Prioritizing Wastewater Facilities for a Swimmable and Resilient Hudson River Estuary

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Presentation Outline

- Hudson River Estuary Program
- Wastewater infrastructure needs
- Prioritizing facilities
- Data gaps and limitations
- Preliminary results
- What you can do

Sewage overflow in New Paltz
Hudson River Estuary Program

Six Benefits:

- Clean water
- Resilient communities
- Vital estuary ecosystem
- Estuary fish, wildlife, and their habitats
- Scenic river landscape
- Education, river access, recreation, and inspiration
Wastewater Infrastructure Needs of NYS

- 2008 DEC report
- “The conservative cost estimate of repairing, replacing, and updating New York’s municipal wastewater infrastructure is $36.2 billion over the next 20 years.”
Hudson River Estuary Watershed

- Publicly-owned facilities
- Combined and separated systems
- ~140 total

Wastewater Treatment Plant Locations
- Combined System
- Separate System
- Satellite Service Areas
- Flow From Satellite Service Area
- County Boundaries
- Municipal Boundaries
Hudson River Estuary Watershed

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Wastewater Treatment Plant Locations
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- County Boundaries
- Municipal Boundaries
Prioritizing Facilities

- Each gets rank – very high, high, medium, low priority
  - Collection system age
  - Overflows
    - Plant
    - Lines
  - Flooding vulnerability
  - Riverine
  - Sea level rise
  - Water quality impacts

Discharge into Rondout Creek from Wawarsing Naponoch facility
Prioritizing Facilities

- To provide additional information
  - Clean Watersheds Needs Survey (US EPA)
  - Clean Water State Revolving Fund Intended Use Plan (NYS EFC)
  - Environmental justice areas
  - Priority areas
  - Swimming/recreation
  - Habitat
  - Population growth
Why are we doing this?

- Better understand the scope of the issue
- Highlight needs that aren’t being identified with current structures
- Prioritize facilities for asset management pilot program
- Clean Water/Resilient Community outcomes for the Hudson River Estuary

Newburgh CSO
Why are we doing this?

- Improve swimming and recreation in the Hudson River Estuary
- Improve resiliency in facilities most at risk for flooding
- Help highlight opportunities for economic development and urban revitalization
Collection System Age

- Miles of pipe
- Volume treated by facility
- Estimated average age of line
- Source: DEC 2012 survey of facilities

Trunk line failure in Newburgh – 95% of City of Newburgh’s system built before 1925
Overflows – Plant

- Number of years plants exceed 90% capacity
- Sewage-related violations from discharge monitoring reports
- Source: DEC Division of Water

Walden Sewage Treatment Plant – exceeded 90% capacity
4 out of the past 5 years
Overflows – Lines

- Separated sewer overflows reported for Sewage Pollution Right to Know
- Combined sewer overflow annual discharge
- Source: DEC Division of Water, CSO Long Term Control Plans

Orangetown sewer system – 21 SSOs reported 2013-2014, System with most miles of pipes (200 mi)
Overflows – Lines

- Separated sewer overflows reported for Sewage Pollution Right to Know
- Combined sewer overflow annual discharge
- Source: DEC Division of Water, CSO Long Term Control Plans

CSO in Albany – discharges ~739 million gallons each year
Flooding Vulnerability

- Riverine flooding – % of plant area
  - in 100-year floodway
  - in 100-year floodplain
  - in 500-year floodplain
- Source: FEMA

Wawarsing Naponoch – 61% in the 100 yr floodway, 38% in the 100 yr floodplain

(13 facilities completely within the 100 year floodplain)
Flooding Vulnerability

- Sea level rise – % of plant area
- inundated by 2 ft
- inundated by 6 ft
- Source: FEMA, Scenic Hudson Sea Level Rise maps

55% of Kingston WWTP would be inundated by 2 ft of sea level rise
Flooding Vulnerability

- Sea level rise – % of plant area
  - inundated by 2 ft
  - inundated by 6 ft
- Source: FEMA, Scenic Hudson Sea Level Rise maps

100% of Kingston WWTP would be inundated by 6 ft of sea level rise
Water Quality Impacts

- In the segment to which facilities discharge:
- Waterbody Inventory Wastewater-related pollution sources
- Biomonitoring samples Impact Source Determination showing contamination from wastewater
- Source: DEC Waterbody Inventory, DEC Division of Water RIBS

New Windsor STP – No Known Impacts to lower Moodna Creek, “possible sewage inputs,” very high age & infrastructure scores
Data Gaps and Limitations

- Accurate infrastructure maps to better understand:
  - overflows,
  - impacts to tributaries, and
  - flooding vulnerability
- Compiling high-resolution data at a regional scale
- Sewage Pollution Right to Know – duplicate reports, inaccurate reports, might not include SPDES

Stony Point sewer map
Data Gaps and Limitations

- Currently using SPDES permits – there are many satellite systems that aren’t included
- Tying in-stream water quality data to specific facilities
- Prioritizing based on swimming/recreation, habitat
- Including population growth and other demographic data
- Results are preliminary!
## Preliminary Results

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Next Steps

- Work with DEC
- Integrate new data and improve scoring system
- Asset management pilot
- Work with water assessment bureau to target monitoring
- Share with other agencies
- Expand process statewide

Newburgh trunk line failure flowing into the Quassaick Creek
What Can You Do?

- Researchers/regional scale:
  - Feedback on methodology and statistics
  - Data could be analyzed in different ways, different scales
  - Watershed scale?
  - Impacts of failing infrastructure on water quality – how far should we expect to see impacts?
- Monitoring

Cornell intern field trip
What Can You Do?

- Local scale:
  - Status of your facility – age, failure, flooding vulnerability, water quality and/or recreation
  - Map infrastructure
  - Asset management planning
  - Monitoring
  - Grants - DEC/EFC engineering planning grant, DEC WQIP

Sewage overflow, Beacon
Thanks to our project team

- Alene Onion – DEC
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Thank You

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