Supplemental CSO Team

Meeting No. 3
Long-Term Control Plan Permit Compliance

City of Elizabeth and
Joint Meeting of Essex & Union Counties (JMEUC)

January 29, 2018 – 1:00 pm
Elizabeth City Hall Council Chambers

Supplemental CSO Team

Meeting No. 3 Agenda

• Prior meeting recap
• Further input on public outreach opportunities
• Further input on potential sensitive areas
• System characterization and modeling updates
• NJ CSO Group coordination
• Green Infrastructure (GI) basics
• Upcoming deadlines
Meeting No. 2 Refresher

Material covered in the prior meeting (10/11/2017):
• CSO outfall locations
• Sewer sampling summary
• Modeling updates (Elizabeth and JMEUC)
• Recent and pending sewer improvement projects
• Input on public outreach opportunities
• Input on potential sensitive areas
• 6-month look-ahead

Any questions on previous topics?

Public Involvement Activities

Prior Meeting Comments
• Provide info on pending construction projects
• Send info to Elizabeth Chamber of Commerce for membership distribution
• Distribute info at Peterstown Community Center nature center and Phil Rizzuto Park outdoor pavilion
• Post info on City’s social media pages
• Consult environmental planning commission and master planners

Opportunities for public engagement on CSO Long-Term Control Plan
• Upcoming Events?
Public Involvement Activities (cont.)

Community Interface Assistance
- Any feedback from your groups on the CSO issues?
- What info do Team members need to facilitate public input?
- What other resources are available?

Input on sewer system issues to be addressed
- Areas of flooding
- Sewer backups
- Sewer infrastructure age & deterioration
- Sewer bills

Sensitive Areas Consideration
- Sensitive Areas, as defined by the CSO Control Policy, include:
  - Outstanding National Resource Waters
  - National Marine Sanctuaries
  - Waters with threatened or endangered species and their habitat
  - Waters with primary contact recreation
  - Public drinking water intakes or their designated protection areas
  - Shellfish beds
- Are sensitive areas present and impacted by CSO discharges?
Sensitive Areas Consideration

Prior Meeting Comments
• Fishing at Slater Park and Waterfront Memorial Park has been observed.
• Jet skiing through the Arthur Kill has been observed.
  • Occasional and unusual use.
• No specific outfall appears to be of greater concern, higher priority, or exceptional quality

Outstanding National Resource Waters
• First and most protective tier of antidegradation protection;
• Applied to surface waters classified as freshwater 1 (FW1) waters, also known as non-degradation waters, and Pinelands (PL) waters;
• None present in City of Elizabeth
Nationwide Rivers Inventory (NRI)

- Listing maintained by the National Parks Service;
- Includes about 67 New Jersey river sections, at approximately 490 river miles;
- None present in the City of Elizabeth

National Marine Sanctuaries

- None located in New Jersey; closest is Stellwagen Bank, off the coast of Massachusetts
  - More information available on-line at: http://www.sanctuaries.nos.noaa.gov/
Waters with Threatened or Endangered Species and their Habitat

- Determine whether listed species are located in the area by checking the Endangered Species Act listings
- Review NJDEP Landscape Project critical wildlife habitat maps
- No presence of threatened or endangered species and critical habitat for specific outfall location anticipated

Are waters used for Primary Contact Recreation?

- N. J. A. C. 7:9B -1.4: “Primary contact recreation” means water related recreational activities that involve significant ingestion risks and includes, but is not limited to, wading, swimming, diving, surfing, and water skiing.
- Focus on existing uses, versus designated use.
  - No bathing beaches present.
  - Channelized portion of Elizabeth River upstream of South Broad Street designated FW2-NT(C2), but no existing primary contact use. No access, concrete base and walls, shallow water depth.
  - Downstream earthen channel of Elizabeth, SE3 (C2), no access, shallow depth.
  - Arthur Kill and Newark Bay – industrial / commercial shipping waterway.
Public Drinking Water Intakes

- No public drinking water source intake located within 1 mile upstream of City of Elizabeth CSO

Shellfish Classification

- Classification of the coastal waters for shellfish harvest in accordance with N.J.A.C. 7:12-1.3.
- None present in City of Elizabeth vicinity
System Characterization Status Update
City of Elizabeth

- Completed sewer data collection
- Confirmed and updated sewer shed and regulator details
- Expanded geographic information system
- Compiled sewer inventory data
- Calibrated and validated model
- Preparing characterization report sections

Monitoring Locations

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<th>FLOW METERS</th>
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<td>Sluice Gates</td>
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Meter vs. Model (Dry Weather Flows)

What Happens When it Rains?
Step 1: Rainfall Selection

- **Calibration Storms**
  - 10/9/2015
  - 10/28/2015-10/29/2015
  - 11/19/2015-11/20/2015
  - 12/17/2015

- **Validation Storms**
  - 9/29/2015
  - 10/2/2015

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<th>End Date</th>
<th>Start Time</th>
<th>End Time</th>
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<th>Rain Duration (hrs)</th>
<th>Max 1-Hr Rainfall Intensity (in/hr)</th>
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<td>22:30</td>
<td>1.15</td>
<td>11.26</td>
<td>0.36</td>
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</table>

WWF - Impervious Areas

- **NJDEP 2012 Land Use/Land Cover Data** (updated in 2015) used to calculate overall % impervious in flow meter sheds.
Meter vs. Model (Wet Weather Flows)

- Calibration Storms
  - 10/9/2015 (Low D, I)
  - 10/28/2015-10/29/2015 (High D, I)
  - 11/19/2015-11/20/2015 (High D, Low I)
  - 12/17/2015 (High D, I)

WWF Calibration Results – Easterly Interceptor

- Calibration Storms
  - 10/9/2015 (Low D, I)
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**Meter vs. Model (Wet Weather Flows)**

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  - 11/19/2015-11/20/2015 (High D, Low I)
  - 12/17/2015 (High D, I)

WWF Calibration Results – Overall Performance

- M-8 - Total Volume - Meas V.S. Sim
- M-32 - Peak Flows - Meas V.S. Sim
Trenton Ave PS

- Interceptors
- Sluice Gates
- Screens/ Bar Racks
- 5 VFD Pumps

Project Status Updates
System Characterizations / Modeling – JMEUC modeling status

- Model calibration – flow monitoring sites for calibration:
  - 13 upstream sites: calibration complete
  - 11 middle trunk sites: calibration complete
  - 5 downstream trunk sites: final calibration adjustments in progress
- Coordination with City of Elizabeth combined sewer system model
- Coordination with NJ CSO Group ambient water quality model (plant effluent discharge)
- Integrate JMEUC wastewater treatment plant into collection system model
NJ CSO Group coordination

- Baseline compliance monitoring program water quality testing and pathogen model
- CSO Notification System website operation
- Duration of discharge results for monthly reports
- Outfall signs, outreach materials and other collaborative works

Green Infrastructure Basics
Description

Presentation is taken from USEPA website.
Learn more by going to:
https://www.epa.gov/green-infrastructure/learn-about-green-infrastructure
Green Infrastructure Basics

Description

What is Green Infrastructure?

According to EPA: Green infrastructure is a cost-effective, resilient approach to managing wet weather impacts that provides many community benefits. While single-purpose gray stormwater infrastructure—conventional piped drainage and water treatment systems—is designed to move urban stormwater away from the built environment, green infrastructure reduces and treats stormwater at its source while delivering environmental, social, and economic benefits.
Green Infrastructure Basics
Description

What is Green Infrastructure?

Changes the Way Stormwater Runoff in Handled from common methods of transport and discharge, including:

• Treat it
• Use it
• Store it, or
• Slow it Down

In a way that can be economical and/or beneficial to the community.

What is Green Infrastructure?

Downspout Disconnection
Rainwater Harvesting
Rain Gardens
Planter Boxes
Bioswales
Permeable Pavements
Green Streets and Alleys
Green Parking
Green Roofs
Urban Tree Canopy
Land Conservation
Green Infrastructure Basics

Examples

**Downspout Disconnection**

Reroute rooftop drains from curb drains or service laterals in combined sewers areas to dry wells, cisterns, or permeable areas.

Water from the roof flows from this disconnected downspout into the ground through a filter of pebbles.

Green Infrastructure Basics

Description

**Downspout Disconnection**

Only works where roof leaders and downspouts are currently directed to service connection and combined sewer system.

Caution:
- a. Water cannot be directed to a neighbor
- b. Do not direct water across a sidewalk (freeze potential).
- c. Does your soil perc?
- d. Check your local ordinances.
Green Infrastructure Basics

Example

Milwaukee
Downspout
Disconnection
Program

Rainwater Harvesting

Collect and Store Rainwater for Later Use on Landscaping or Gardens, i.e. rain barrels, or larger storage tanks. Particularly valuable in arid regions with limited water supplies.
Green Infrastructure Basics
Description

Rainwater Harvesting

Limitations:
• Size of Container
• Only reuse during growing season.
• Manual maintenance needed to keep barrel empty to maximum harvesting.

Green Infrastructure Basics
Example

New York City
Rain Barrel Giveaway Program
**Green Infrastructure Basics**

**Description**

**Rain Gardens**

As per EPA, Rain gardens are versatile features that can be installed in almost any unpaved space. Also known as bioretention, or bioinfiltration, cells, they are shallow, vegetated basins that collect and absorb runoff from rooftops, sidewalks, and streets.

**Limitation:**
Needs permeable non-paved areas

**Advantage:**
Mimics natural hydrology of infiltration, evaporation, and transpiration.
Green Infrastructure Basics
Rain Gardens - Minnesota

Planter Boxes
As per EPA, Planter boxes are urban rain gardens with vertical walls and either open or closed bottoms. They collect and absorb runoff from sidewalks, parking lots, and streets and are ideal for space-limited sites in dense urban areas and as a streetscaping element.
Green Infrastructure Basics

Description

Planter Boxes
Limitation:
Needs permeable non-paved areas and thus a decent right-of-way width between curbs and buildings.

Advantage:
Mimics natural hydrology of infiltration, evaporation, and transpiration.
Green Infrastructure Basics
Description

**Bioswales**
As per EPA, Bioswales are vegetated, mulched, or xeriscaped channels that provide treatment and retention as they move stormwater from one place to another. Vegetated swales slow, infiltrate, and filter stormwater flows.

Limitation:
Needs permeable non-paved areas and thus a decent right-of-way width between curbs and buildings.

Advantage:
Mimics natural hydrology of infiltration, evaporation, and transpiration.
**Green Infrastructure Basics**

**Description**

**Permeable Pavements**

As per EPA, Permeable pavements infiltrate, treat, and/or store rainwater where it falls. They can be made of pervious concrete, porous asphalt, or permeable interlocking pavers.

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**Permeable Pavements**

**Limitation:**
Needs permeable subsoils or high void volume subbase.

**Require higher maintenance to limit plugging.**

**Advantage:** Could be cost effective in areas with high land values and flooding or icing problems.
Green Infrastructure Basics

Example

Permeable Pavements

Sultan, Washington

Straford Place

Community Residential Project

Green Infrastructure Basics

Description

Green Streets and Alleys

As per EPA, “Green streets and alleys are created by integrating green infrastructure elements into their design to store, infiltrate, and evapotranspire stormwater. Permeable pavement, bioswales, planter boxes, and trees are among the elements that can be woven into street or alley design
Green Infrastructure Basics

Description

**Green Streets and Alleys**

EPA Region 3 Green Streets, Green Jobs, and Green Towns (G3) Program is meant to provide guidance with:

- Policy, Regulations, and Incentives
- Planning and Design
- Construction, Operation, and Maintenance
- Financing and Economic Benefits
- Green Jobs and Training

https://www.epa.gov/G3

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Green Infrastructure Basics

Example

**Green Streets and Alleys**

**Syracuse, NY**

**Green Street Project**

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FACT SHEET

Green Street: Concord Place

*Project's overall goal in Syracuse: To provide the community with a range of green infrastructure alternatives in the urban environment and to include the following strategies:*

- **Green Streets and Alleys:**
  - **Concord Place:**
    -ö**Project aims to improve stormwater management by integrating green infrastructure elements into the existing drainage system.**

- **Syracuse, NY**
  - **Green Street Project:**
    -ö**The project involves the implementation of green street concepts along Concord Place to enhance stormwater management and aesthetics.**

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1/25/2018
Green Infrastructure Basics

Description

**Green Parking**

Use of permeable pavements can be installed in sections of a lot (parking spaces) and rain gardens and bioswales can be included in medians and along the parking lot perimeter.
Green Infrastructure Basics

Description

**Green Roofs**

As per EPA, Green roofs are covered with growing media and vegetation that enable rainfall infiltration and evapotranspiration of stored water. They are particularly cost-effective in dense urban areas where land values are high and on large industrial or office buildings where stormwater management costs are likely to be high.
Green Infrastructure Basics

Description

Urban Tree Canopy

Trees reduce and slow stormwater by intercepting precipitation in their leaves and branches. They can also be integrated into green infrastructure such as tree trenches or bioswales.
Green Infrastructure Basics

Description

**Land Conservation**

The water quality and flooding impacts of urban stormwater also can be addressed by protecting open spaces and sensitive natural areas within and adjacent to a city. Natural areas that should be a focus of this effort include riparian areas, wetlands, and steep hillsides.

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**Six-month look ahead**

- Next meeting: late April – early May
- Submit reports with July 1, 2018 deadline:
  - System Characterization Reports
    - Separate reports for Elizabeth and Joint Meeting
    - Joint reviews and certifications
    - Drafts anticipated in April
  - Consideration of Sensitive Areas Plan
  - Public Participation Report
  - Compliance Monitoring Program Report
    - NJ CSO Group joint effort, draft results under review
- Develop and evaluate alternatives, with performance modelling
Questions?

Thank you

City of Elizabeth and Joint Meeting of Essex & Union Counties (JMEUC)

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