Citywide/Open Waters
CSO Long Term Control Plan

Public Meeting
Harlem River/Tibbetts Brook

October 2, 2019
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<th>Speaker</th>
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<td>Mikelle Adgate</td>
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<td>Summary of Water Quality &amp; Existing Grey Projects</td>
<td>Keith Mahoney</td>
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<td>Overview of Demand Management and Tibbetts Brook Daylighting Projects</td>
<td>Pinar Balci</td>
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<td>Mikelle Adgate</td>
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Welcome & Introduction

Mikelle Adgate
Senior Policy Advisor
DEP
What is a Combined Sewer Overflow (CSO)?

- NYC’s sewer system is approximately 60% combined, which means it is used to **convey both sanitary and storm flows**.

- 65% to 90% of **combined** sanitary & storm flow is captured at wastewater resource recovery facilities (WRRF).

- When the sewer system is at full capacity, a diluted mixture of rain water and sewage may be released into local waterways. This is called a combined sewer overflow (CSO).
### What is a LTCP and CSO Consent Order?

<table>
<thead>
<tr>
<th><strong>Long Term Control Plan (LTCP)</strong></th>
<th>identifies appropriate CSO controls to achieve applicable water quality standards consistent with the Federal CSO Policy and Clean Water Act</th>
</tr>
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<tr>
<td><strong>CSO Consent Order</strong></td>
<td>an agreement between NYC and DEC that settles past legal disputes without prolonged litigation</td>
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<td></td>
<td>DEC requires DEP to develop LTCPs and mitigate CSOs</td>
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Citywide/Open Waters LTCP

- Waterbody-specific CSO evaluation of Open Waters:
  - Harlem River
  - Upper and Lower New York Bay
  - East River/Long Island Sound
  - Hudson River
  - Arthur Kill and Kill Van Kull

- Citywide/Open Waters LTCP will be submitted to DEC in **March 2020**
Summary of Water Quality & Existing Grey Projects

Keith Mahoney, PE
Senior Director
DEP
Harlem River – Fecal Coliform

Sampling Results at a Glance

Sampling Details

<table>
<thead>
<tr>
<th>Sampling Period (2016)</th>
<th># Locations</th>
<th># Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTCP Apr 27 – Jun 9</td>
<td>6</td>
<td>8 38</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HSM Jan 4 – Nov 9</td>
<td>1</td>
<td>12 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM Mar 8 – Oct 19</td>
<td>4</td>
<td>3 1</td>
</tr>
</tbody>
</table>

Note: Wet weather sampling conducted when Wards Island WRRF was not at 2xDDWF wet weather capacity due to construction.

*Class I Fecal Coliform Criteria: Monthly GM ≤ 200 cfu/100mL
**Sampling Results at a Glance**

### Sampling Details

<table>
<thead>
<tr>
<th>Location</th>
<th>Sampling Period (2016)</th>
<th># Locations</th>
<th># Samples Dry</th>
<th># Samples Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTCP</td>
<td>Apr 27 – Jun 9 Nov 16 – Nov 19</td>
<td>6</td>
<td>8</td>
<td>38</td>
</tr>
<tr>
<td>HSM</td>
<td>Jan 4 – Nov 9</td>
<td>1</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Riverkeeper</td>
<td>May 1 – Oct 31</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Citizen</td>
<td>May 1 – Oct 31</td>
<td>5</td>
<td>7</td>
<td>13</td>
</tr>
</tbody>
</table>

Note: Wet weather sampling conducted when Wards Island WRRF was not at 2xDDWF wet weather capacity due to construction.

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**Enterococci, cfu/100mL**

- **Enterococcus Criteria:** 30-day GM ≤ 35 cfu/100mL (Not an applicable standard for Class I Waterbodies)

- **HAR-1/C-Swindler’s Cove:** 10
- **HAR-2:** 12
- **HAR-3/C-Muscota Marsh:** 14
- **HAR-4:** 12
- **H3:** 7
- **HAR-5/R-Washington Ave Bridge:** 8
- **HAR-6:** 7

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**Scale (cfu/100 mL):**

- 0–30
- 31–50
- 51–100
- >100

**Dry Weather Geomean**

- **HAR-1/C-Swindler’s Cove:** 38
- **HAR-2:** 52
- **HAR-3/C-Muscota Marsh:** 55
- **HAR-4:** 51
- **H3:** 60
- **HAR-5/R-Washington Ave Bridge:** 30
- **HAR-6:** 26

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**Legend:**

- Orange: Dry Weather Data
- Purple: Wet Weather Data
- Dry Weather Geomean
- Wet Weather Geomean
Harlem River – Dissolved Oxygen

Sampling Results at a Glance

Sampling Details

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<th>Sampling Period (2016)</th>
<th># Locations</th>
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<td>LTCP</td>
<td>Apr 27 – Jun 9 Nov 16 – Nov 19</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>HSM</td>
<td>Jan 4 – Nov 9</td>
<td>1</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: Wet weather sampling conducted when Wards Island WRRF was not at 2xDDWF wet weather capacity due to construction.

*Class I Dissolved Oxygen Criteria: ≥4.0mg/L

Dissolved Oxygen, mg/L

Dry Weather Data
Wet Weather Data
Dry Weather Geomean
Wet Weather Geomean
Baseline Grey Infrastructure Projects

Wards Island WWTP Upgrades

- **$13.7 M** Replace Bar Screens at Bronx and Manhattan Grit Chambers  
  [Completed January 2017]

- **$5.3 M** Reconstruction of Six (6) Main Sewage Pumps  
  [Completed August 2019]

  - During construction wet weather flow capacity was reduced
  - Full wet weather flow capacity was restored with the completion of this work
Overview of Demand Management and Tibbetts Brook Daylighting Projects

Pinar Balci, PhD
Assistant Commissioner
DEP
Harlem River Baseline Green Infrastructure Projects

- Public Property Retrofits
- Private Property Incentives
- Stormwater Rules
- Demand Management Project
- Tibbetts Brook Daylighting Project

GI Commitment is to capture 1.67B gallons of CSO Citywide by 2030
Central Park Jackie Onassis Reservoir Recirculation Project

- 0.83 MGD of potable water savings
- CSO reduction of about 4 MG/yr to the East River
# Tibbetts Brook – Proposed Alternatives

## Summary of Alternatives

### CSO Reduction

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>CSO Reduction (MG/year)</th>
<th>Cost Estimate ($M)</th>
<th>CSO Reduced ($/gal)</th>
<th>Need Siphons</th>
<th>Maintenance Requirements</th>
<th>Safety Requirements</th>
<th>Constructability Concerns</th>
<th>Open Channel Flow (cfs)</th>
<th>Channel Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Base Flow Daylighting w/ Van Cortlandt Lake Improvements</td>
<td>156</td>
<td>202</td>
<td>0.35</td>
<td>0.30</td>
<td>No</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Up to 14</td>
</tr>
<tr>
<td>2</td>
<td>Base Flow Daylighting w/ Van Cortlandt Lake Improvements and Additional Storm Flow</td>
<td>228</td>
<td>63</td>
<td>0.28</td>
<td>No</td>
<td>Low</td>
<td>Low/Moderate</td>
<td>Medium</td>
<td>Up to 31</td>
<td><img src="image2.png" alt="Channel Dimensions" /></td>
</tr>
<tr>
<td>3</td>
<td>Base Flow Daylighting with Parallel Pipe for Full Flow</td>
<td>282</td>
<td>90</td>
<td>0.32</td>
<td>Yes</td>
<td>High</td>
<td>Low</td>
<td>Severe</td>
<td>Up to 14 (203 in parallel pipes)</td>
<td><img src="image3.png" alt="Channel Dimensions" /></td>
</tr>
<tr>
<td>4</td>
<td>Full Flow Daylighting</td>
<td>282</td>
<td>N/A</td>
<td>N/A</td>
<td>Yes</td>
<td>High</td>
<td>High</td>
<td>Very Severe</td>
<td>Up to 217</td>
<td><img src="image4.png" alt="Channel Dimensions" /></td>
</tr>
</tbody>
</table>

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The proposed alternative open channel would sit above the sewer crossings and be designed for a baseflow of 31 cfs (16.7 MGD). Greenway paths would run parallel to the open channel.

Cost estimate: $63 million
Tibbetts Brook – Proposed Alternative
The proposed alternative would divert flow from a tunnel which connects an existing weir structure in Van Cortlandt Lake to the Broadway Sewer.
Tibbetts Brook – Potential Tie-in Location

The new sewer will tie into the tide gate chamber of Regulator 67, downstream of the tide gates and discharge through outfall WI-056.
Proposed Improvements at Van Cortlandt Lake

- Modify the downstream overflow weir to include a low flow orifice, which would create a foot of dynamic storage at the top of the lake (volume of 13 acre-feet)
- Construct new weir structure between Upper Basin and Van Cortlandt Lake to maintain existing water surface elevation of Upper Basin and protect high-value wetland
Advantages of Improvements at Van Cortlandt Lake

- Minimal land disturbance (excavation or fill) would be required – primarily modifications to existing structures
- Creating dynamic storage without altering overall hydrology
- An additional 0.85 acre of wetland plantings would be created, diversifying shoreline, improving water quality, and potentially broadening flora and fauna
Proposed Improvements at Van Cortlandt Lake

- Modification of Existing Weir
- Soft Edge, Vegetative Shoreline
- Hard Edge, Hard/Rocky Shoreline
- Van Cortlandt Golf Course Clubhouse, Entrance, and Parking Lot
- Van Cortlandt Golf Course
- Major Deegan Expressway
- Pedestrian Path (Former Putnam Line)
- Sports Fields
- Remove Phrag from Portion of Upper Basin Upper Basin
- New Weir Structure
- VAN CORTLANDT LAKE
  0.85 AC DECREASE OF WATER SURFACE AREA
Next Steps

Mikelle Adgate
Senior Policy Advisor
DEP
Citywide/Open Waters LTCP Public Outreach

2018 Annual Public Meeting

Stakeholder Briefing

Retained Alternatives Public Meeting (10/15)

Harlem River Briefing (10/2)

Staten Island Briefing (11/6)

LTCP Recommended Plan Public Meeting

2018
2019
2020

2018 Annual Public Meeting

Citywide/Open Waters LTCP Submittal to DEC
- Final LTCP Summary
- Complete LTCP Report
- Response to Public Comments
Additional Information & Resources

➢ Visit the DEP Website for more information: www.nyc.gov/dep/ltcp

• Monthly Updates on the Citywide LTCP
• Citywide LTCP Content: sampling information, baseline information etc.
• CSO Order including LTCP Goal Statement
• Links to Waterbody/Watershed Facility Plans
• Presentations, Meeting Materials and Meeting Summaries
• LTCP Brochure and Waterbody Fact Sheets
• All Submitted LTCP Reports and Other LTCP Updates
• NYC’s Green Infrastructure Reports and Grant Program
• Green Infrastructure Interactive Map of Projects
• NYC Waterbody Advisory Program
• Upcoming Meeting Announcements