

North Hudson Sewerage Authority Long Term Control Plan



Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP)

Mandated by NJDEP and USEPA

- Submission of preliminary planning to NJDEP by June 1, 2020

Goal

- To dramatically reduce the discharges of combined sewer overflows into the nation's waterbodies

Long-term

- Implementation over a 35 to 40 year time frame

Cost

- NHSA sees a 35 year path to completion without raising the rate beyond annual 2% cap
- Estimates over a 35 to 40 year time frame are preliminary in nature

LTCP GOAL IS TO REDUCE CSO DISCHARGES. IT IS NOT A FLOOD MITIGATION PROGRAM.

NJDEP CSO Control Mandate

Long Term Control Plan (LTCP) Requires NHSA:

1. **TO UNDERTAKE A MAJOR STUDY OF THE COLLECTION SYSTEM, TREATMENT WORKS AND DISCHARGES INTO WATER BODIES (“SYSTEM CHARACTERIZATION”)**
 - This includes hydraulic analysis and condition assessment of wastewater collection systems, pumping stations, regulators and sewage treatment facilities
 - The purpose is to provide the basis for the development of a long-term plan to regulate CSO discharges
 - **THIS STUDY HAS BEEN SUCCESSFULLY COMPLETED BY NHSA**
2. **TO UNDERTAKE A MAJOR STUDY OF THE POSSIBLE ALTERNATIVES TO REDUCE CSOs (“ALTERNATIVES EVALUATION”)**
 - Identify and evaluate possible opportunities to reduce CSOs
 - Estimate costs for possible opportunities
 - **THIS STUDY HAS BEEN SUCCESSFULLY COMPLETED BY NHSA**
3. **TO DEVELOP A LTCP TO BE SUBMITTED TO THE NJDEP BY JUNE 1, 2020**
 - Determine what system improvement projects will be needed over the next 30 to 40 years to reduce the frequency, volume and impacts of CSOs.
 - **THIS INITIAL PLAN IS DISCUSSED IN THIS PRESENTATION. THE FINAL DRAFT WILL BE SUBMITTED TO NJDEP ON TIME**

NJDEP CSO Control Mandate

Permit Compliance can be achieved in 1 of 2 ways:

1. CAPTURE A MINIMUM OF 85% OF WET WEATHER VOLUME ANNUALLY

- Based on the comprehensive study of its system, NHSA will opt for this method of meeting NJDEP requirements

or

2. REDUCE ANNUAL OVERFLOWS TO 4 PER YEAR SYSTEM-WIDE

- Given the size of the NHSA system, number of outfalls in three cities, and technical requirements, this option is not feasible

NHSA IS REQUIRED BY THE NJDEP TO REVIEW EACH OPTION

Analysis: 4 Overflows Per Year Option

FOUR (4) OVERFLOWS PER YEAR SYSTEM-WIDE

CURRENT VS MANDATED OVERFLOWS SYSTEM-WIDE

- **Currently**, Adams Street WWTP System: 12 to 60 overflows/year; River Road WWTP System: 48-53
- **Mandated**, 4 overflows/year for entire system

Adams Street WWTP System

Drainage Basin	Outfall	Current Estimated Number of Overflows Per Year
H1	002A	33
H3/H4/HSI	005A	45
H5	006A	16
H6/H7	008A	15
18St. Pump Station	012A	12
W1234	013A	60
W5	015A	24

River Road WWTP System

Drainage Basin	Outfall	Current Estimated Number of Overflows Per Year
JOSO	002A	48
WNY1	005A	53

Technically Viable Solutions and Estimated Costs

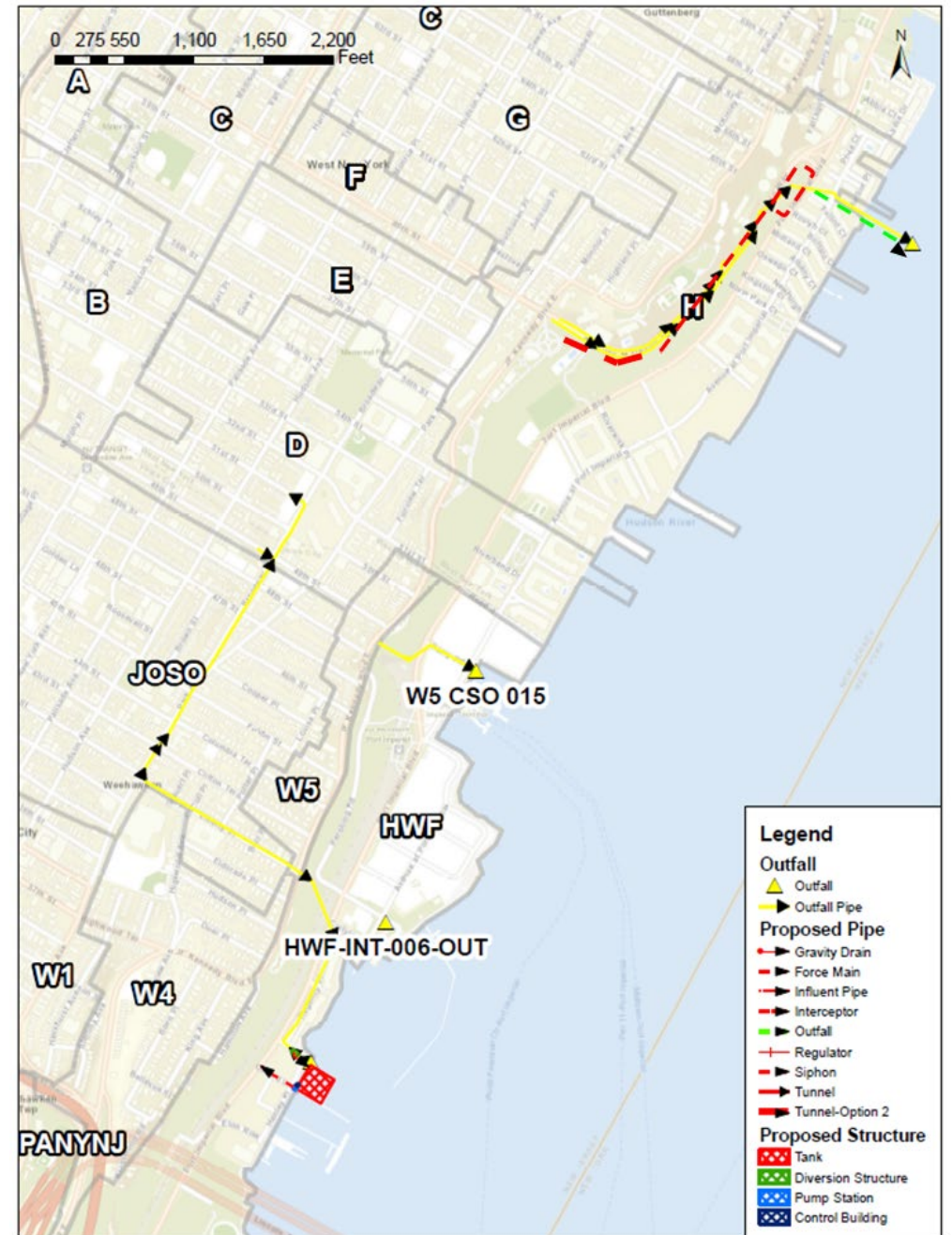
Adams Street WWTP: 4 Overflows Per Year

Drainage Basin	Outfall	Controls for 4 overflows/year	Construction Cost
H1	002A	3.65 MG Underground Storage Tank at Observer Highway and Hudson Street	\$58,000,000
H3/H4/HSI	005A	4.67 MG In-Water Storage Tank	\$49,000,000
H5	006A	2.35 MG In-Water Storage Tank at Maxwell Place	\$47,000,000
H6/H7	008A	1 MG Storage Tank at Northwest Resiliency Park	\$30,000,000
18PS	012A	Increase Capacity of Pump Station at 18 th Street	\$6,000,000
W1234	013A	<ul style="list-style-type: none"> 2 MG In-Water Storage Tank at W1234 Outfall Construct 72" Parallel Siphon Along Park Avenue back to Adams Street WWTP 	\$25,000,000 \$32,000,000
W5	015A	Construct High Level Storm Sewer along Boulevard East	\$5,000,000
Adams Street WWTP	001A	Construct Larger Outfall Increase capacity by 20 MGD with side stream treatment Replace trickling filter with 20 MG storage tank	\$5,000,000 \$13,000,000 \$169,000,000
TOTAL			\$439,000,000

Technically Viable Solutions and Estimated Costs

River Road WWTP: 4 Overflows Per Year

Drainage Basin	Outfall	Controls for 4 overflows/year	Construction Cost
JOSO	002A	4.7 MG In-Water Storage Tank	\$82,000,000
WNY1	001A	-Construct 8.3 MG Tunnel and Treatment on Anthony M. Defino Way -Construct Parallel Outfall	\$171,000,000
TOTAL			\$253,000,000



4 Overflows Option: Pros and Cons

The 4 Overflows Option has only one technically viable approach

- The total estimated cost for that approach is \$692 million (\$439 million for Adam Street WWTP service area and \$253 million for the River Road WWTP service area)
- This approach is also heavily reliant upon the construction of large storage tanks, 4 of which would be underwater just off the waterfront
- It is also highly disruptive to the waterfront communities and their residents

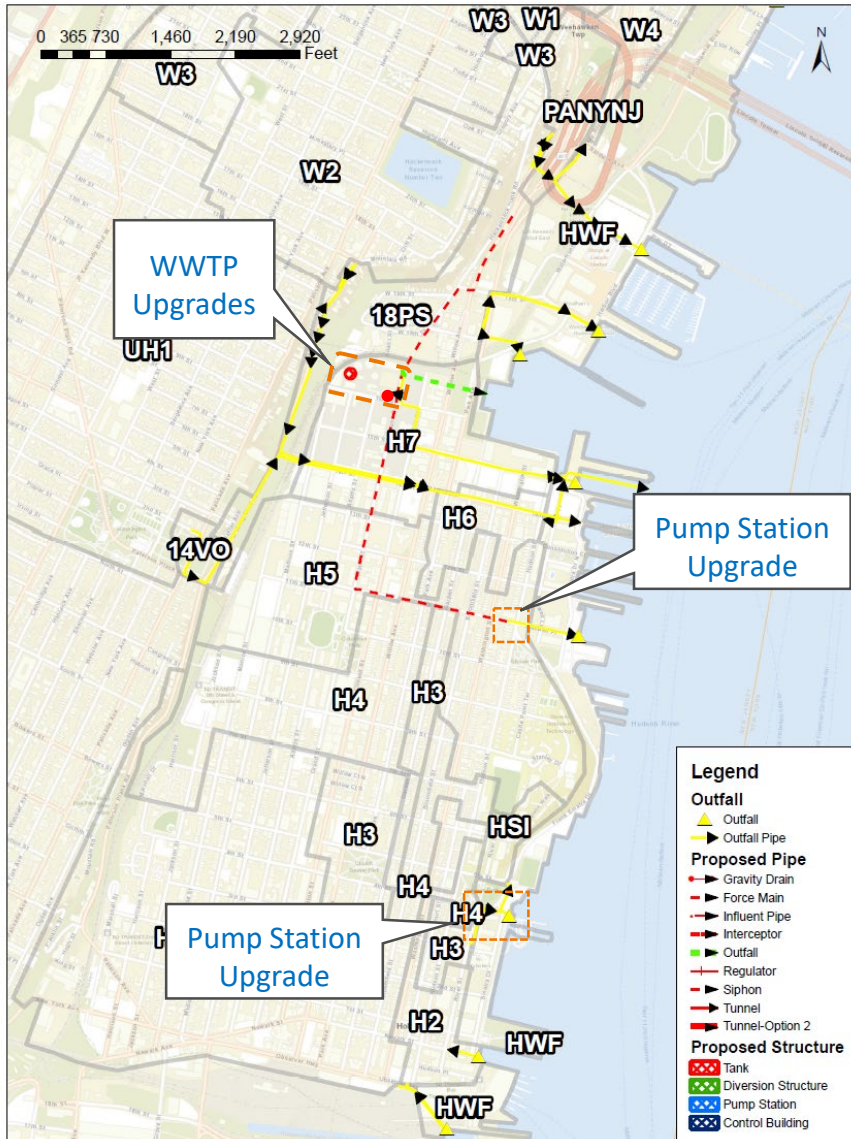
Analysis: 85% Capture Option

85% Capture Options

- Unlike the single approach for the 4 Overflows Option, the 85% Capture Option has several (3) viable technical approaches (scenarios)
- Each scenario or approach includes two elements:
 - A plan for the area serviced by the Adams Street WWTP
 - A plan for the area serviced by the River Road WWTP
- This section shows the three technically viable approaches for each WWTP service area

Technically Viable Solutions and Estimated Costs

Adams Street WWTP: 85% Capture

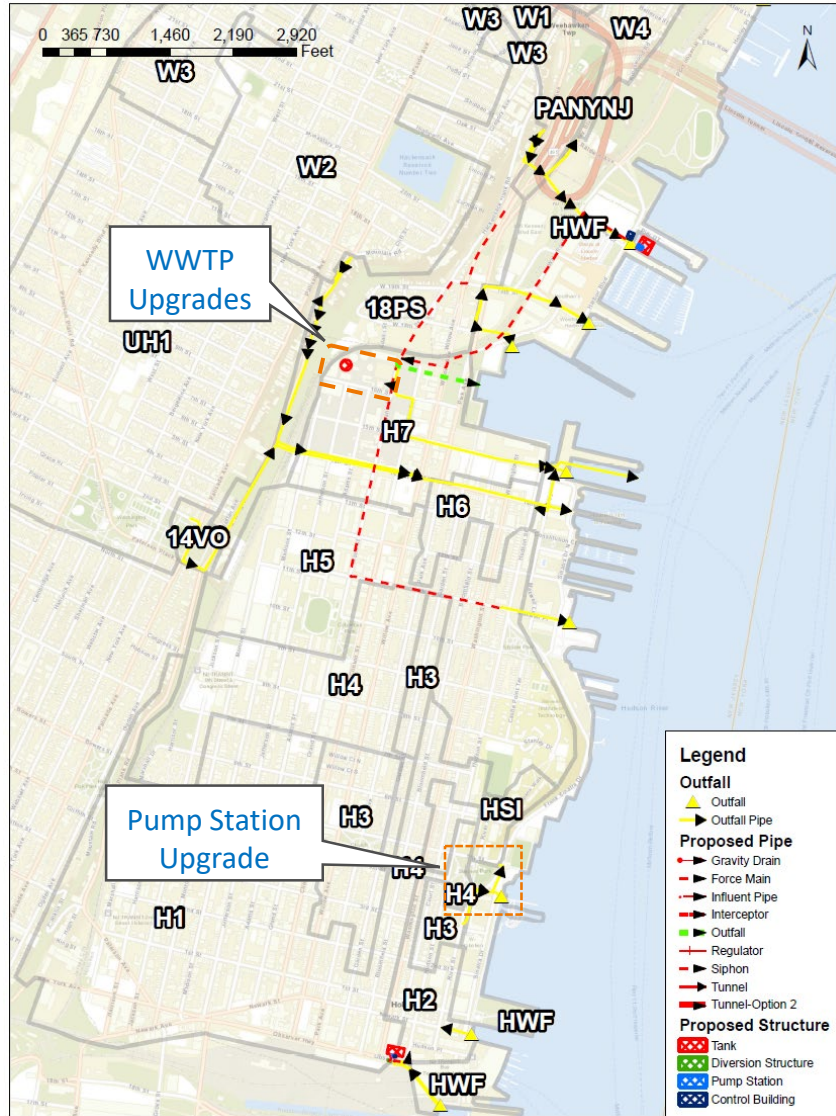


Scenario 1

Collection System and WWTP Controls	Construction Cost
Integration of 1 MG, \$12 million Resiliency Park storage tank into NHTA conveyance system	\$30,000,000
Increase Capacity of 5 th Street Pump Station from 15 mgd to 47 mgd AND Construct Parallel 11 th Street Siphon to divert partial volume from H1 and all volume from H3/H4/HSI	\$35,000,000
Increase Capacity 11th Street Pump Station from 11.6 mgd to 20 mgd	\$24,000,000
Parallel 48" Park Ave Siphon	\$28,000,000
Increase Capacity of WWTP by 20 MGD through Side Stream Treatment	\$13,000,000
8 MG Storage Tank at Adams Street WWTP	\$68,000,000
2 MG Storage Tank at Adams Street WWTP	\$17,000,000
Construct New WWTP Outfall	\$5,000,000
TOTAL	\$220,000,000

Technically Viable Solutions and Estimated Costs

Adams Street WWTP: 85% Capture

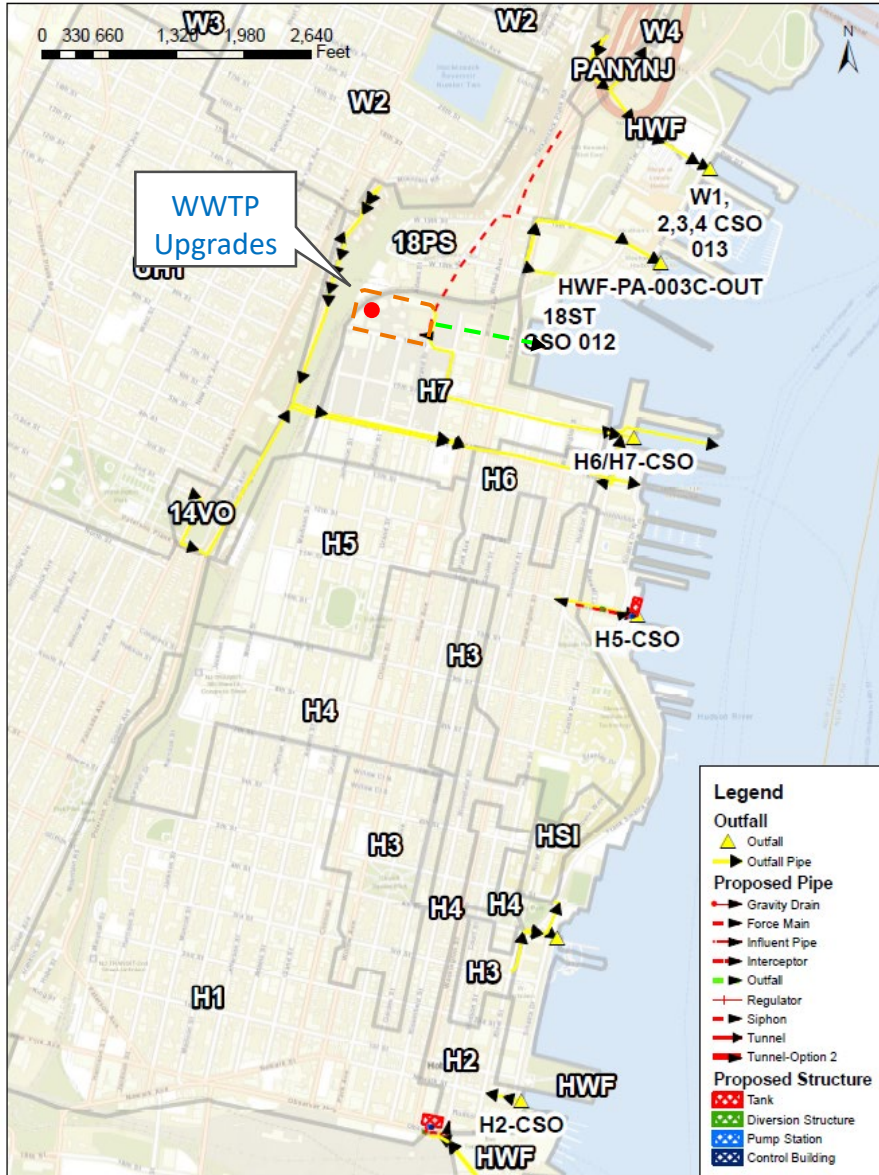


Scenario 2

Collection System and WWTP Controls	Construction Cost
Integration of 1 MG, \$12 million Resiliency Park storage tank into NHTA conveyance system	\$30,000,000
Construct High Level Storm Sewer on Blvd East	\$5,000,000
Divert partial volume from H1 and all volume from H3/H4/HSI with Siphon and Increase Capacity of 5 th Street Pump Station from 15 mgd to 47 mgd	\$35,000,000
1.5 MG Underground Storage at H1 near PATH	\$35,000,000
Parallel 42" Park Ave Siphon	\$28,000,000
Increase Capacity of WWTP by 20 MGD through Side Stream Treatment	\$13,000,000
8 MG Storage Tank at Adams Street WWTP	\$77,000,000
Construct New WWTP Outfall	\$5,000,000
1.3 MG In-Water Storage at W1234	\$26,000,000
TOTAL	\$254,000,000

Technically Viable Solutions and Estimated Costs

Adams Street WWTP: 85% Capture

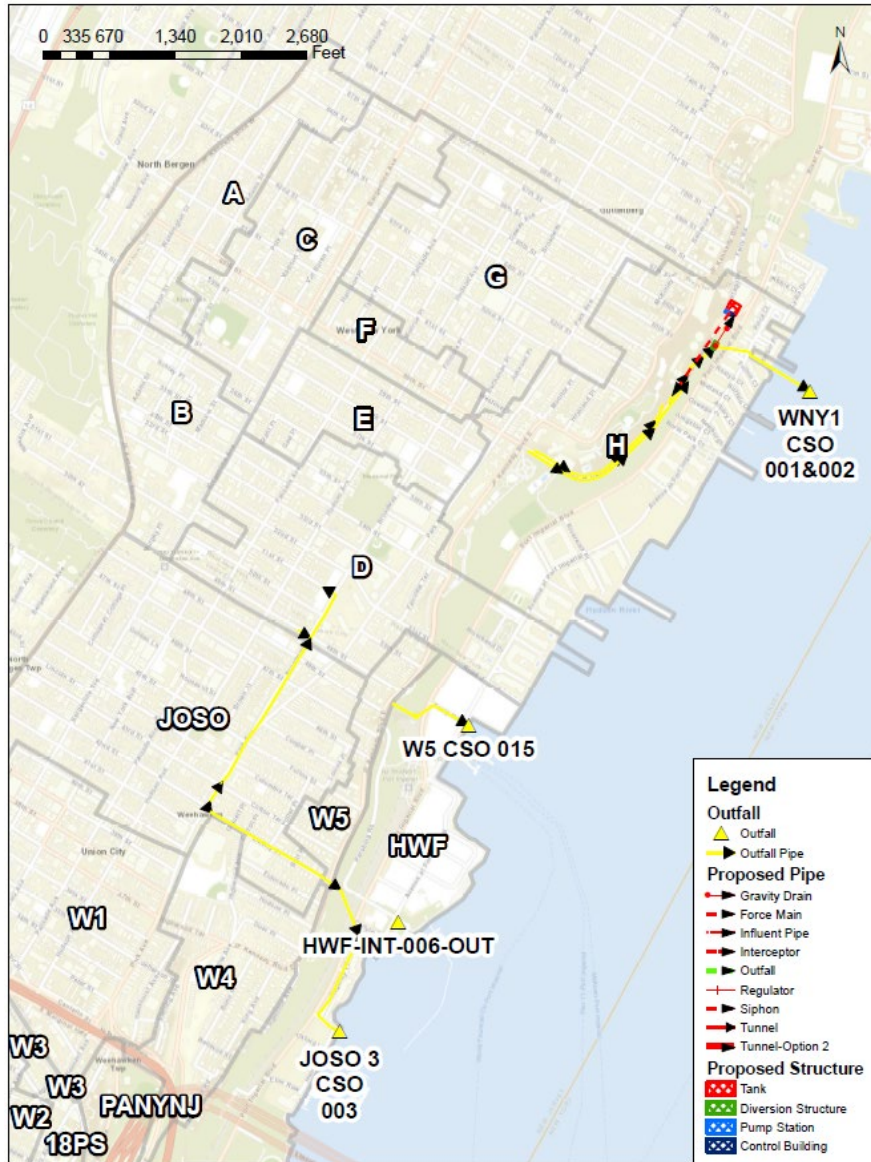


Scenario 3

Collection System and WWTP Controls	Construction Cost
Integration of 1 MG, \$12 million Resiliency Park storage tank into NHTA conveyance system	\$30,000,000
Construct High Level Storm Sewer on Blvd East	\$5,000,000
Construct 7 MG Storage at lot on Observer Highway and Washington Street	\$70,000,000
Construct 4 MG storage tank at Maxwell Place	\$56,000,000
72" Park Ave Siphon	\$32,000,000
Increase Capacity of WWTP by 20 MGD through Side Stream Treatment	\$13,000,000
10 MG Storage Tank at Adams Street WWTP	\$84,000,000
Construct New WWTP Outfall	\$5,000,000
TOTAL	\$295,000,000

Technically Viable Solutions and Cost Estimates

River Road WWTP: 85% Capture

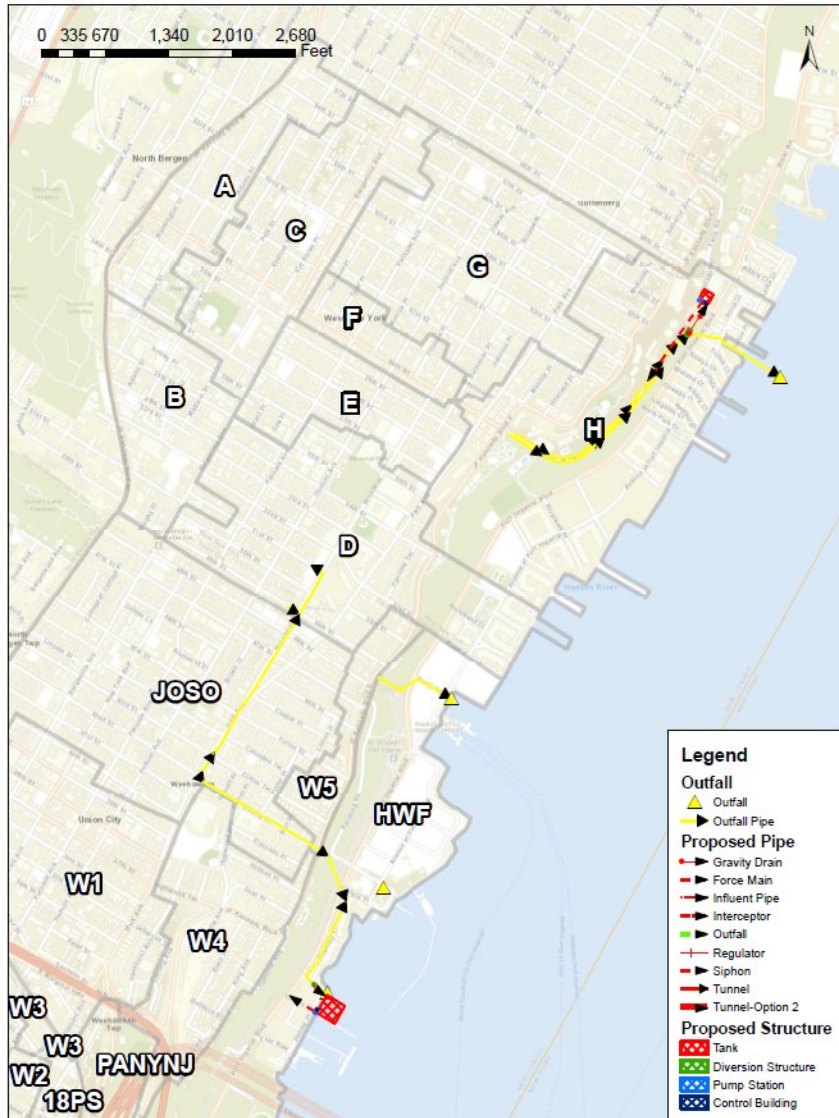


Scenario 1

Collection System and WWTP Controls	Construction Cost
8 MG Storage at lot north of WWTP	\$77,000,000
Raise JOSO Weirs by 1 foot	\$2,000,000
Increase capacity at River Road WWTP to 35 MGD with High Level Treatment	\$13,000,000
TOTAL	\$91,000,000

Technically Viable Solutions and Estimated Costs

River Road WWTP: 85% Capture



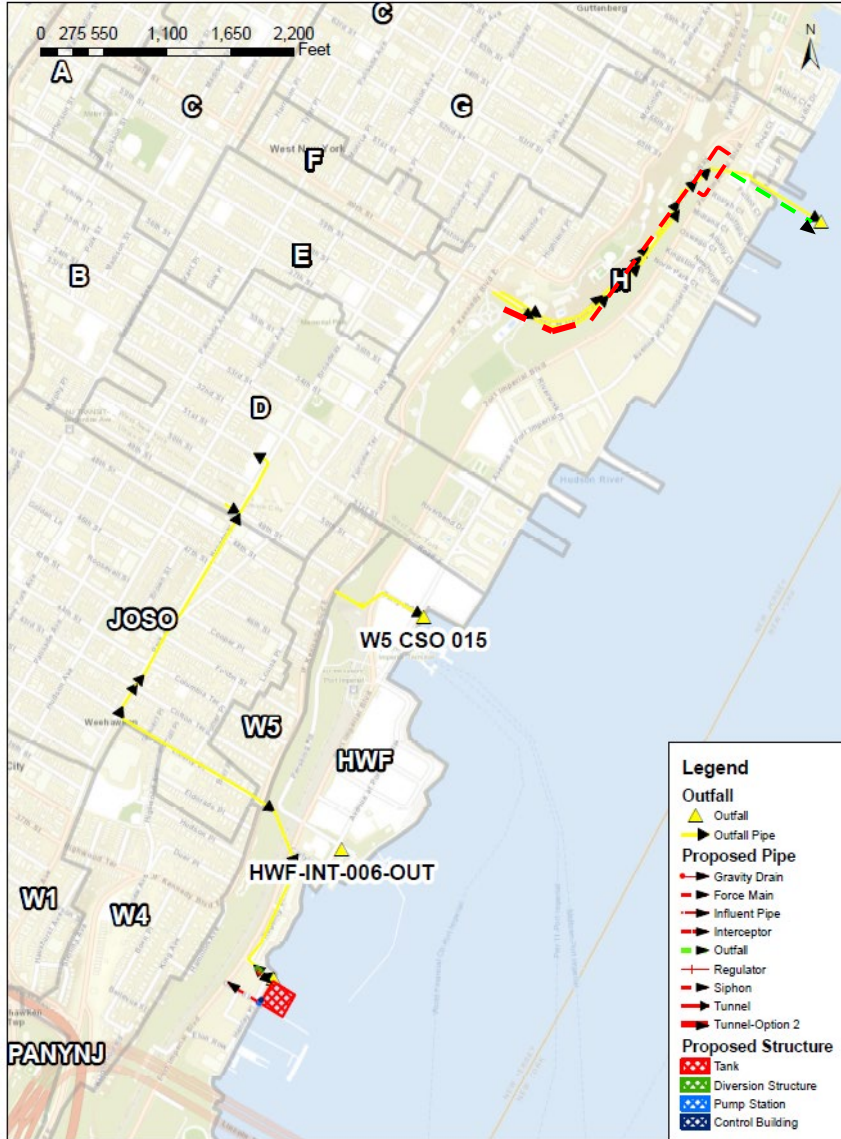
Scenario 2

Collection System and WWTP Controls	Construction Cost
8 MG Storage at lot north of WWTP	\$77,000,000
1.5 MG In-Water Storage at JOSO	\$27,000,000
Increase capacity at River Road WWTP to 35 MGD with High Level Treatment	\$13,000,000
TOTAL	\$117,000,000

Technically Viable Solutions and Estimated Costs

River Road WWTP: 85% Capture

Scenario 3



Collection System Controls	Construction Cost
Linear Storage/Treatment on Anthony M. Defino Way	\$171,450,000
0.8 MG In-Water Storage at JOSO	\$13,500,000
TOTAL	\$184,950,000

NHSA: 4 Overflows/Year OR 85% Capture

Criteria:

- Least disruption to the service area communities
- Comparative technical feasibility
- Relative cost effectiveness

Recommendation:

- 85% Capture: less disruption, technically preferable, and more cost effective
- Scenario 1 for Adams Street WWTP service area
- Scenario 1 for River Road WWTP service area

NHSA LTCP Preliminary Projects, Construction Cost & Construction Time

Collection System and WWTP Controls	Construction Cost	Year
Integration of 1 MG, \$12 million Resiliency Park storage tank into NHSA conveyance system	\$30,000,000	2024-6
Land Purchase for WNY1 Storage Tank		2028
Construct New Adams Street WWTP Outfall	\$5,000,000	2031
Increase Capacity at River Road WWTP to 35 MGD with High Level Treatment	\$13,000,000	2042
Increase Capacity at Adams Street WWTP by 20 MGD through Side Stream Treatment	\$13,000,000	2043
Raise JOSO Weirs by 1 foot	\$2,000,000	2044
Parallel 48" Park Ave Siphon	\$28,000,000	2044
Increase Capacity of 5 th Street Pump Station from 15 mgd to 47 mgd AND Construct Parallel 11 th Street Siphon to divert partial volume from H1 and all volume from H3/H4/HSI	\$35,000,000	2046
Increase Capacity 11th Street Pump Station from 11.6 mgd to 20 mgd	\$24,000,000	2048
Adams Street WWTP 2 MG Storage Tank	\$17,000,000	2050
River Road WWTP 8 MG Storage Tank	\$77,000,000	2054
Adams Street WWTP 8 MG Storage Tank	\$68,000,000	2058
TOTAL	\$311,000,000	

Financing the CSO LTCP

Key Assumptions

- Operating expenses increase at the rate of 2% per year in conformity with the required 2% annual cap
- Connection fees will remain steady at \$3.1 million per year (less than recent receipts)
- Facilities charges increase at 2% per year
- Water consumption declines at 1% per year for the next 5 years, then declines at 0.5% per year thereafter
- A 2% per year increase in revenue from sewer usage based consumption charge

Financing the CSO LTCP

Financing Strategy

- Excluding NJ Infrastructure Bank loans, current NHSA debt is paid in full in 2044
- Between now and 2044, NHSA would use some NJIB loans plus some capital cash to fund a limited number of LTCP projects
- Implementing a limited number of LTCP projects over that period can enable the Authority to live within the 2% per year net increase in revenue
- After 2044 and through 2060, NHSA would borrow additional funds and use capital cash to complete the LTCP, while still maintaining the focus on 2% per year net increase in revenue
- Between now and 2060, NHSA will continue to replace/reline sewers and make other improvements as needed, at a modest pace