

# Supplemental CSO Team

Meeting No. 1 – Project Introduction  
Long-Term Control Plan Permit Compliance

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

June 9, 2017, 1 pm  
Elizabeth City Hall Council Chambers



## Supplemental CSO Team Meeting No. 1 Agenda

### Important points to cover:

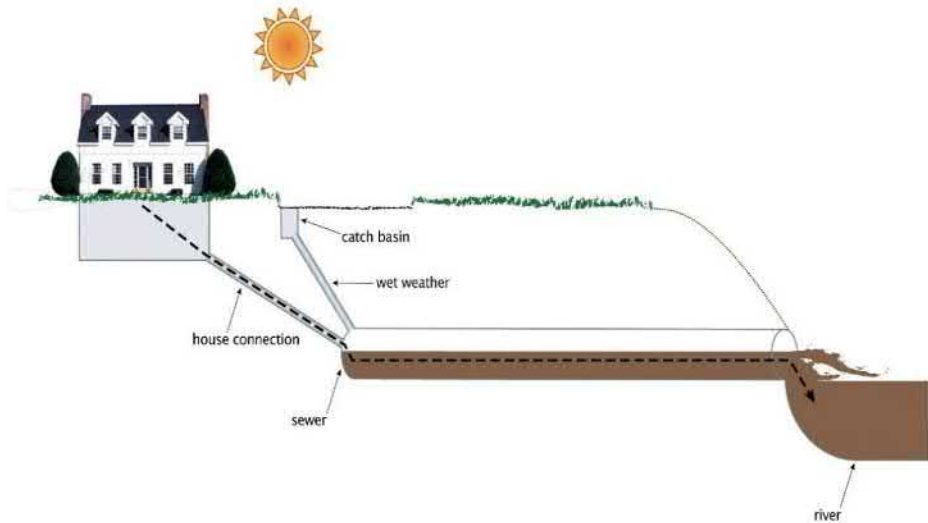
- Introductions
- What is a Combined Sewer System?
- What is a Combined Sewer Overflow?
- Why are the City and JMEUC undertaking this project?
- What are the regulatory requirements?
- What have the City and JMEUC done so far, and what's left?
- What is my role?

## What is a Combined Sewer System?

### Oldest Sewers in Country

In the mid 1800s, sewers and ditches were built in large cities to transport both sewage and stormwater to the river.

Is dilution the solution?



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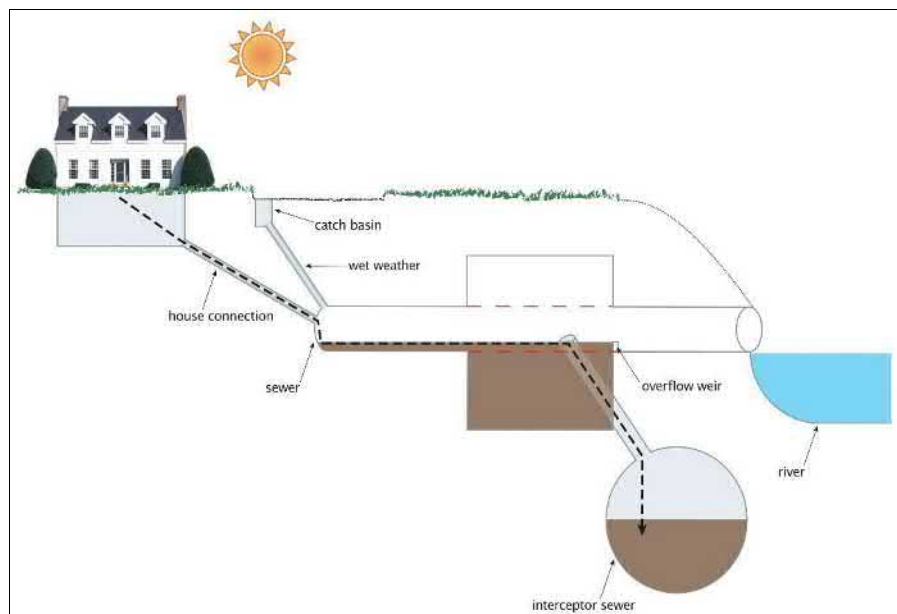
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## What is a Combined Sewer System?

### Oldest Sewers in Country

By the turn of the century, our rivers turned to open sewers and new intercepting sewers were constructed to collect and treat wastewater.

Dilution is not the solution!



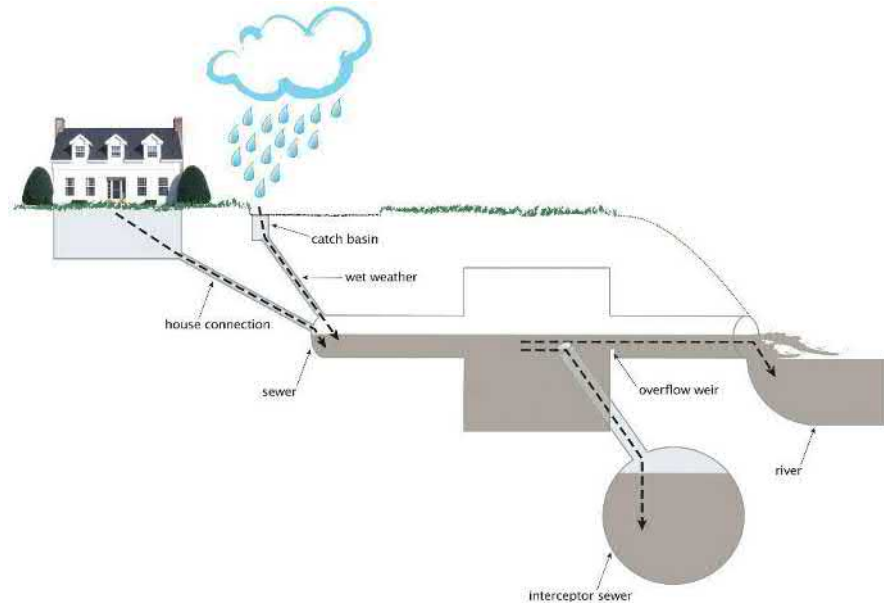
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## What is a Combined Sewer Overflow?

Oldest Sewers in Country

Dilution is not the solution, but hydraulic relief is needed in wet weather to limit the size and cost of Interceptor Sewers and Sewage Treatment Plants.



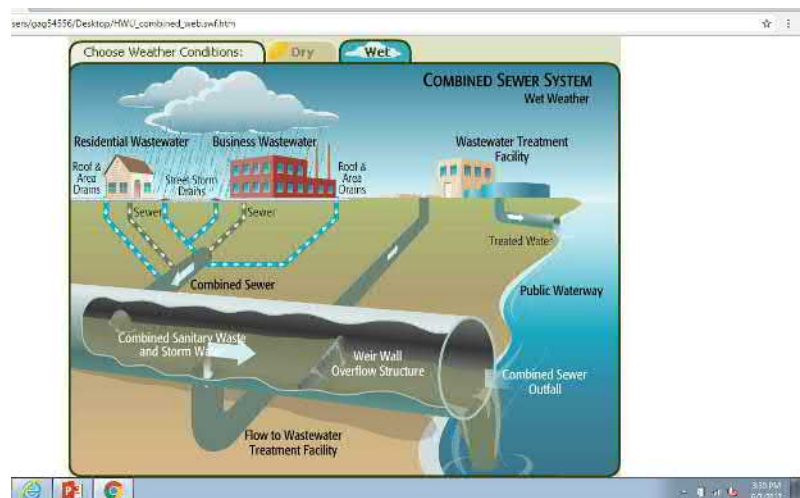
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## What is a Combined Sewer Overflow?

Combined Sewer Flow Animation File:

[HWU\\_combined\\_web.swf](#)



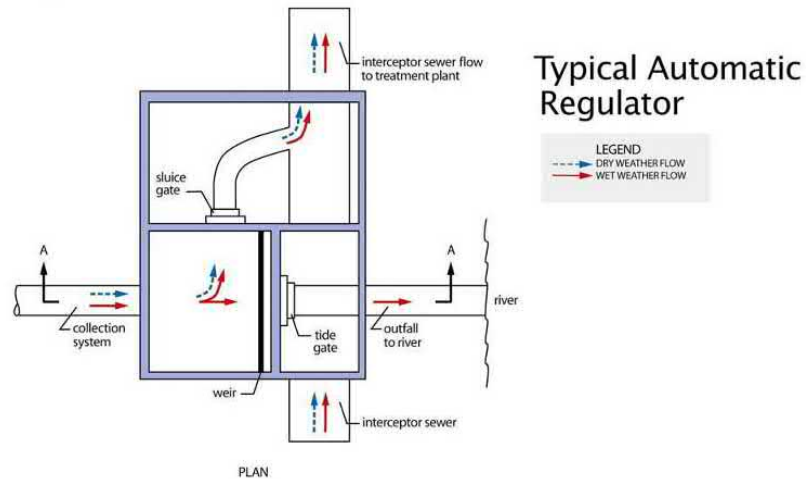
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## What is a Combined Sewer Overflow?

Oldest Sewers in Country

Wet weather flows to the Sewage Treatment Plant  
are controlled by CSO Control Facilities



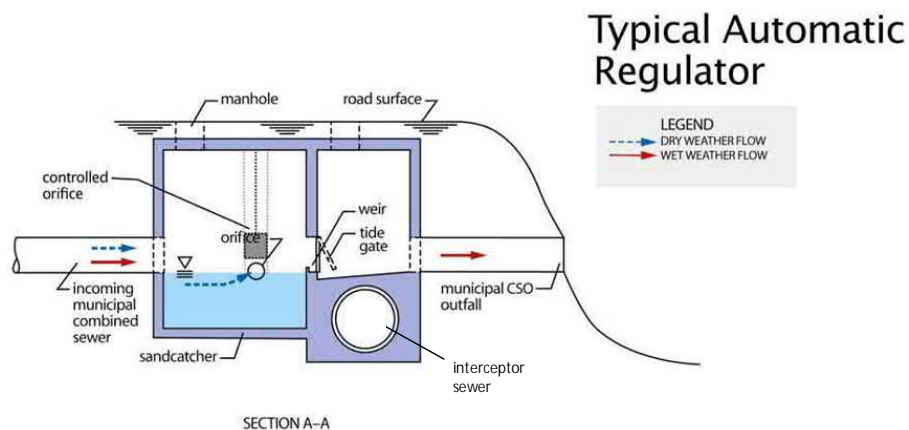
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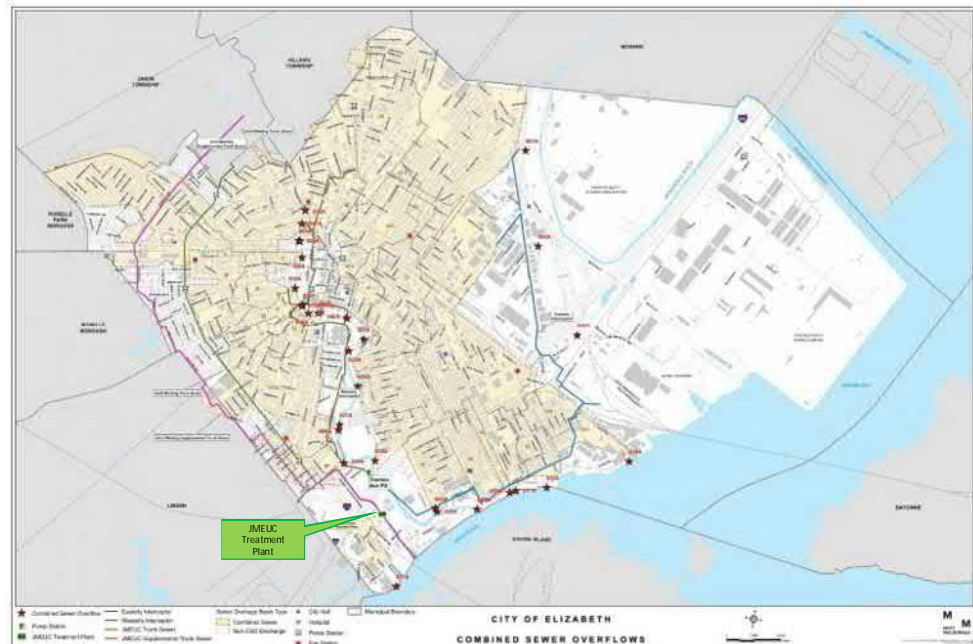
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## City of Elizabeth – CSO Locations

Population: 129,000

CSO Characteristics:  
29 CSO Discharge Points

Receiving Waters:  
Elizabeth River,  
to the Arthur Kill



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## JMEUC Tributary Area

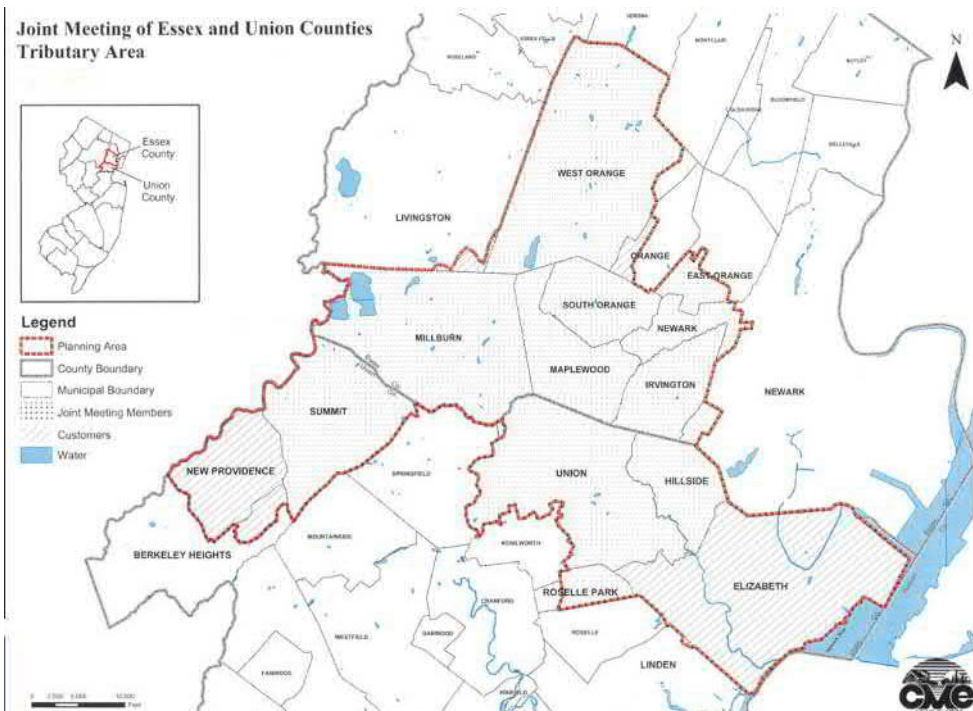
11 member communities:

- East Orange
- Hillside
- Irvington
- Maplewood
- Millburn
- Newark
- Roselle Park
- South Orange
- Summit
- Union
- West Orange

4 customer communities:

- City of Elizabeth
- Livingston
- Orange
- New Providence

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## JMEUC Interceptor Sewer System

Total Service Area = 60 square miles

Gravity sewers ranging from 10-inches in diameter to the twin 67 x 68-inch rectangular sewers at WWTP

WWTP capacity:

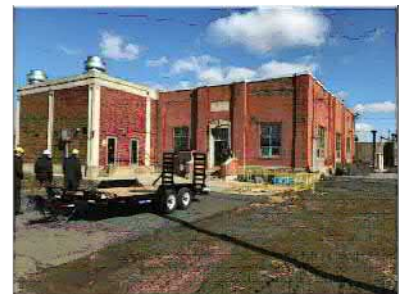
- Design flow = 85 mgd
- Maximum capacity varies with tidal conditions: up to 225 mgd



JMEUC  
Wastewater  
Treatment Plant <sup>11</sup>

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## JMEUC Wastewater Treatment Plant



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## Why are the City and JMEUC undertaking this work?

### History of Regulations & Permits

- US EPA issued National CSO Control Policy in 1994
  - Remains the current national framework for CSO control and Long-Term Control Plan (LTCP) development
- NJPDES Permits for all CSO discharges first issued in 1995 under General Permits for Combined Sewer Systems
  - Nine Minimum Controls, incl. Solids/Floatable Control Facilities in 2001 to 2005
  - Initial System Characterizations & Cost and Performance Analysis Work for LTCP in 2007

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## Why are the City and JMEUC undertaking this work?

### NJDEP Issues Individual NJPDES Permits

- Issued in March 2015, Amended in October 2015
- To develop Long-Term CSO Control Plans per EPA National Policy
- 25 Permittees Total – Fractured ownership of collection systems and treatment plants
  - With regional coordination and cooperation, LTCP anticipated to center around Treatment Plant and its associated CSO communities
    - JMEUC has the sewage treatment plant
    - Elizabeth has the combined sewer system

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## What are the regulatory requirements?

Nine elements of the Long-Term Control Plan:

1. Characterization, monitoring, and modeling of the combined sewer systems
2. Public participation (Supplemental CSO Team is a component)
3. Consideration of sensitive areas
4. Evaluation of alternatives
5. Cost/performance considerations
6. Operational plan
7. Maximizing treatment at the existing treatment plant
8. Implementation schedule
9. Compliance monitoring program



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## What are the regulatory requirements?

Long-Term Control Plan Submittal Schedule:

### CSO Submittal Summary

Summary of Reports Required to be Submitted to the Department		
Permit Condition	Abbreviated Description of Requirement	59 Month LTCP Due Date
Part IV.D.3.b.ii	Submit System Characterization Report	July 1, 2018
Part IV.D.3.b.iii	Submit Public Participation Process Report	July 1, 2018
Part IV.D.3.d	Submit Compliance Monitoring Program Report	July 1, 2018
Part IV.D.3.b.iv	Submit Consideration of Sensitive Areas Plan	July 1, 2018
Part IV.D.3.b.v	Submit Development and Evaluation of Alternatives Report	July 1, 2019
Part IV.D.3.b.vi	Submit Selection and Implementation of Alternatives Report in the Final LTCP	June 1, 2020

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## What are the regulatory requirements?

NJPDES Individual Permits include requirements other than LTCP development, such as:

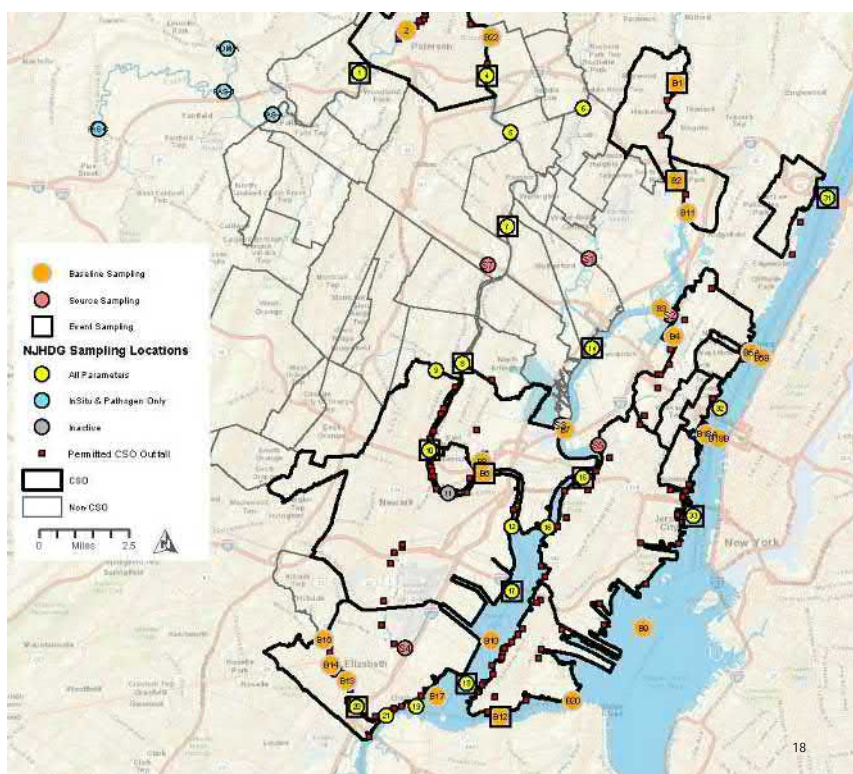
- Install new outfall signs
- Create and maintain CSO hotline or website for public notification of CSO occurrences
- Update Operation and Maintenance Manual
- Update Standard Operational Procedures (SOPs)
- Develop Asset Management Plan
- Revise rules/ordinances on sewer use conditions
- Update information on component locations and mapping

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## Working Together in NJ

- There are nearly 200 CSO Outfalls in the Region not counting New York City!
- Elizabeth and JMEUC are coordinating with several other municipalities and sewage authorities as part of the NJ CSO Group.
- Keeps abreast of CSO issues and assists members with CSO compliance for interconnected waterways with CSO Outfalls.

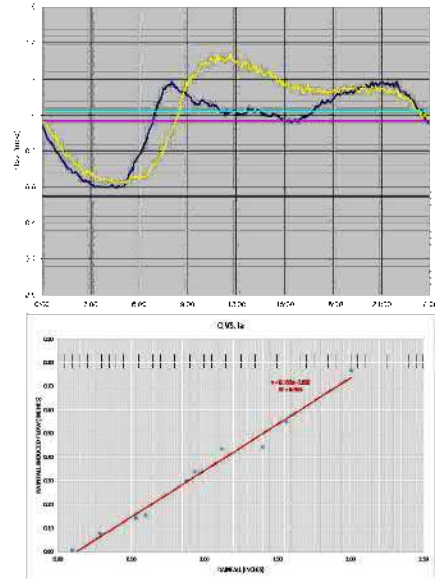


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## City of Elizabeth - Work Performed to Date

- System Characterization Work Plan (submitted and approved)
- Baseline Compliance Monitoring Program Work Plan (submitted and approved in conjunction with NJ CSO Group shared services program)
- Combined and separate sewer system area mapping
- Sewer inventory and field surveys
- Sewer flow monitoring (40 sites for 4-month period)
- Sewer flow sampling and analysis for 3 wet weather events
- Sewer system model updating



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## City of Elizabeth – Upcoming Work Items

- Compile combined sewer flow sampling results and summary chapter
- Complete updated sewer system model calibration and validation
- Coordinate typical year precipitation record selection
- Follow-up on outside flows from adjoining towns



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## JMEUC - Work Performed to Date

- System Characterization Work Plan (submitted and approved)
- Baseline Compliance Monitoring Program Work Plan (submitted and approved in conjunction with NJ CSO Group shared services program)
- Interceptor sewer system model developed
- Flow and rainfall monitoring program in place
  - Flow monitoring: 32 sites – August 2013 to present
  - Rainfall: 4 sites – November 2014 to present
- Analysis of full record of flow and rainfall data completed

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## JMEUC – Upcoming Work Items

- Link City of Elizabeth combined sewer system model to JMEUC interceptor sewer model
- Refine interceptor sewer model representation of WWTP
- Update interceptor sewer system model calibration
- Coordinate selection of typical year precipitation record
- Apply updated model to characterize interceptor sewer system performance
- Characterize WWTP performance
- Prepare System Characterization Report

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## Public Participation Process

- Supplemental CSO Team is an essential part of this process!
- To seek to actively involve the affected public
  - Rate payers
  - Environmental groups
  - Economic Development Groups
  - Industrial, Institutional, and Educational Interests
  - Integration with Municipal Agencies
- NJDEP interested in assisting in the public participation efforts



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## Stakeholders Invited to Participate



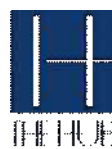
Department of Engineering,  
Public Works and Facilities  
Management



GROUNDWORK  
Elizabeth



Elizabeth River / Arthur Kill  
Watershed Association



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## Supplemental CSO Team

- Advisory role; two-way communications is key
- You are our link to the general public
- Will provide input on planning process
- Will provide input for consideration on
  - evaluation of sensitive areas
  - evaluation of CSO control alternatives
  - selection of CSO control alternatives
- Final selection and decision rests with permittees, with NJDEP approval



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## Public Participation Process

### Supplemental CSO Team

- Quarterly meetings anticipated for:
  - permit process and requirements
  - system characterization and results
  - status and schedule for each process
  - sensitive area analysis
  - alternatives evaluation considerations
  - LTCP alternatives and costs
  - implementation schedule

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## System Characterization and Sensitive Areas

Deadline for submission July 1, 2018

- City of Elizabeth and JMEUC working cooperatively to develop independent reports
- Characterization of system performance
  - CSO performance statistics
  - System conveyance capacities/limitations vs. wet weather system flows
  - Identification of basement and surface flooding
- Identification of Sensitive Areas



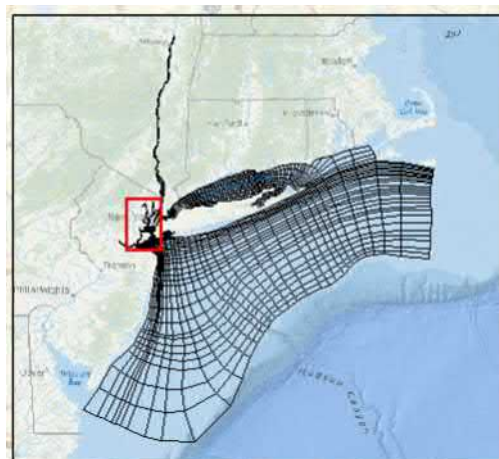
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## Compliance Monitoring Program (CMP) Report

Deadline for submission July 1, 2018

- City of Elizabeth and JMEUC working with NJ CSO Group
- Report to establish baseline receiving water quality conditions
- Water quality model being developed to better evaluate:
  - WQ in the region
  - Existing WQ compliance
  - Impacts of CSO discharges
  - Impacts of separate storm sewer discharges
  - Impacts from NYC combined sewers



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## Development and Evaluation of Alternatives

Deadline for submission July 1, 2019

- Work will be presented to Supplemental CSO Team in future meetings
  - what are alternative controls?
  - space requirements for each
  - what are the costs associated with each?
    - construction costs
    - operation and maintenance costs
  - anticipated benefits



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## Selection and Implementation of Alternatives Report in the Final LTCP

Deadline for Submission June 1, 2020

- Work will be presented to Supplemental CSO Team in future meetings
  - what are alternative controls recommended?
  - what are the costs associated with the LTCP?
    - construction costs
    - operation and maintenance costs
  - implementation and funding schedule
  - anticipated benefits



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## Scheduling of Future Meetings

- Quarterly
- Next meeting: September 2017



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## Questions?

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# Thank you

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Joint Meeting of Essex & Union Counties (JMEUC)

Supplemental CSO Team

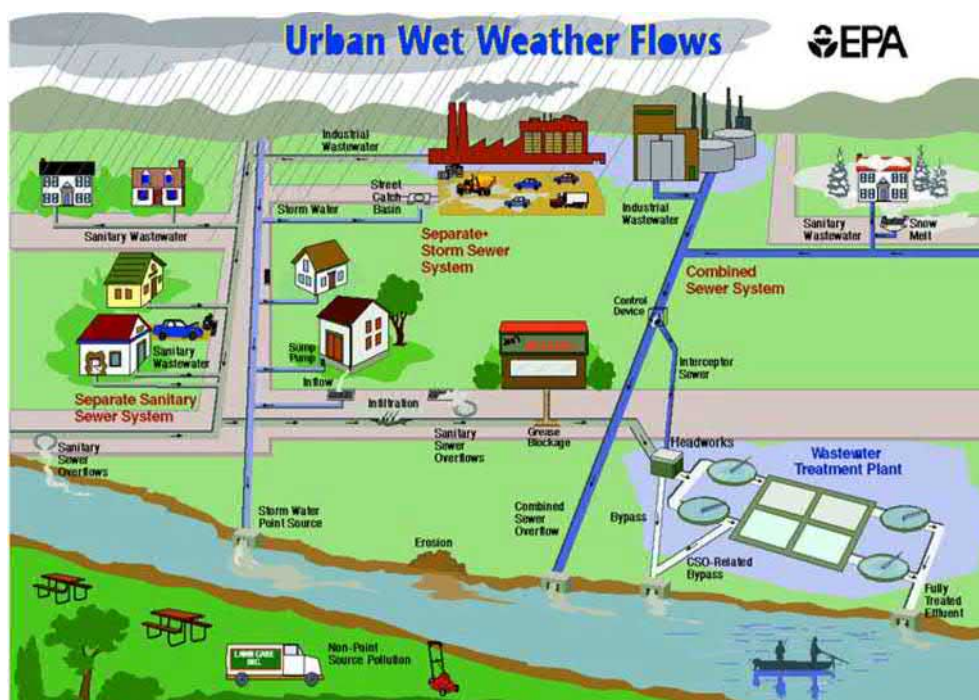
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# Combined Sewer Overflow Program Overview

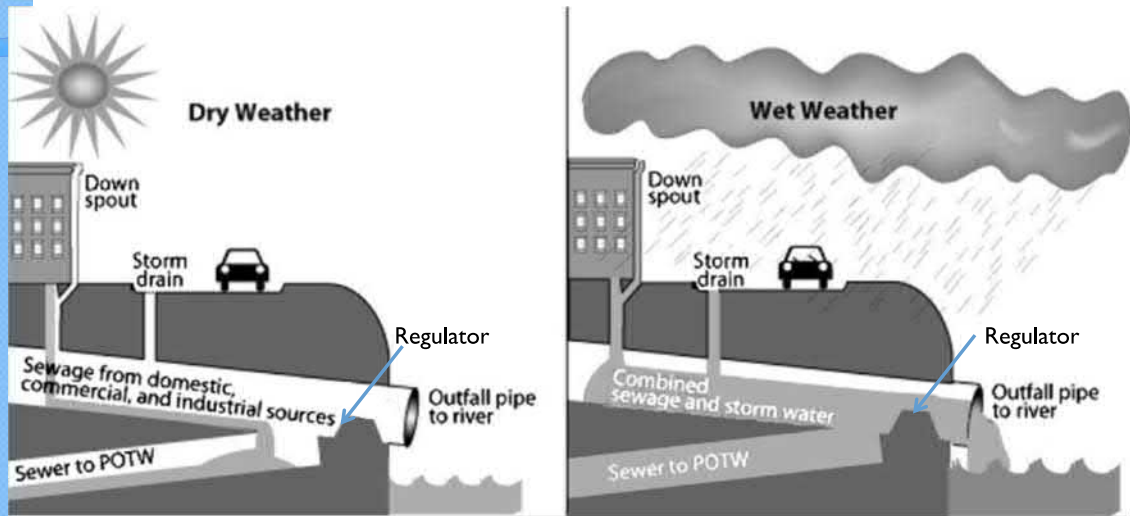
Division of Water Quality



## Sewer System Types



# Combined Sewer System Operation



## Combined Sewer Systems

- Combined Sewer Systems are remnants of our country's early infrastructure. They are outdated and in need of repair.



## CSOs in the US

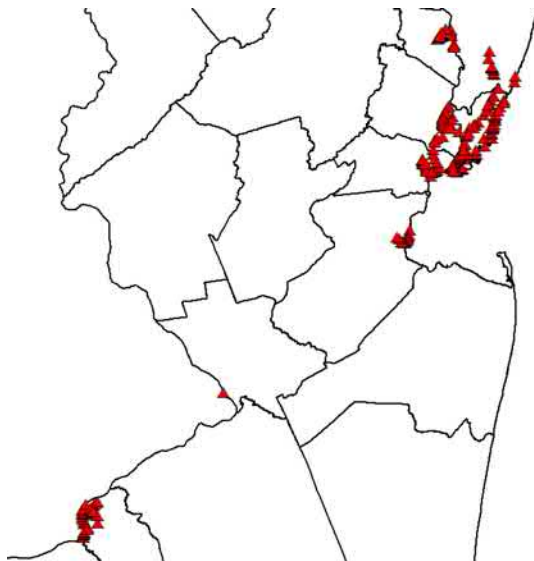


- 772 communities

- 9350 outfalls

- 850 billion gallons discharged per year

## CSOs in New Jersey



- 21 communities
- 210 permitted outfalls
- 23 billion gallons discharged per year
- 9 POTWs
  - Northeast: 179 outfalls, 7 communities and 7 POTWs
  - Camden County: 30 outfalls, 3 communities and 1 POTW
  - Trenton: 1 outfall, 1 community and 1 POTW





# CSO Permits - Two Components

- **Nine Minimum Controls (NMC)**

- Simple, low cost measures
- Mostly carried forward but with some enhancements

- **Long Term Control Plan (LTCP)**

- Goal is to reduce or eliminate CSO discharges to comply with the CWA
- Dictates a path to achieve that goal
- Substantially new requirements
- Due June 2020



## Nine Minimum Controls (NMC)

- Proper operation and maintenance
- Maximize use of collection system for storage
- Review of pretreatment requirements
- Maximize flow to POTW for treatment
- Elimination of discharges during dry weather (SSO)
- **Control of solids/floatables**
- Pollution prevention
- **Public notification (signs & website)**
- Monitoring of impacts and efficacy of controls

## CSO - Outfall



## Nets Can Be Exposed





## S/F Nets Under Stress



## Nets Can Be Exposed



## Nets Can Be Exposed



## S/F Nets Can Be Hidden





# S/F Nets Can Be Hidden



# Public Notification – Two Signs



## CSO Websites



11/29/16; 4:57 PM

<http://www.nhudsonsa.com/Public/waterbody.html>

## Long Term Control Plan (LTCP)

- System characterization, monitoring and modeling
- **Public participation**
- **Consideration of sensitive areas**
- Evaluation of CSO control alternatives
- Cost/performance considerations
- Operational plan
- Maximization of treatment at the POTW
- Implementation schedule
- Post-construction compliance monitoring

## Public Participation

- Permittees are required to seek public input throughout the LTCP process via the Supplemental CSO Team:
  - Where is flooding?
  - What abatement strategies should be considered?
  - What should be the LTCP schedule?
- Permittees are not *required* to follow public input.



## Consideration of Sensitive Areas

- Sensitive areas can include: ONR Waters, T&E species, Drinking Water Intakes and Primary Recreation (Bathing beaches)



- Sensitive Areas are given the highest priority



# Questions?

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Division of Water Quality

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