



# **Westchester Creek Combined Sewer Overflow Long Term Control Plan**

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Public Meeting #2

Herbert H. Lehman High School

May 7, 2014

# Welcome & Introductions

*Shane Ojar*  
DEP

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## Topic

- 1 Welcome and Introductions
- 2 Long Term Control Plan (LTCP) Process
- 3 Waterbody/Watershed Characteristics
- 4 Water Quality – Current Improvement Projects
- 5 Draft Alternatives for LTCP
- 6 Next Steps
- 7 Discussion and Q&A Session

# Overview of Combined Sewer Overflow Long Term Control Plan Process

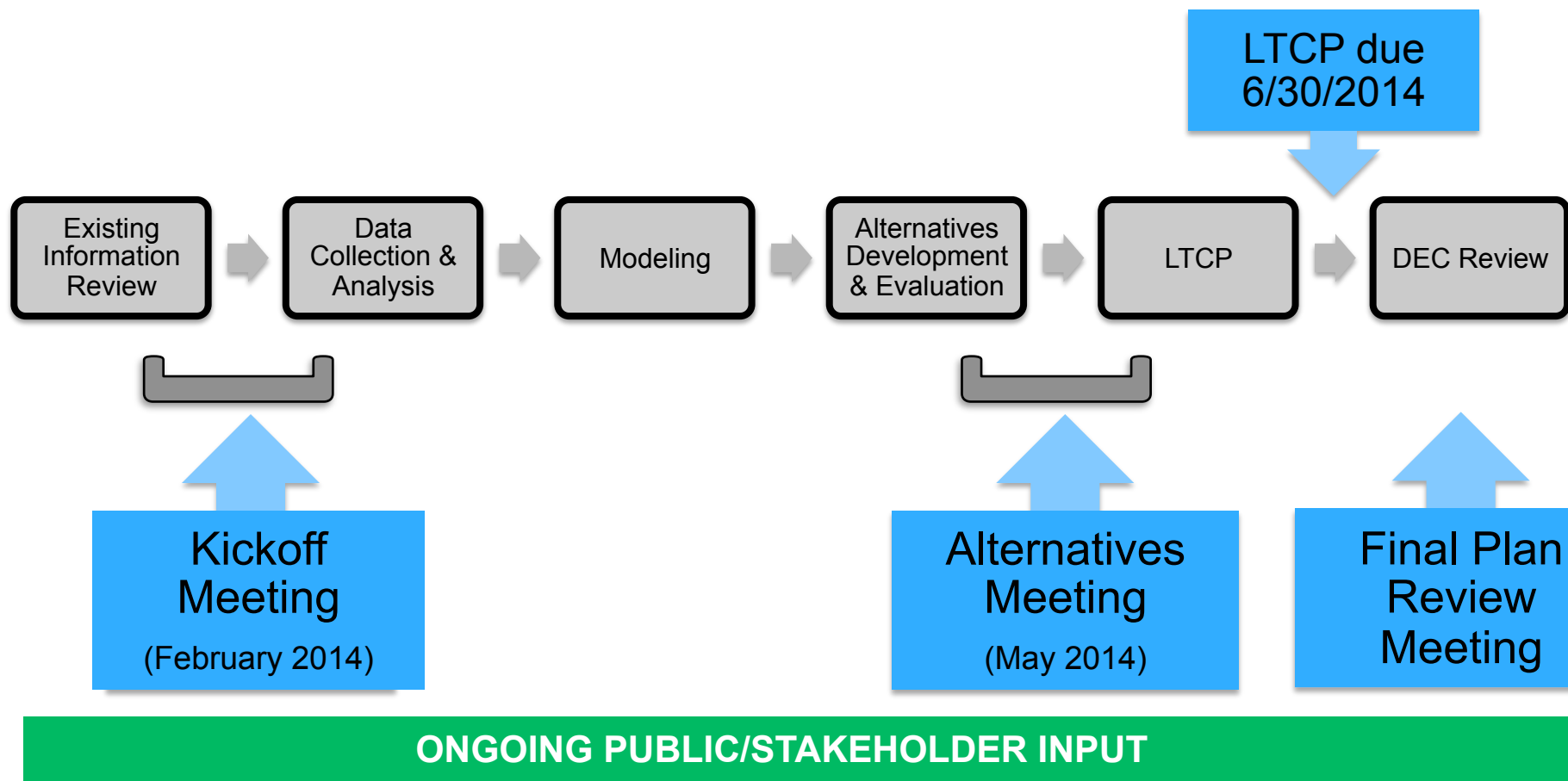
*Lily Lee, P.E.*  
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- What is a Long Term Control Plan?
  - Required under NYC SPDES permits in accordance with the Clean Water Act (CWA) and Federal CSO Control Policy.
  - Comprehensive evaluation of alternatives to reduce CSOs and improve water quality in NYC's waterbodies.
  
- The Long Term Control Plan Process:
  - Assesses feasibility of attaining current water quality standards and fishable/swimmable standards;
  - Builds off Waterbody/Watershed Facility Plans (WWFP);
  - Identifies grey-green\* infrastructure balance for different watersheds; and
  - Requires robust, targeted public process.

\*Green: sustainable pollution reducing practices that also provide other ecosystem services.

\*Grey: traditional practices such as pipes and sewers.

# Public Involvement and LTCP Process



# Waterbody & Watershed Characteristics

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# Current Water Quality Standards



- Best Use Designations
- Saline Surface Water Quality Standards (WQS)
- **Westchester Creek – Class I**
  - Dissolved Oxygen (DO)  $\geq 4.0$  mg/L
  - Fecal Coliform  $\leq$  GM 2,000/100 mL
  - Total Coliform  $\leq$  GM 10,000/100 mL

New York State Saline Surface Water Quality Standards				
Class	Bacteria (when disinfection is practiced)			Dissolved Oxygen
	Total Coliform	Fecal Coliform	Enterococci	
SA	Median $\leq 70$ MPN/100 mL	—	Geometric mean $\leq 35/100$ mL	$> 4.8$ mg/l (daily avg) $\geq 3.0$ mg/l
SB	Monthly median $\leq 2,400/100$ mL 80% $\leq 5,000/100$ mL	Monthly geometric mean $\leq 200/100$ mL	Geometric mean $\leq 35/100$ mL	$> 4.8$ mg/l (daily avg) $\geq 3.0$ mg/l
SC	Monthly median $\leq 2,400/100$ mL 80% $\leq 5,000/100$ mL	Monthly geometric mean $\leq 200/100$ mL	Geometric mean $\leq 35/100$ mL	$> 4.8$ mg/l (daily avg) $\geq 3.0$ mg/l
<b>I</b>	Monthly geometric mean $\leq 10,000/100$ mL	Monthly geometric mean $\leq 2,000/100$ mL	—	$\geq 4.0$ mg/l
SD	—	—	—	$\geq 3.0$ mg/l



# Westchester Creek Waterbody Characteristics

- From Lehman High School to the Whitestone Bridge, including Pugsley Creek to the west
- Classified for secondary contact recreation (I), boating and fishing; similar existing uses
  - 100% attainment of fecal coliform criterion (monthly GM < 2,000 cfu/100 mL)
  - Dissolved oxygen modeling not complete, but minimum winter DO measurement = 7.61 mg/L (WQS is never less than 4 mg/L)



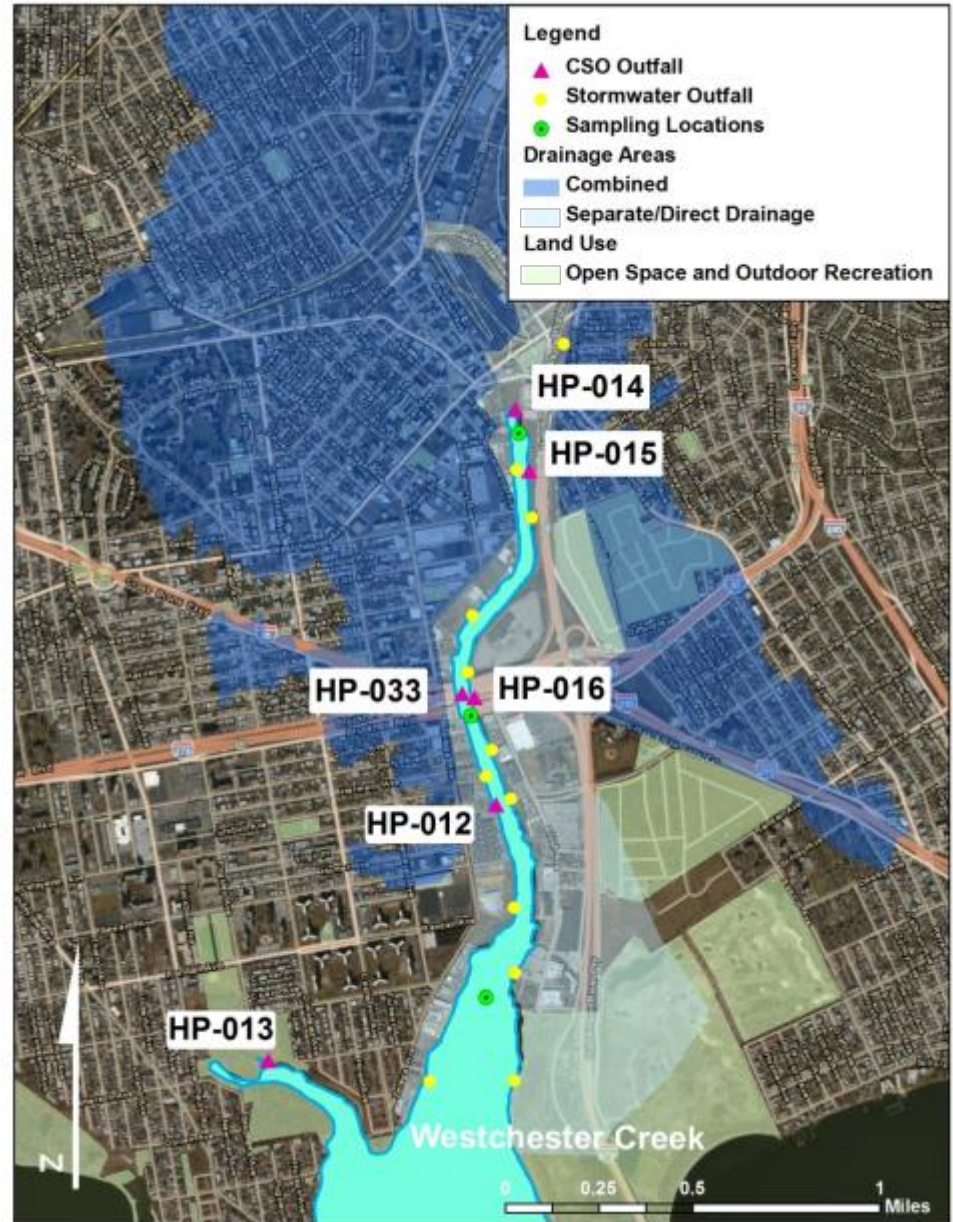
# Westchester Creek Drainage Area Characteristics

## ➤ Wet weather discharges

▲ 6 CSO Outfalls

● 12 Stormwater Outfalls







## ➤ Majority of CSO discharges at head end near Lehman HS (HP-014)



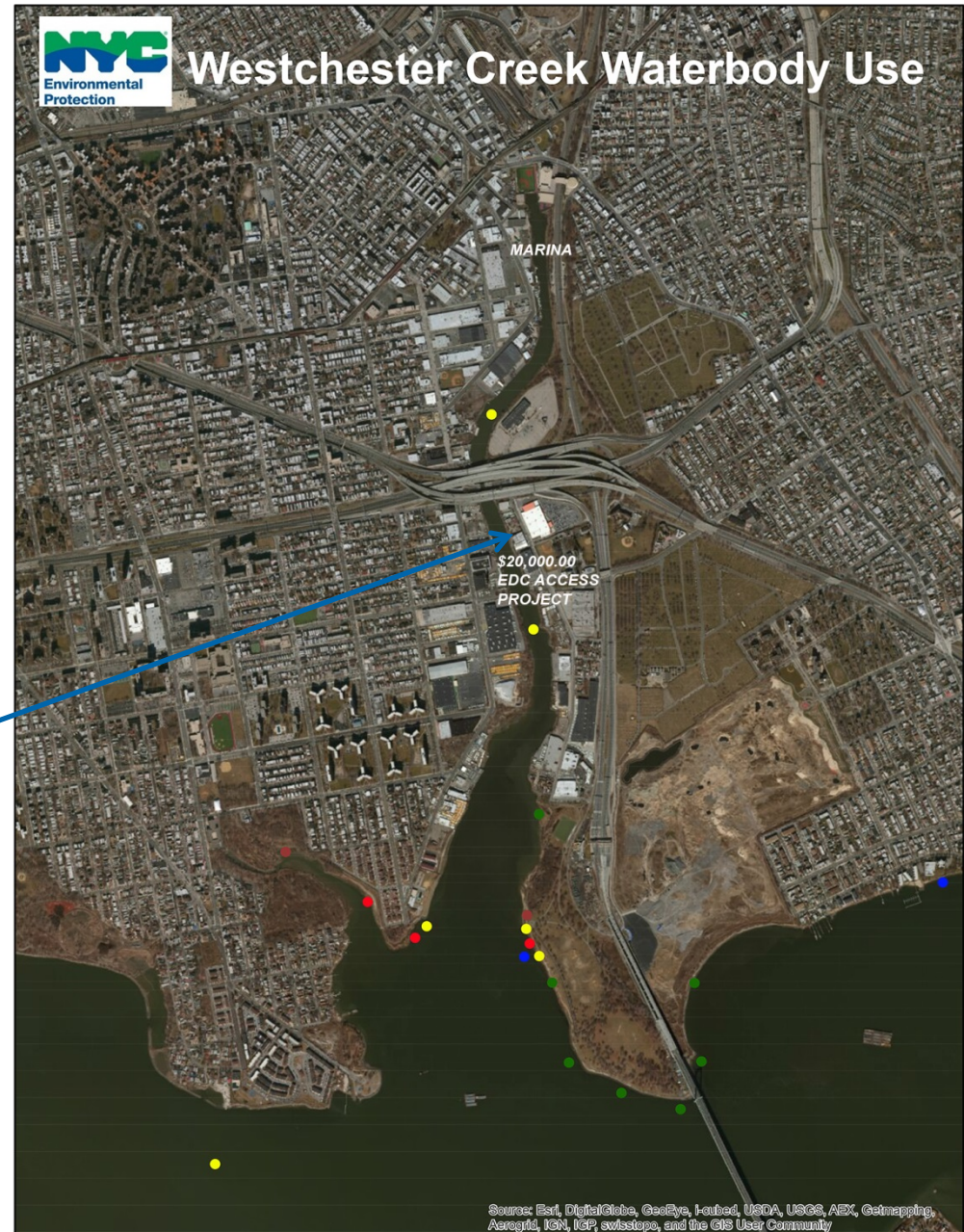


# Westchester Creek Recreational Uses

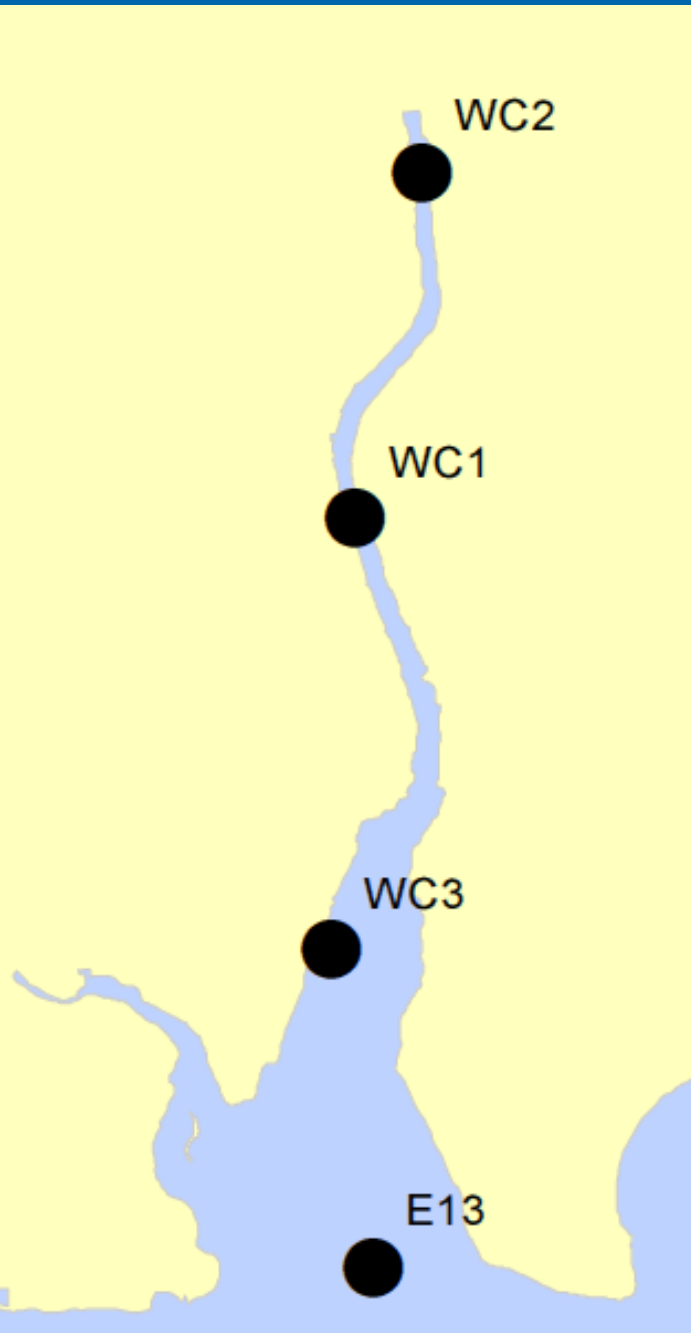
Existing Recreational Uses identified during Public Meeting No. 1:

	Fishing
	Swimming
	Wading
	Kayaking
	Wildlife Observation and Hiking
	Camping

Proposed EDC project identified at Public Meeting No. 1: Access to Creek by Trail for aesthetic purposes



# Westchester Creek: Open Water Sampling Results



- Enhanced Harbor Survey Program Data
  - Weekly sampling from mid-December 2013 through end of April 2014
  - 16 sampling events, 8 during dry weather, 8 during wet weather (64 total samples)
- **Data show FULL ATTAINMENT of current standard (fecal < 2,000)**

Station	FECAL			ENTERO		
	GM (Dry)	GM (Wet)	GM (All)	GM (Dry)	GM (Wet)	GM (All)
WC2	97	559	215	74	460	170
WC1	76	277	145	38	141	73
WC3	9	43	19	3	18	7
E13	5	23	11	4	12	7

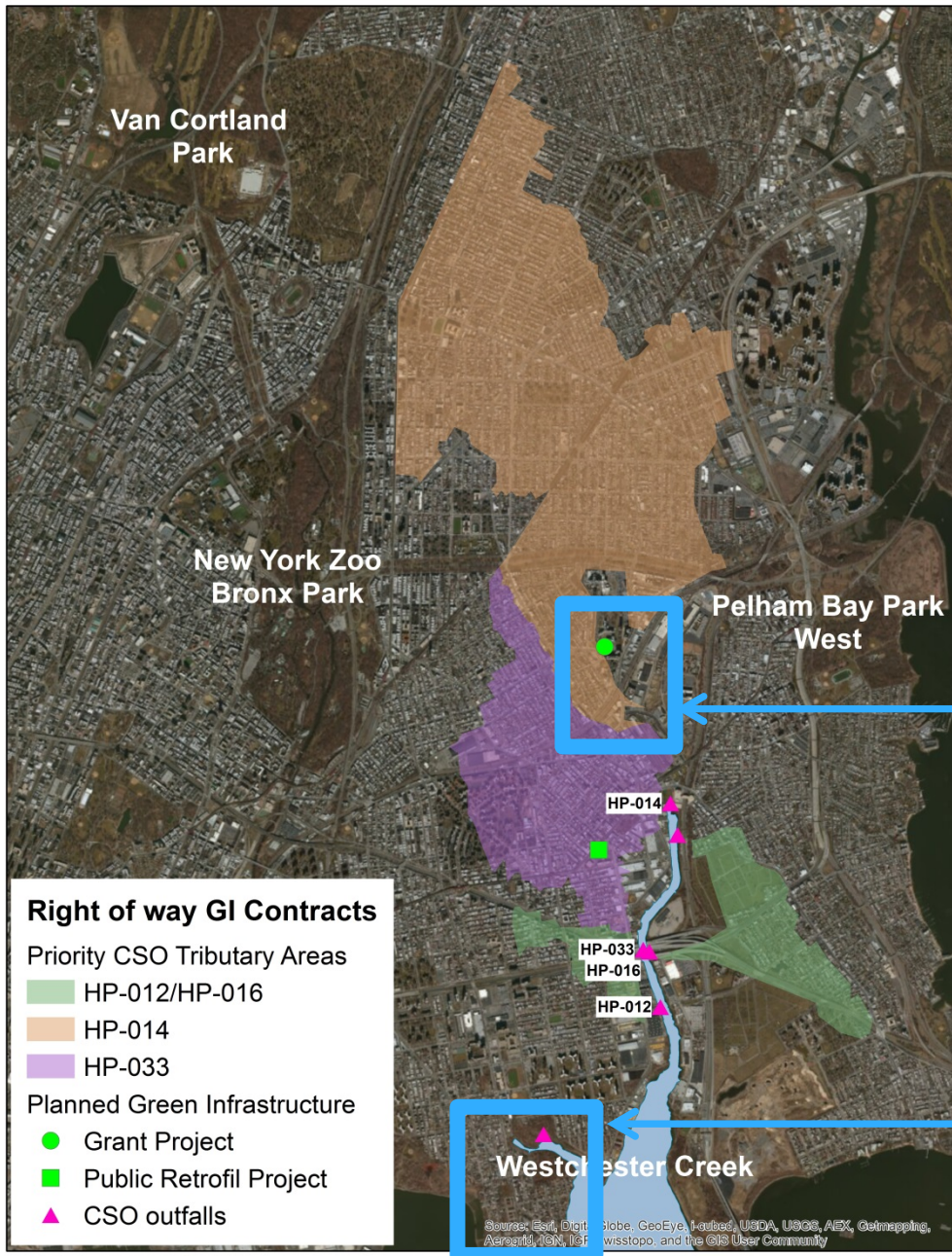
Enterococci data provided to show current conditions.  
No Enterococci Standard applies to Class I water

# **Westchester Creek Water Quality – Current Improvement Projects**

Weir Modification  
Pugsley Parallel Sewer  
Green Infrastructure



# Westchester Creek: Current Improvement Projects



**Green Infrastructure**  
**Cost = \$20 million**

**Weir Modifications to regulators CSO-29A and CSO-29**  
**Cost = \$13.6 million**

**Parallel relief sewer to divert CSO away from Pugsley Creek**  
**Cost = \$66 million**

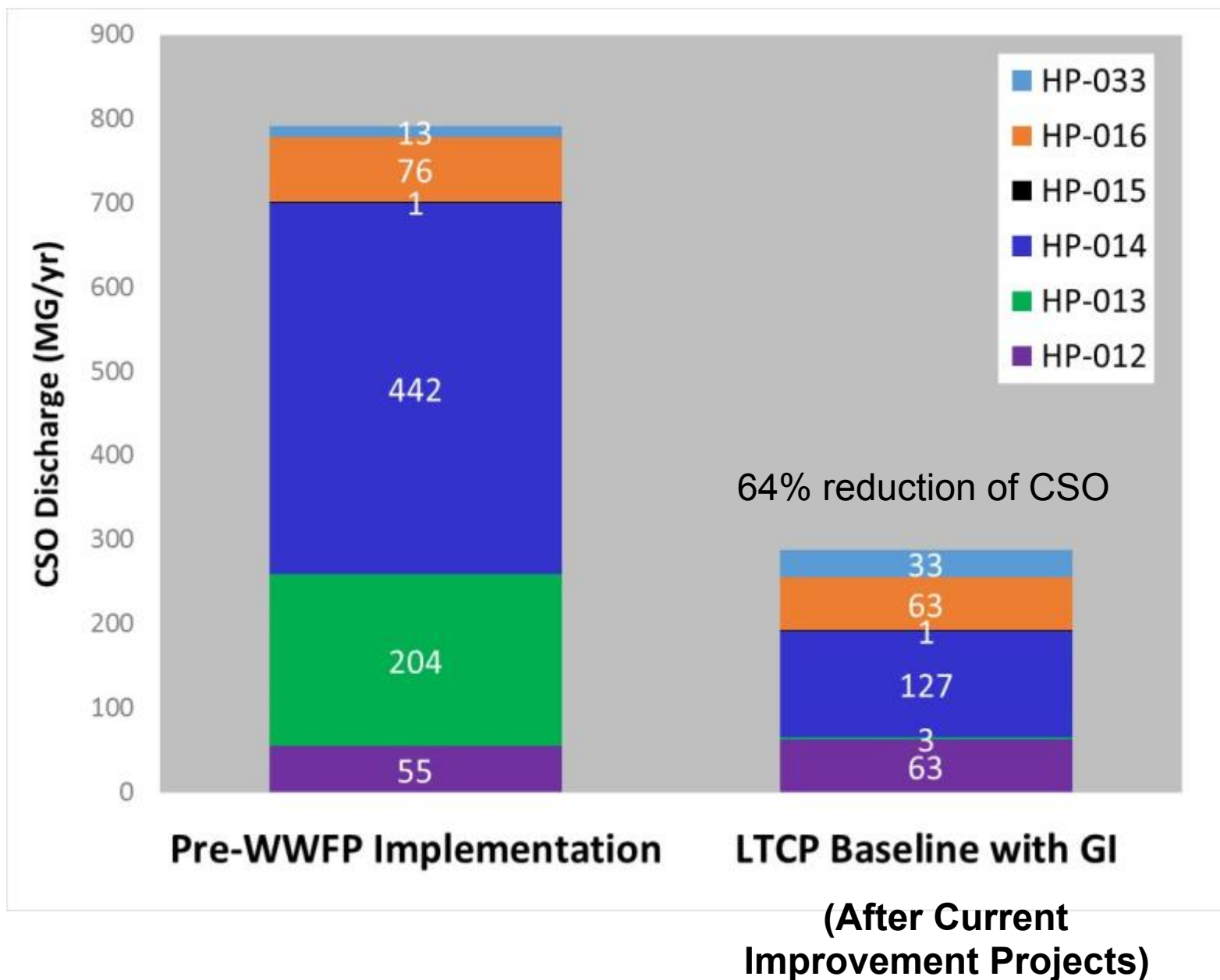
## ❖ Weir Modification/Pugsley Parallel Relief Sewer:

- Construction of these projects to be completed in 2019

## ❖ Green Infrastructure:

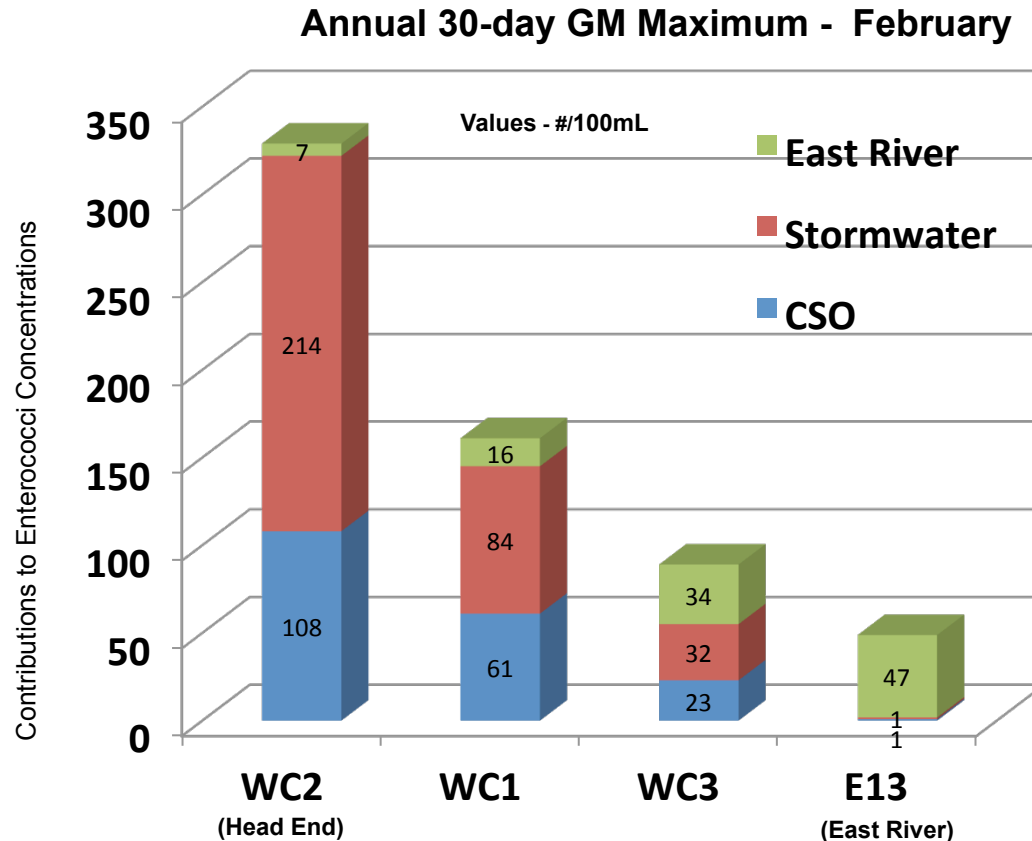
- DEP's partnering agency, the Economic Development Corporation (EDC), will begin the design for right-of-way green infrastructure in Westchester Creek in Summer 2014.
- Area-wide contract allows DEP to:
  - Focus resources on these specific outfall tributary areas
  - Saturate these areas with as much GI as possible
  - Achieve efficiencies in design and construction

# Westchester Creek: Modeling Baseline



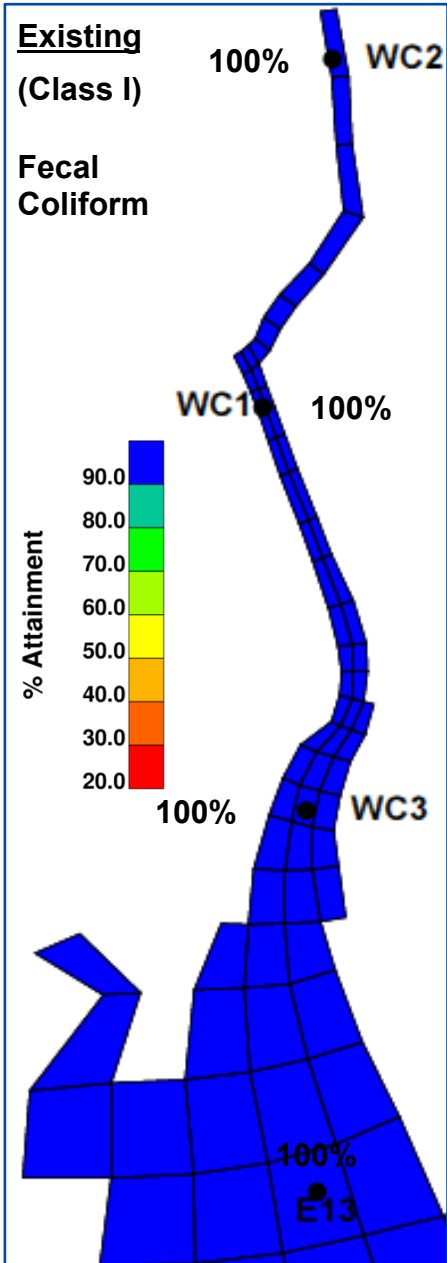


# Westchester Creek Contributing Sources (with Baseline Projects Implemented)



- With implementation of the WWFP and green infrastructure, stormwater contribute a larger portion of Entero than remaining CSOs

# Summary of Water Quality Considerations



❖ **Existing WQS – Secondary Contact (Class I)**

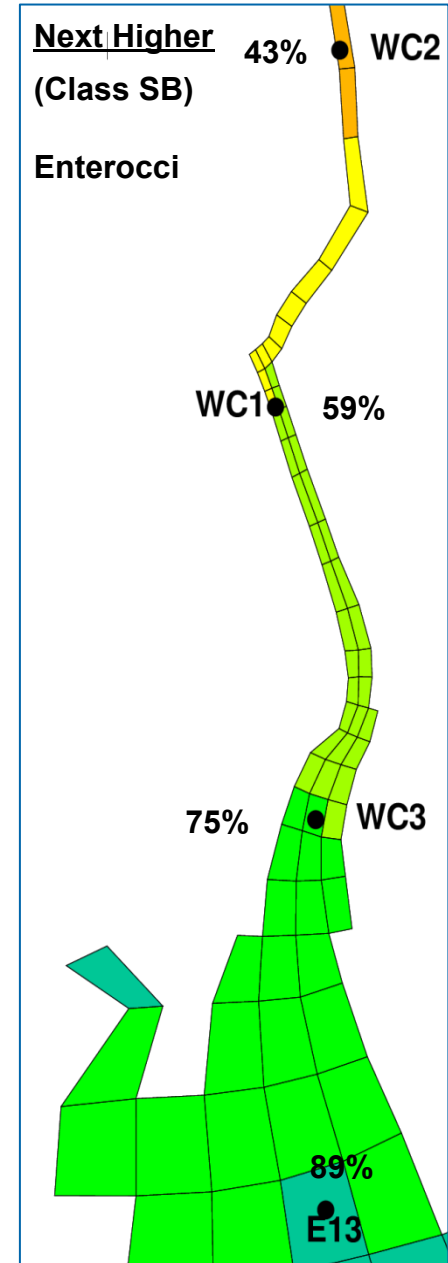
- Attainment with existing planned projects (Baseline)

❖ **Next Higher Use – Primary Contact (Current Class SB)**

- At Baseline: very high to full summer attainment with fecal coliform and entero standards
- At Baseline: annual attainment with fecal coliform or entero standards not reached
- Complete CSO elimination provides some improvements over baseline, but would not result in annual attainment of SB criteria
- East River is not in full attainment, limiting complete attainment in Westchester Creek
- Stormwater inputs into Westchester Creek also limits reaching full SB attainment

❖ **Next Higher Use (Class SB) With Proposed 2015 Modification**

- At Baseline: significant non-attainment
- Complete CSO elimination provides small improvement over baseline



# Alternatives Evaluation for Westchester Creek

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# Westchester Creek: Alternatives Considered

- In-Line Storage at HP-014
- Disinfection at HP-014
- Upsizing Throgs Neck PS
- Storage Tunnels
- Floatables Control
- Additional Green Infrastructure Build-out
- Dredging
- Based on 2002-2011 (10-yr)

BASELINE Attainment (Starting Point)	CURRENT USE (Class I)	NEXT HIGHER USE (Class SB)			
		SUMMER		ANNUAL	
		Fecal	Entero	Fecal	Entero
Head End (WC2)	100%	100%	78%	83%	43%
Bruckner Blvd (WC1)	100%	100%	100%	83%	59%
Mid-Length (WC3)	100%	100%	100%	92%	75%
East River (E13)	100%	100%	100%	100%	89%

Max Potential Increase in Attainment (100% CSO Control)	CURRENT USE (Class I)	NEXT HIGHER USE (Class SB)			
		SUMMER		ANNUAL	
		Fecal	Entero	Fecal	Entero
WC2	-	-	+19%	-	+16%
WC1	-	-	-	+17%	+13%
WC3	-	-	-	+8%	+5%
E13	-	-	-	-	-

Based on 2002-2011 (10-yr)

*Concept: Use existing outfall HP-014 for CSO storage, then pump stored CSO back to the sewers after it rains.*

## ❖ Benefits

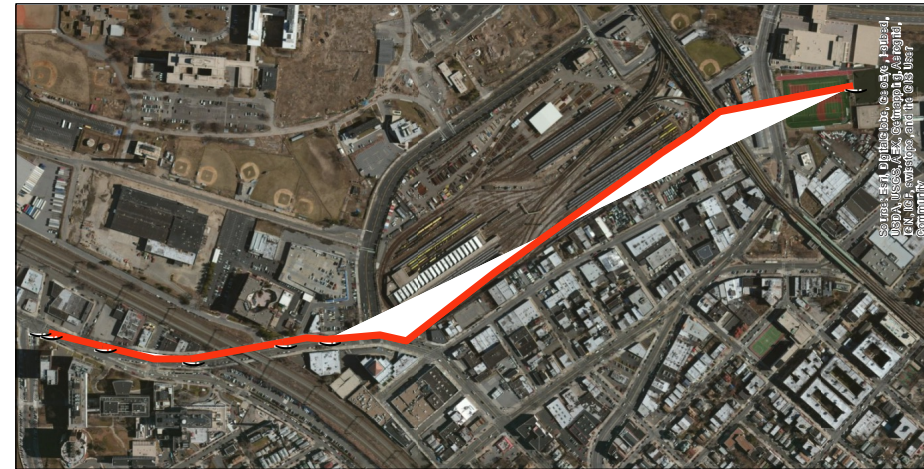
- Reduces CSO by 67 MG (23%)
- Increases attainment of next higher use < 6 percentage points

## ❖ Estimated Cost

- **\$42 Million**

## ❖ Challenges

- Siting, building, and operating a new 5.9 MGD pump station and 1,000 ft. long force main for pump-back near the Lehman HS athletic fields
- Access to pipe beneath NYTA rail yard during construction and 24/7 during operation
- Operation and maintenance



Attainment (2008)	NEXT HIGHER USE (Class SB)			
	SUMMER		ANNUAL	
	Fecal	Entero	Fecal	Entero
WC2	100%	80%	83%	49%
WC1	100%	100%	83%	62%
WC3	100%	100%	92%	77%
E13	100%	100%	100%	89%

Increases in attainment are shown in **GREEN**

*Concept: Add disinfection and dechlorination facilities to HP-014 in-line storage*

## ❖ Benefits

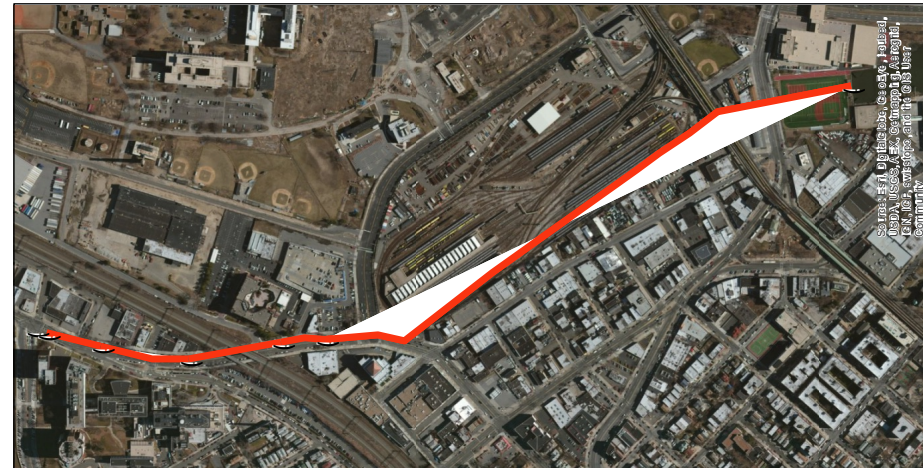
- Reduces CSO load by 44%
- Increases attainment of next higher use about 5 percentage points

## ❖ Estimated Cost

- **\$53 Million**

## ❖ Challenges

- May negatively impact ecosystem
  - Difficult to control chlorine dosing to reduce pathogens and avoid fish kills
- Ongoing operation and maintenance
- Chemical delivery
- Siting would be a challenge



Attainment (2008)	NEXT HIGHER USE (Class SB)			
	SUMMER		ANNUAL	
	Fecal	Entero	Fecal	Entero
WC2	100%	85%	83%	52%
WC1	100%	100%	83%	63%
WC3	100%	100%	100%	77%
E13	100%	100%	100%	89%

Increases in attainment are shown in **GREEN**



*Concept: Expand the existing 37.5 MGD pump station and relocate the discharge away from Westchester Creek*

## ❖ Benefits

- Reduces CSO volume by 19%
- Increases attainment of next higher use by no more than 3 percentage points

## ❖ Costs

- **\$48 - \$215 Million**

## ❖ Challenges

- Requires new building and a 3.13-mi 48-in force main
- Disruption of local roadways during construction
- CSO partially relocated to other waterbodies



Attainment (2008)	NEXT HIGHER USE (Class SB)			
	SUMMER		ANNUAL	
	Fecal	Enterococci	Fecal	Enterococci
WC2	100%	79%	83%	46%
WC1	100%	100%	83%	60%
WC3	100%	100%	92%	76%
E13	100%	100%	100%	89%

Increases in attainment are shown in **GREEN**

# CSO Storage Tunnel Options

*Concept: Evaluate a range of alternatives up to 100% CSO capture per EPA policy requirements. Given volume requirements, use storage tunnels.*

## ❖ Benefits

- Evaluated 44%, 77%, 99%, and 100% reductions
- Maximum WQ Improvement

## ❖ Costs

- **From \$500 to over \$700 Million**

## ❖ Challenges

- Significant long-term construction disturbance
- Drop shafts must be close to outfalls
- Pump station required to drain tunnel within 24 hours
- Operation and maintenance

TUNNEL OPTIONS	HP-014	HP-014 HP-015 HP-016 HP-033	All but HP-013	All six outfalls
CSO Reduction	<b>44%</b>	<b>77%</b>	<b>99%</b>	<b>100%</b>
Tunnel Length (ft)	<b>2,600</b>	<b>4,500</b>	<b>6,000</b>	<b>12,600</b>
Tunnel Diameter (ft)	<b>40</b>	<b>40</b>	<b>38</b>	<b>26</b>
Cost (\$M)	<b>\$509</b>	<b>\$662</b>	<b>\$754</b>	<b>\$731</b>

Attainment (2008)	NEXT HIGHER USE (Class SB)			
	SUMMER		ANNUAL	
	Fecal	Entero	Fecal	Entero
WC2	<b>100%</b>	<b>97%</b>	<b>83%</b>	<b>59%</b>
WC1	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>72%</b>
WC3	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>80%</b>
E13	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>89%</b>

Increases in attainment are shown in **GREEN**



*Concept: Where no CSO reduction is possible, consider retrofitting floatables control on outfall to reduce CSO impact to waterbody*

## ❖ Benefits

- Reduces CSO floatables load
- May improve waterbody aesthetics

## ❖ Costs

- ~\$10 Million per outfall

## ❖ Challenges

- Not a CSO reduction strategy
- Does not increase WQS attainment
- Siting would be a challenge
- Operation and maintenance



**NO CHANGES IN ATTAINMENT FROM BASELINE**

*Concept: Construct additional ROW bioswales beyond Baseline by 10% to reduce inflows to the combined sewers*

## ❖ Benefits

- Reduces CSO by 42 MG (14%)
- Increases attainment of next higher use by < 4 percentage points

## ❖ Estimated Cost

- **\$20 Million**

## ❖ Challenges

- Already at 14% GI target in this area for Baseline; finding more sites may be difficult
- Shallow bedrock in drainage area may limit GI effectiveness



Attainment (2008)	NEXT HIGHER USE (Class SB)			
	SUMMER		ANNUAL	
	Fecal	Entero	Fecal	Entero
WC2	100%	79%	83%	47%
WC1	100%	100%	83%	61%
WC3	100%	100%	92%	76%
E13	100%	100%	100%	89%

Increases in attainment are shown in **GREEN**

*Concept: where CSO sediment mounds are visible and above low tide, remove to 3 ft below MLLW*

## ❖ Benefits

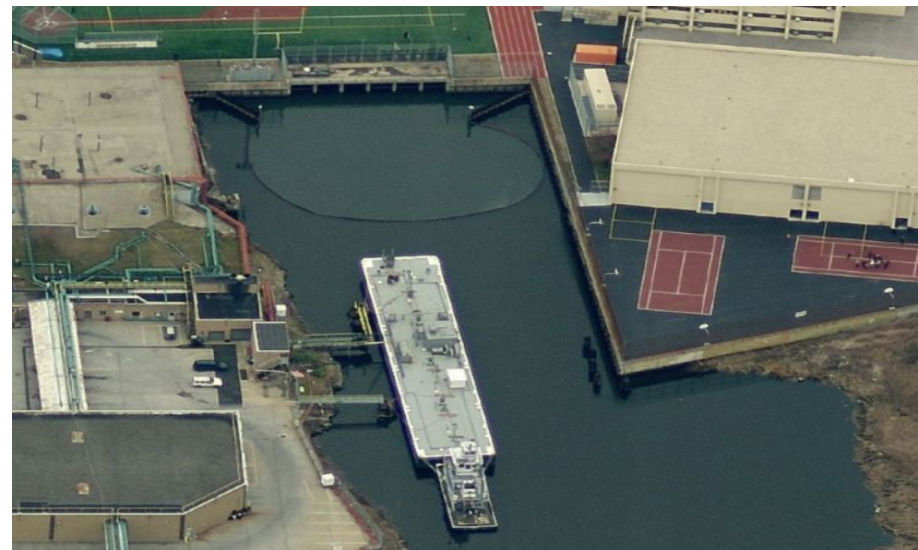
- Aesthetics
- May improve navigation

## ❖ Costs

- **Unknown at this time**

## ❖ Challenges

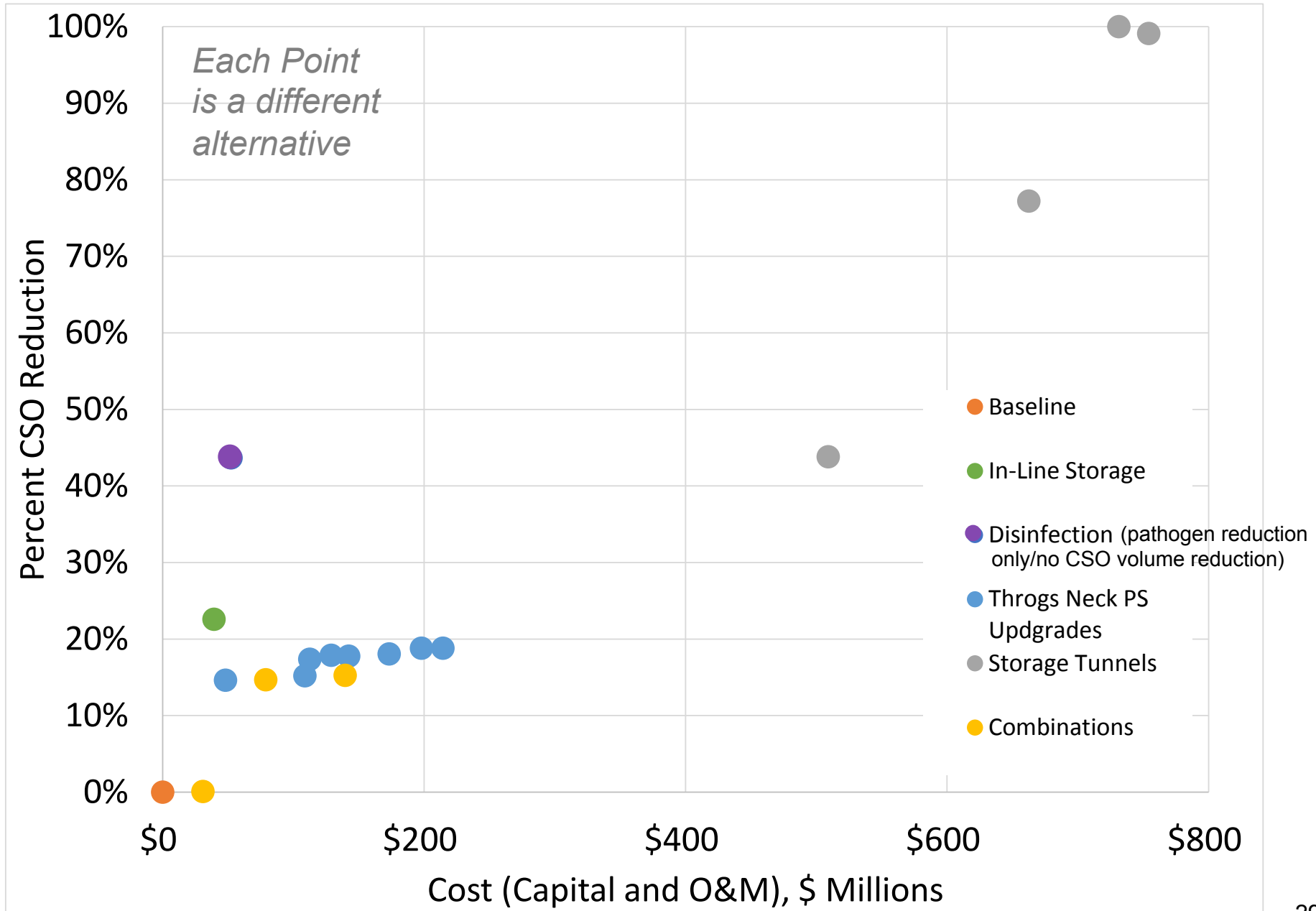
- No basis for environmental dredging per DEP guidelines
- Navigational dredging the responsibility of USACE
- Dredging will not reduce CSO discharges



**NO CHANGES IN ATTAINMENT FROM BASELINE**

- In-Line Storage at HP-014 (\$42 million)
- Disinfection (\$53 million)
- Upsizing the Throgs Neck PS (\$50 - \$220 million)
- Storage Tank/Tunnel (\$100 - 750 million)
- Floatables Control (\$10 million)
- Additional Green Infrastructure (\$20 million)
- Dredging (N/A)

# Percent CSO Reduction vs Cost



# Next Steps

*Shane Ojar*  
DEP

- ❖ Public comments on alternatives due 5/21/2014
- ❖ Comments can be submitted to:
  - New York City DEP at: [ltcp@dep.nyc.gov](mailto:ltcp@dep.nyc.gov)
- ❖ Westchester Creek LTCP Public Meeting #3
  - Objective & Topics: Present and review proposed Draft LTCP

- Visit the informational tables tonight for handouts and poster boards with detailed information
  
- Go to [www.nyc.gov/dep/ltcp](http://www.nyc.gov/dep/ltcp) to access:
  - LTCP Public Participation Plan
  - Presentation, handouts and poster boards from this meeting
  - Links to Waterbody/Watershed Facility Plans
  - CSO Order including LTCP Goal Statement
  - NYC's Green Infrastructure Plan
  - Green Infrastructure Pilots 2011 and 2012 Monitoring Results
  - Real-time waterbody advisories
  - Upcoming meeting announcements
  - Other LTCP updates



# Discussion and Q&A Session