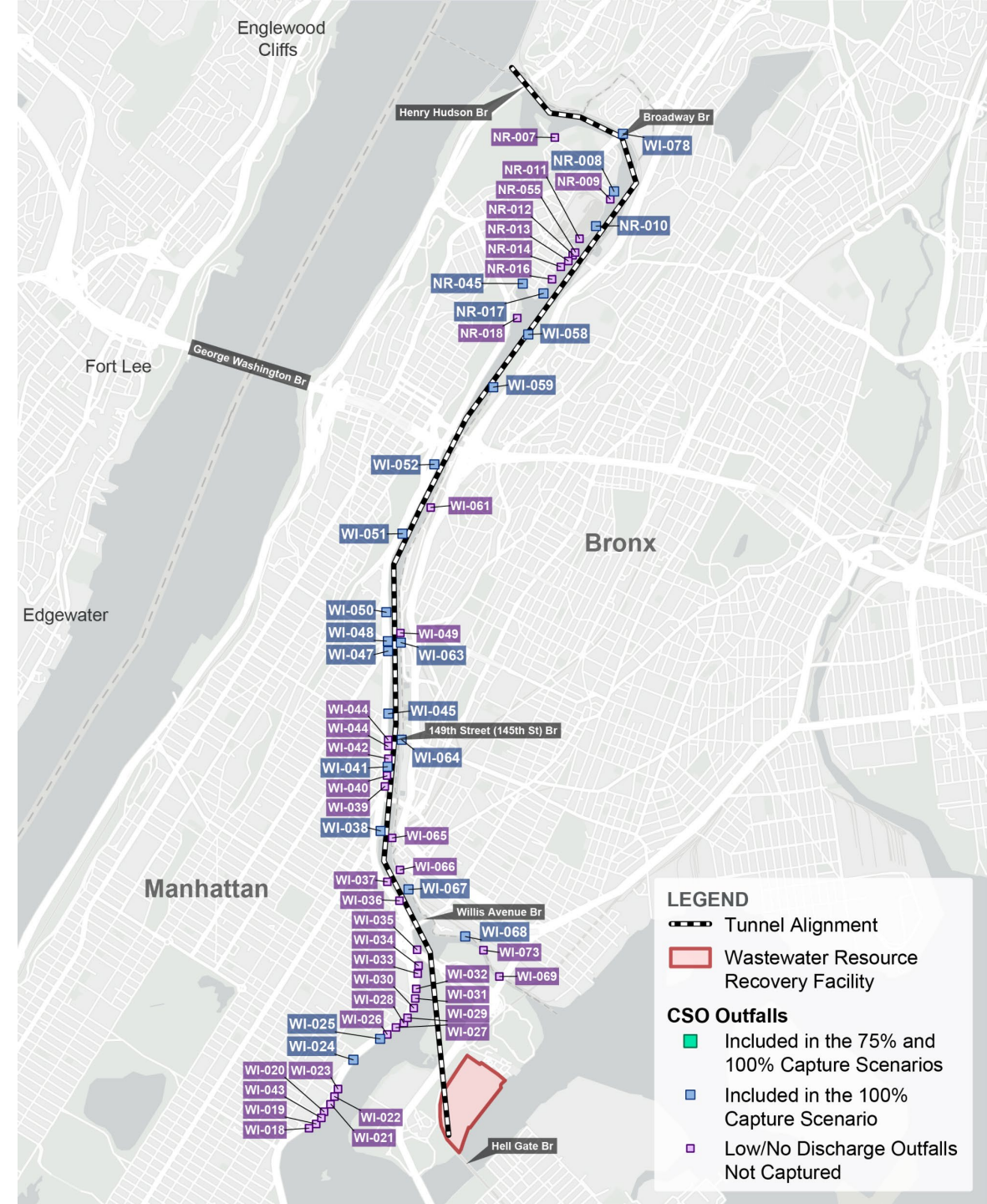


Harlem River CSO Controls Alternatives

Required CSO reductions to fully attain primary contact bacterial indicator criteria.

New Tunnel Under Harlem River

- Alternatives evaluation focused on a tunnel to reduce CSO activations and volume.
 - 75% control of CSO volume
- Requirements:
 - 7 miles long tunnel
 - 150 feet deep
 - 30 feet diameter
 - 188 MG storage



CSO Control Alternatives for the Harlem River Tunnel – Challenges

Real Estate Acquisition

- Significant land acquisitions
- Significant easements from private and public properties

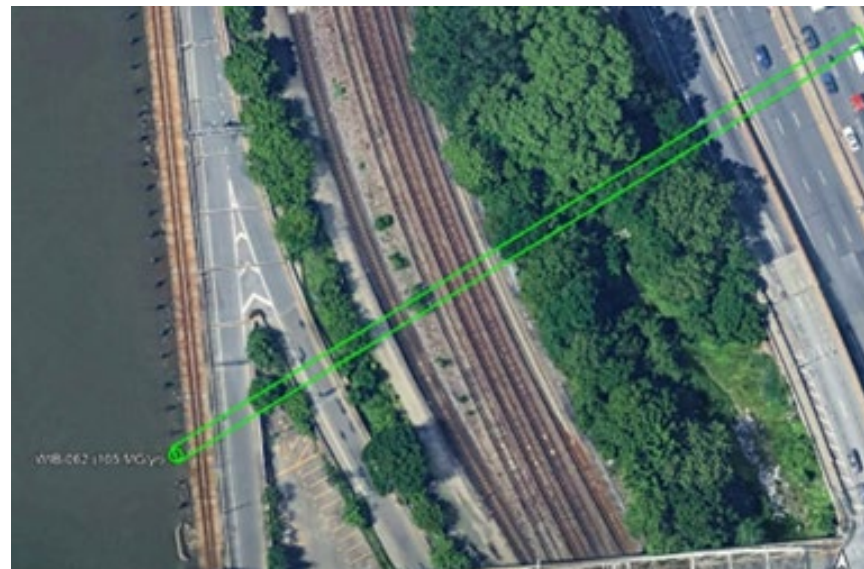
Components of CSO Tunnel

- Dewatering Pump Station
- Drive and Recovery Shafts
- Nine (9) New Drop Shafts
- Diversion Structures and Intercepting Sewers
- Potential Upsizing of Outfall Structures
- New Wet Weather Treatment Facilities

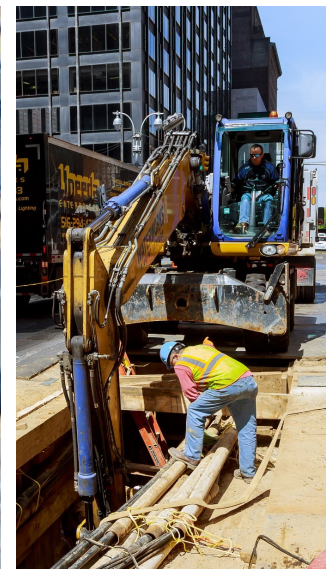
Community Impacts

- Complete or Partial Street Closures
- Significant Truck Traffic for Tunneling Muck
- Potential condemnation of properties
- Increases to water rates throughout the City

Preliminary Total Cost: **\$6-13 Billion (~9 Billion)**

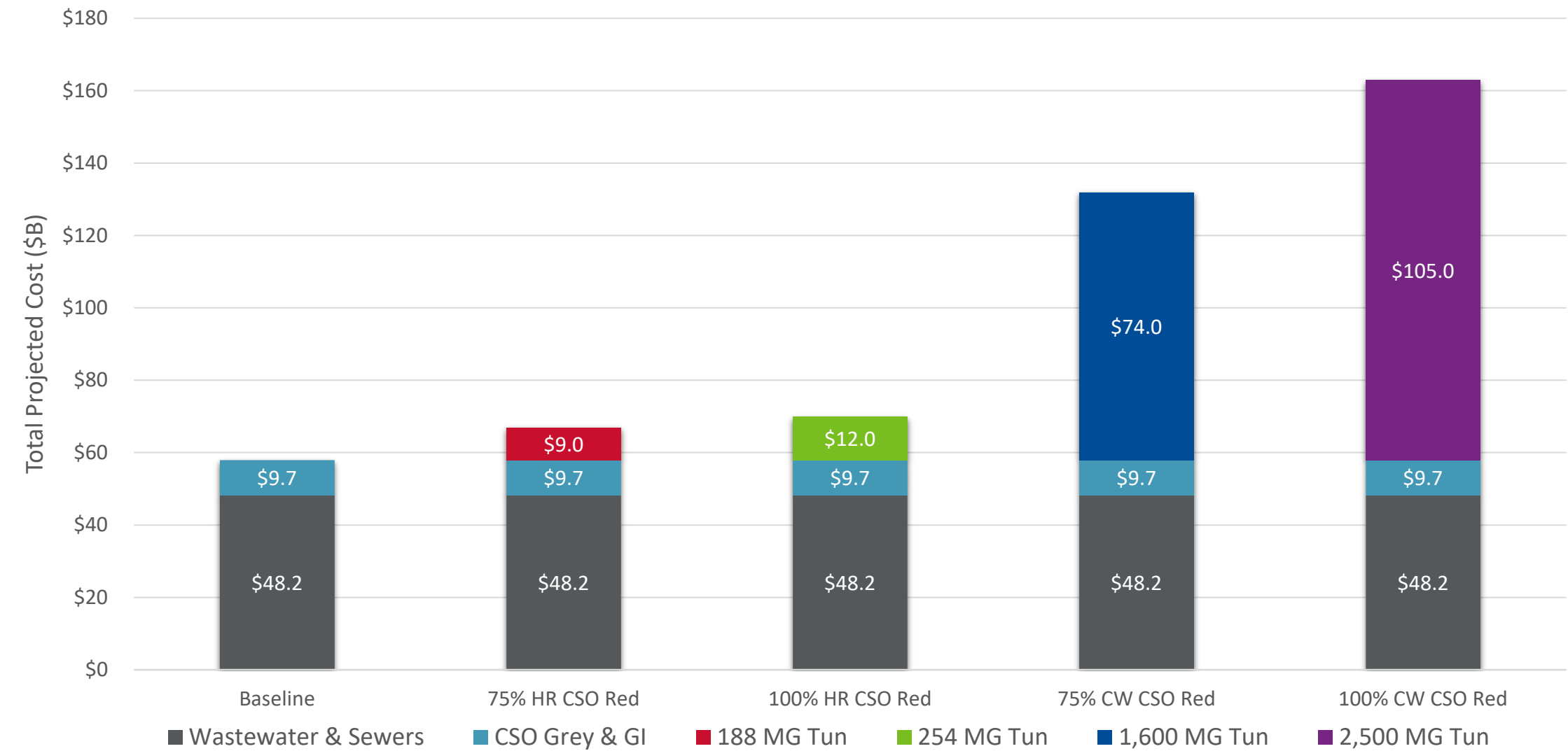


Outfall WIB-062



Factor Six – Financial Capability Assessment

25 YEAR BUDGET COMPARISON BASED ON SEPT 2024 CIP (\$B)



Federal Methodology To Determine Project Cost Impacts On Ratepayers

FCA Analysis

The analysis* includes:



Percentage of Median Income

Costs to ratepayers as a percent of median household income



Income and Poverty

Assesses the degree to which a community's ratepayers, especially low-income households, can support additional pollution control costs



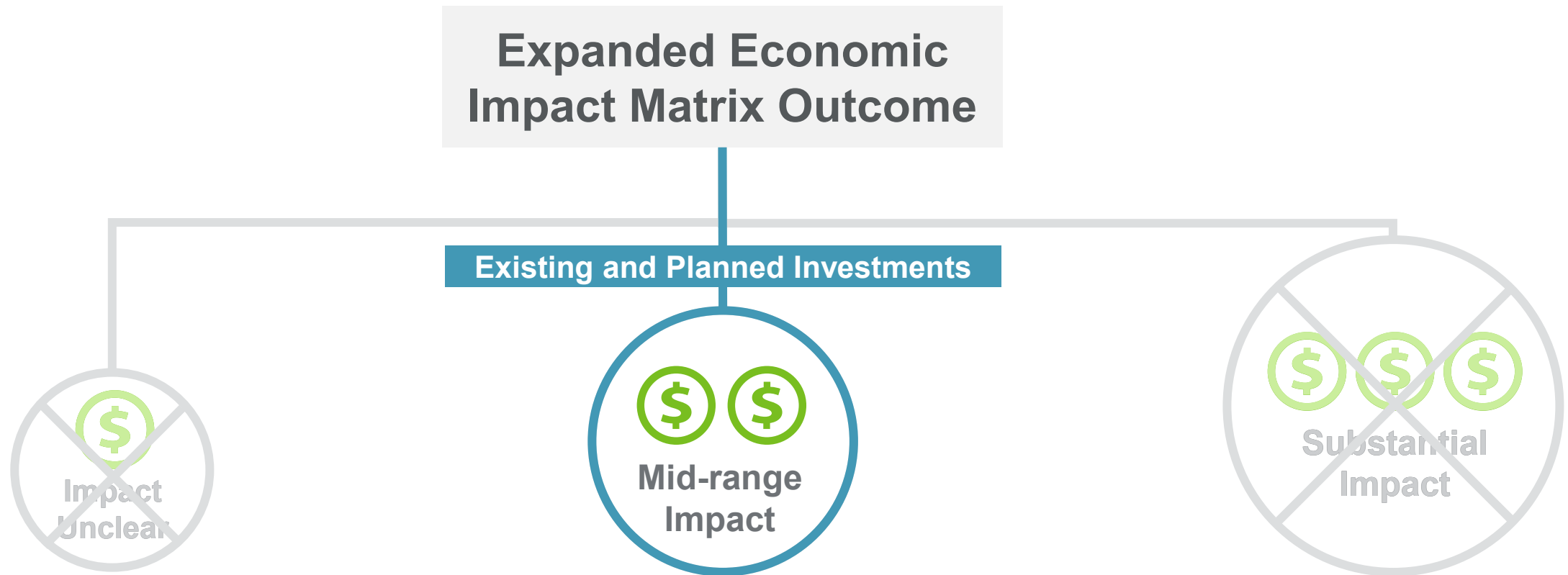
Economic Indicators

Measure the city's economic health and potential financial impacts

**Assumes total annual pollution control cost is based on the 75% capture tunnel plus 25-year CIP*

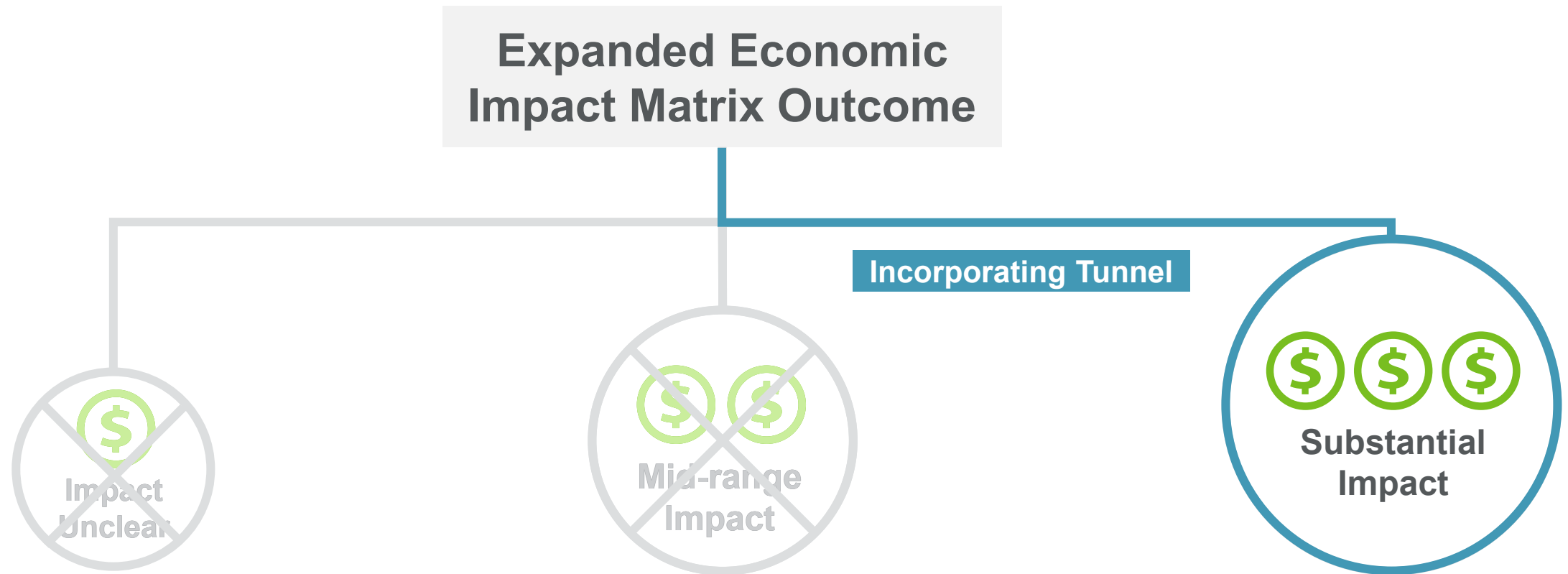
FCA Analysis Outcome – Substantial impact on ratepayers

LTCP Pollution Control Costs Plus Harlem River CSO Tunnel



FCA Analysis Outcome – Substantial impact on ratepayers

LTCP Pollution Control Costs Plus Harlem River CSO Tunnel



05

NYCDEP Proposed UAA & Reclassification



Six factors to evaluate:

Naturally occurring pollutant concentrations

Natural, ephemeral, intermittent or low flow conditions of water levels

Human caused conditions that cannot be remediated or would cause more environmental damage to correct

Dams, diversions, or other types of hydrologic modifications

Physical conditions related to the natural features of the waterbody

Substantial and widespread economic and social impact

Factors that do not support swimming without wet weather designation:

Factor 3: Constructing the CSO storage tunnel system may be infeasible and would **cause more environmental damage** owing to foregone benefits from other environmental improvement programs and projects

Factor 4: Restoring the Harlem River to its natural hydrologic condition is not feasible due to the **intense urbanization of the watershed**

Factor 6: DEP's customers would face **both substantial and widespread adverse economic and social impacts** with additional CSO control measures beyond the approved LTCP commitments

Comparison of Water Body Classifications



Class I (current)

Boating and fishing

No longer option



Class SB-WW (wet weather restrictions)

No additional operational, construction, or economic impacts

Requires signage and educational program for awareness

Swimming during and shortly after rainfall is not supported by water quality

Complies with DEC standards if UAA is approved



Class SB (primary contact)

Requires \$9 billion additional investment for just Harlem River

Construction impacts to community

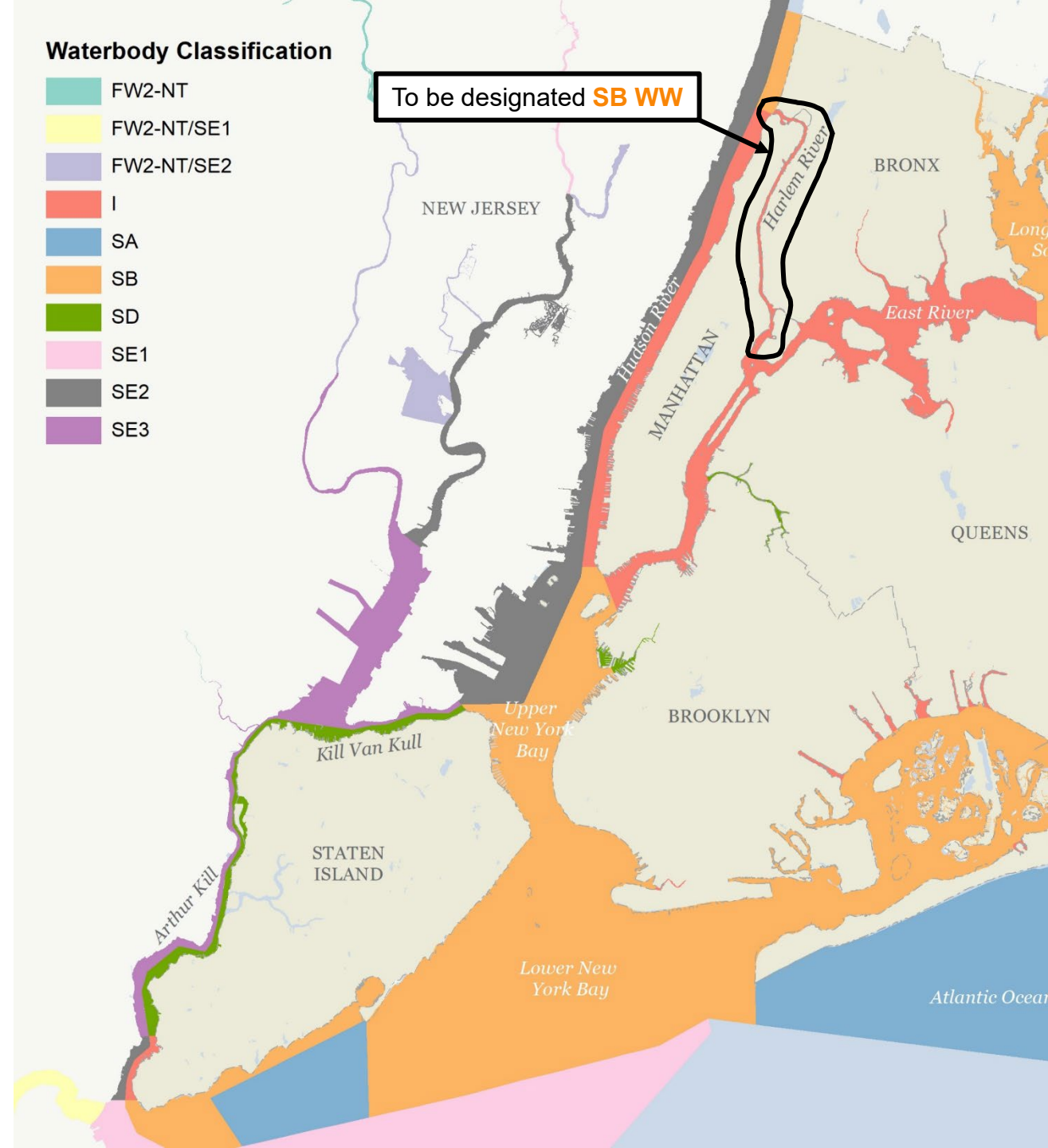
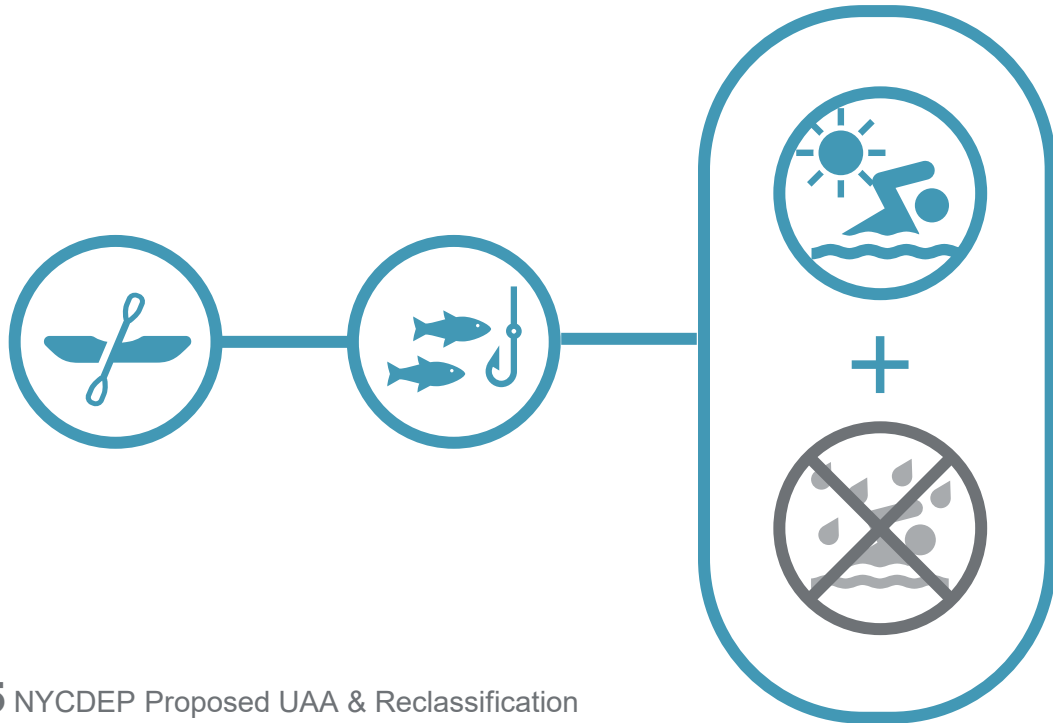
Long-term operational impacts to community

Substantial economic impacts

Recommended Waterbody Classification

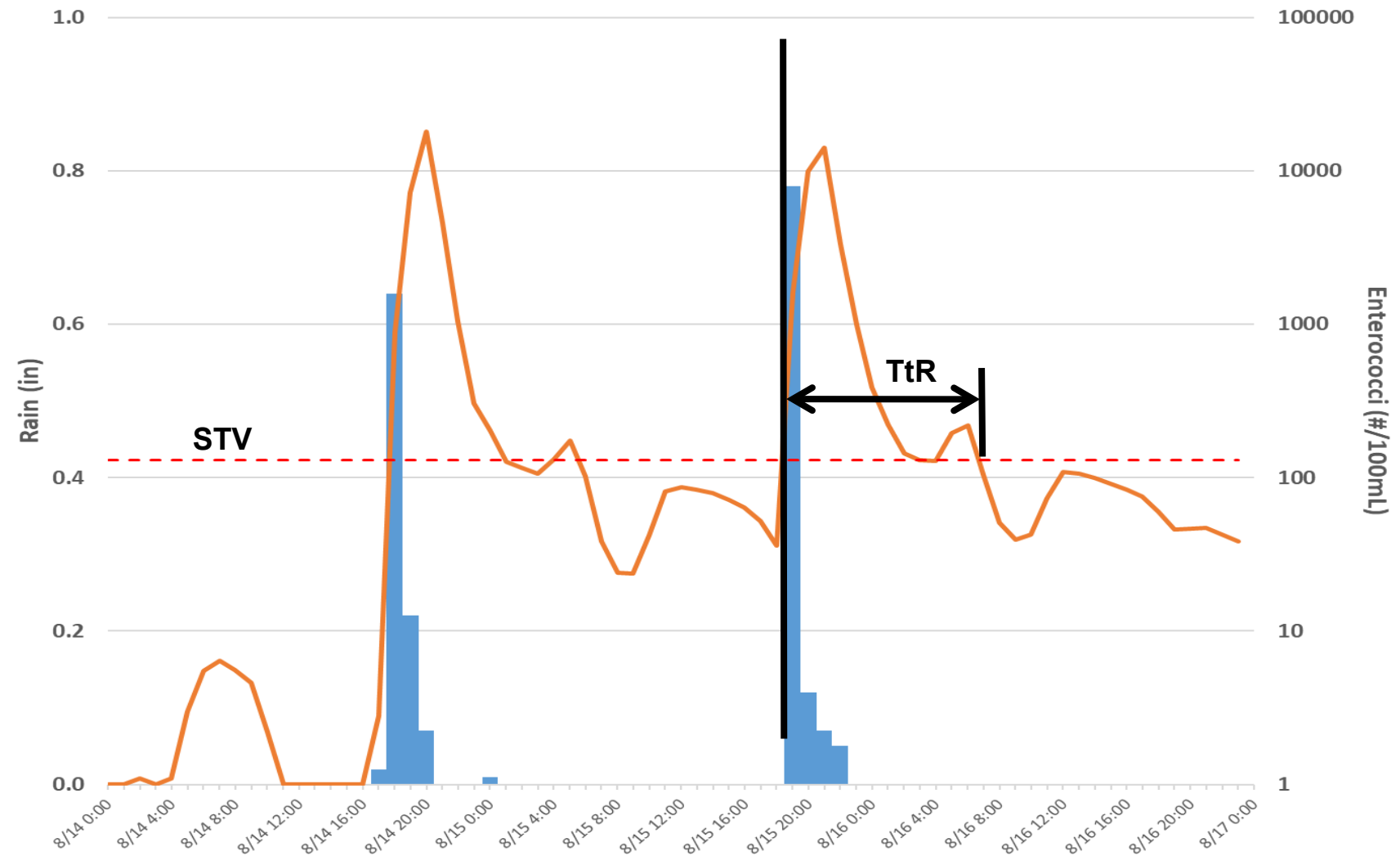
Harlem River

- Proposed – New wet weather (SB-WW) restriction



Projected Water Quality Attainment and Wet Weather Limited Use Analysis

- Wet Weather Limited Use Period (Time to Recovery)
 - Determine time from end of rain event to meet 130 #/100mL (STV) – time to recovery



Harlem River Proposed Upgrade to SB (WW) Classification

Harlem River will be upgraded from secondary contact (Class I) to a new primary contact classification that include a wet weather waiver (Class SB-WW)

Harlem River has a high level of attainment:



Complies with primary contact criteria for monthly fecal coliform geometric mean of less than 200 cfu/100 MI



Complies with 30-d rolling average enterococcus geometric mean of less than 35 cfu/100 mL



Has some exceedances of the 30-d rolling enterococcus 90th percentile of less than 130 cfu/100 mL

New proposed classification will allow for exceedances of the bacterial criteria for a duration of time following certain wet weather events.

Wet Weather Waiver Triggers	
Rainfall Vol	Advisory Duration (hrs.)
< 0.5"	No Advisory
> 0.5"	36

JFK 2002 - 2011 Precipitation			
Rainfall Depth	# Events	Hours of Advisories	% of Time
0.5 - 1.0"	79	2,844	6.5%
1.0 - 3.0"	61	2,196	5.0%
> 3"	8	288	0.7%
Total	148	5,328	12.2%

06

Survey Polling and Questions



Questions?