MOTT MACDONALD

City of Elizabeth
Union County, NJ

50 Winfield Scott Plaza
Elizabeth, NJ 07201

Joint Meeting of Essex and Union Counties
Union County, NJ

500 South First Street
Elizabeth, NJ 07202

Public Participation Process Report

Combined Sewer Overflow Long Term Control Program

June 20, 2018

Mott MacDonald
111 Wood Avenue South
Iselin NJ 08830-4112
United States of America

T +1 (800) 832 3272
F +1 (973) 376 1072
mottmac.com

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Certifications

Public Participation Process Report

Submitted on behalf of the following participating Permittee by
Mott MacDonald LLC:

City of Elizabeth
NJPDES Permit No. NJ0108782

Certification:

"Without prejudice to any objections timely made to permit conditions, I certify under penalty of law that this document and all attachments were prepared either: (a) under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted; or (b) as part of a cooperative effort by members of a hydraulically connected system, as is required under the NJPDES Permit, to provide the information requested. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for purposely, knowingly, recklessly, or negligently submitting false information."

Permittee: _____ 6/20/2018

Daniel J. Loomis, P.E. — Date
City Engineer, City of Elizabeth

Public Participation Process Report

Submitted on behalf of the following participating Permittee by
Mott MacDonald LLC:

Joint Meeting of Essex and Union Counties
NJPDES Permit No. NJ0024741

Certification:

"Without prejudice to any objections timely made to permit conditions, I certify under penalty of law that this document and all attachments were prepared either: (a) under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted; or (b) as part of a cooperative effort by members of a hydraulically connected system, as is required under the NJPDES Permit, to provide the information requested. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for purposely, knowingly, recklessly, or negligently submitting false information."

Permittee: _____ 6/21/18
Samuel McGhee — Date
Executive Director, Joint Meeting of Essex and Union Counties

Executive Summary

This Public Participation Process Report has been prepared on behalf and in coordination with the City of Elizabeth (City) and the Joint Meeting of Essex and Union Counties (JMEUC or Joint Meeting) as part of efforts to meet the conditions of the New Jersey Pollutant Discharge Elimination System (NJPDES) individual permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) for Combined Sewer Overflow (CSO) control.

The report outlines the process that has been taken to date as well the future planned efforts to inform, engage, and solicit input from the public on the CSO Long Term Control Plan (LTCP) being developed the City and JMEUC (i.e., the permittees). Section 1 provides an overview of the current CSO regulatory permits, the assoicated public participation requirements, and the program goals and objectives. The NJPDES CSO permits have 2 key public participation requirements: (1) the development and implementation of the Public Participation Process Report, and (2) the involvement of a Supplemental CSO Team. The overall goal of the public participation process is to seek public input and identify and select CSO LTCP alternatives that are supported by the public given that the CSO control plan will involve significant costs and be disruptive to affected communities during implementation. This involves communicating with and soliciting input from interested stakeholders and the broader public on receiving water quality and the challenges and opportunities of CSO controls.

A discussion of the stakeholder identification process, including the affected public and the hydraulically connected municipalities, and the various engagement methods for public outreach and public input and involvement is given in Section 2. Generating public support for CSO controls requires raising the public's awareness of and interest in combined sewer overflows and wet weather controls. The permittees are seeking to deepen the public's understanding of the regulatory requirements, potential water quality benefits, and cost implications of LTCP options. The efforts are intended to make the public more informed and generate meaningful community involvement in the planning process. By raising awareness, generating interest, and soliciting and responding to constructive input, the desired outcome is the public's informed support of the selected CSO Long Term Control Plan.

Engaging with stakeholders over a long term requires a multi-pronged approach with a range of strategies and activities, implemented in a consistent and sustained manner and targeted to the diverse stakeholder needs and interests. Public engagement methods are identified in terms of opportunities for education and outreach in order to provide information, as well as opportunities for public input in which feedback is solicited. Public education and outreach activities include the Supplemental CSO Team meetings; posters, flyers, and handout publication and distribution; website postings; community group and school event presentations and information dissemination; press releases, interviews, and media advisories; regional partnership collaborations; CSO outfall and green infrastructure identification signage; CSO notification system; and infrastructure tours.

The Supplemental CSO Team is a key component of the public participation program and details on its formation, proceedings, and goals are presented in Section 3. Invitations were made and the Supplemental CSO Team has been formed, with members representing resident and business communities, economic development interests, significant water consumers, environmental groups, the principal hydraulically connected adjacent municipality, and local and county government planning groups. To date, 4 meetings have been held to provide updates on the status of the system characterization, monitoring program, and sensitive areas analysis, to

obtain feedback on the progress of these items from the team members. The team is providing essential input on the planning process, including draft permit submittal contents, CSO control alternatives considered for evaluation and selection, and plan affordability and potential rate implications. Live audience participation and feedback is also being obtained through survey questions asked during presentations and a web-based audience response system that processes and displays poll results in real time. Summaries of the meeting presentations and participant comments are provided in this report and its appendices.

The implementation of public engagement activities throughout the 3 stages of the long term control plan development is outlined in Section 4. As noted, several Supplemental CSO Team meetings have been conducted and team members have acquired an understanding of the LTCP issues and challenges through information presented at the meetings so that they can initiate and facilitate discussions of these issues and challenges within their organizations, groups, and communities. Input and involvement by the team will continue throughout the 3 stages of the planning process.

Posters, flyers, and handouts have been used at public education events to assist in explaining combined sewer overflows, the regulatory context for CSO controls, and the public's role in water quality protection. The permittees have also been participating in various events to educate the public, including working with school groups and community organizations; maintaining websites containing information on the CSO control plan; publishing press releases and conducting interviews; installing educational signs for CSO outfalls and control infrastructure; maintaining a web-based CSO notification system; and participating in regional partner events. These public outreach and education efforts will continue throughout the 3 stages of LTCP development process.

In addition to actively educating and involving the public through the activities initiated to date, public participation efforts planned for the Alternatives Evaluation and Plan Selection phases of the program include publishing and distributing additional content through permittee websites, public schools, libraries, community groups, and news media; presentations to city government and JMEUC executive and board officials to review options for controlling CSOs, identify preferred control options and priorities, and obtain input on constituent outreach; and issuing public notices and conducting public meetings. Comments received throughout the engagement process will be duly considered in the development of the LTCP and will be incorporated into the recommended alternatives as determined appropriate by the permittees.

1 Introduction

This Public Participation Process Report has been prepared on behalf and in coordination with the City of Elizabeth (City) and the Joint Meeting of Essex and Union Counties (JMEUC or Joint Meeting) to meet certain conditions of the New Jersey Pollutant Discharge Elimination System (NJPDES) individual permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) for Combined Sewer Overflow (CSO) control, with an effective date of July 1, 2015 (referred herein as the NJPDES CSO permits). As permittees of a hydraulically connected system, the City and JMEUC are cooperating and collaborating on the development of a Long Term Control Plan (LTCP) for CSO control per the permit conditions and are jointly submitting this report for permit compliance. The City and JMEUC are collectively referred herein as the permittees.

1.1 Background

The City of Elizabeth is a major urban municipality located in eastern Union County, New Jersey, and is situated along the west banks of the Arthur Kill and Newark Bay. The City of Elizabeth is the state's 4th largest municipality by population with approximately 128,000 inhabitants. Several significant transportation systems and shipping facilities are located in the city and with this large infrastructure system, it is an important residential, commercial, and transportation center in the New York metropolitan area.

The City provides wastewater and stormwater collection and conveyance services to its customers through an extensive network of sewers, manholes, catch basins, pump stations, overflow control facilities, and drainage conduits that comprise the existing sewer system. The City of Elizabeth does not own or operate any wastewater treatment plant facilities; wastewater flows are conveyed to the JMEUC wastewater treatment plant (WWTP) in Elizabeth, NJ.

The Joint Meeting of Essex and Union Counties is a regional wastewater conveyance and treatment public entity formed by joint meeting of its member municipalities. The JMEUC WWTP serves more than 600,000 residents in several towns of Essex and Union counties, covering a 65-square mile service area. The 11 member municipalities of JMEUC are East Orange, Hillside, Irvington, Maplewood, Millburn, Newark, Roselle Park, South Orange, Summit, Union, and West Orange. In addition, Joint Meeting serves the City of Elizabeth as a customer municipality and small portions of Livingston, Orange, Berkeley Heights, Linden, and New Providence are served through member or customer systems. The treatment facility is designed to treat an average flow of 85 million gallons per day (mgd), but can process additional quantities of flow during wet weather events. The JMEUC's trunk sewer lines and treatment facility collect, convey, and treat the wastewater generated from JMEUC's member and customer municipalities and industrial contributors.

Much of the City of Elizabeth is served by a combined sewer system that collects and conveys sanitary and stormwater flows in the same conduit. In certain areas of the City, sanitary flows are conveyed in a separate (sanitary) sewer system connected to interceptors, with stormwater runoff conveyed by a separate storm sewer system. The combined sewer systems are prevalent throughout the northern, western, and southern sections of the City, coinciding with its historical residential, commercial, and institutional development. The existing combined system includes regulators and diversion structures, solids and floatables control facilities, interceptor connections, and outfalls at various locations.

All dry weather sewage from the City sewer system is conveyed to and treated at the JMEUC WWTP. Except for flows from sewers directly connected to the Joint Meeting trunk sewers, wastewater is collected and conveyed by 2 City owned intercepting sewers serving the easterly and westerly portions of the City, respectively. These intercepting sewers flow to the Trenton Avenue Pumping Station, which is the City's main pumping station, and its force main discharges flows to the JMEUC incoming trunk sewer approximately 1,300 feet upstream of the wastewater treatment facilities.

1.2 Current Combined Sewer Overflow Regulatory Permits

In 2015, the New Jersey Department of Environmental Protection revoked prior authorizations related to combined sewer overflows under NJPDES Master General Permit No. NJ0105023 and issued individual permits to authorize discharges from CSOs. Discharges from the City of Elizabeth's 29 designated CSO locations are authorized and regulated by NJPDES Permit No. NJ0108782. While the Joint Meeting does not own or operate CSO discharge points, the downstream portion of the JMEUC trunk sewer system receives and conveys combined sewage from the City and the systems are hydraulically connected. As such, the NJDEP revoked and reissued the individual Category "A" Permit No. NJ0024741 to JMEUC to incorporate the prior General Permit Authorization No. NJG0108740 and updated CSO permit requirements as part of the current CSO permit actions.

These individual NJPDES permits contain provisions for the development of a CSO Long Term Control Plan in accordance with the National CSO Control Policy established by United States Environmental Protection Agency (EPA). A CSO LTCP involves a comprehensive study of the hydraulically connected sewer systems and the evaluation of alternatives for reducing CSO impacts to water quality. It investigates the hydrologic and hydraulic relationships between the precipitation, conveyance, treatment capacity, and overflows. The LTCP is a feasibility study to evaluate the means, costs, impacts, and effectiveness of possible control alternatives for reducing the frequency and volume of CSO discharges. The planning approach consists of three major steps: system characterization; development and evaluation of alternatives; and selection and implementation of the controls. The permittees must also establish a public participation process that actively involves the affected public throughout the plan development.

In drafting the current permits, the NJDEP recognized the complexity of the hydraulic interrelationships between a combined sewer system and its associated domestic treatment works and the connections from other municipal sewer systems. Through various conditions of the individual CSO permits issued to the separate entities of hydraulically connected systems, the NJDEP has aimed to promote better coordination of a LTCP among permittees of hydraulically connected systems. The permits indicate that the various hydraulically connected systems must be evaluated concurrently so that an effective and equitable CSO LTCP is developed. As permittees of a hydraulically connected system, the City and Joint Meeting are cooperating and collaborating on the development of a single LTCP for CSO control.

This report has been prepared to fulfill the requirement for the Public Participation Process Report as outlined in the individual CSO NJPDES Permit No. NJ0108782 for the City of Elizabeth and Permit No. NJ0024741 for JMEUC. It describes the public participation program being used to educate the public about the CSO program and allow affected parties the chance to communicate their views as the LTCP is developed so that public input can be made part of the decision-making process.

The City and JMEUC are also involved as members of the regional assembly of NJPDES CSO permittees referred to as the NJ CSO Group. Members of this group consist of municipalities, sewerage authorities, and other entities that have been issued an NJPDES CSO permit and

have agreed to work jointly in addressing common and overlapping areas for permit compliance. On behalf of the member permittees, the NJ CSO Group, with the Passaic Valley Sewerage Commission (PVSC) serving as the managing member, is providing shared services for these common elements of the CSO permits to avoid costly and inefficient duplication of efforts. These shared services encompass certain water quality monitoring and modeling work, such as ambient in-stream sampling and testing, baseline compliance monitoring reporting, and pathogen receiving water quality modeling; production of CSO outfall identification signs; setup and operation of a CSO notification system website; and coordination with regulatory agencies on common issues for permit compliance. This regional partnership also assists in sharing information and gathering feedback on techniques for public involvement and CSO controls.

1.3 Permit Conditions Relating to Public Participation

The National CSO Control Policy specifies that in developing its long term CSO control plan, the permittees are to employ a public participation process that actively involves the affected public in the decision-making to select the long term CSO controls. Based on this EPA policy requirement, the NJDEP incorporated the following conditions regarding the public participation process in Part IV, Specific Requirements: Narrative, subpart Combined Sewer Management of the individual CSO permits.

- Section D.3.b.iii states that in accordance with Section G.2, permittees are required to submit the Public Participation Process Report within 36 months from the effective date of the permit (EDP), which corresponds to a due date of July 1, 2018.
- Section G.2.a indicates that permittee shall submit the Public Participation Process Report to include appropriate input and participation with other hydraulically connected communities, in accordance with Section D.3.a (which encourages a single LTCP to be developed and submitted on behalf of all of permittees in a hydraulically connected system) and G.10 (which requires cooperation between permittees for a consistent LTCP.) Section G.2.a also notes that the permittees may use information from the previous submittals, such as:
  - Elizabeth City: Public Participation Report, prepared by Hatch Mott MacDonald, April 2007; and
  - Joint Meeting of Essex and Union Counties: Long Term Control Plan, Public Participation Report, NJPDES General Permit No. NJ0105023, NJPDES Individual Permit No. NJ0024741, prepared by CDM, dated March 2007.
- Section G.2.b states:

  Implementation shall actively involve the affected public throughout each of the 3 Steps of the LTCP process. The affected public includes rate payers (including rate payers in the separate sewer sections), industrial users of the sewer system, persons who reside downstream from the CSOs, persons who use and enjoy the downstream waters, and any other interested persons. A Public Participation Process Report shall include the following elements:

  i. *Conduct outreach to inform the affected/interested public (during the development of the permittee's LTCP) through various methods which may include: public meetings, direct mailers, billing inserts, newsletters, press releases to the media, postings of information on the permittee's website, hotline, development of advisory committees, etc.; and to*
  ii. *Invite members of the affected/interested public to join a Supplemental CSO Team to work with the permittee's assigned staff, consultants and/or contractors as required in Part IV, Section G.2.c.* [see bullet below] *of the permit.*
- Section G.2.c states:

The permittee shall invite members of the affected/interested public to establish a Supplemental CSO Team to work with the permittee's assigned staff from Section F.1 [which is related to system operation and maintenance] *and to work as an informal work group as a liaison between the general public and the decision makers for the permittee. The goals of the Supplemental CSO Team could consist of the following elements:*

i. Meet periodically to assist in the sharing of information, and to provide input to the planning process;

iii. Review the proposed nature and extent of data and information to be collected during LTCP development;

iv. Provide input for consideration in the evaluation of CSO control alternatives; and

v. Provide input for consideration in the selection of those CSO controls that will cost effectively meet the Clean Water Act requirements.

As such, the permit requirements for public participation have 2 key elements: (1) the development and implementation of the Public Participation Process Report, and (2) the involvement of a Supplemental CSO Team. Documentation on the various activities conducted and planned for each of these public participation elements is provided in this report.

1.4 Program Goals and Objectives

The intent of the public participation process is to raise awareness about, foster understanding of, and encourage input on the development of the CSO control alternatives and the selection of the long term control plan. As the current LTCP selection program is more complex and extensive than previous permit requirements, it is important to seek public input and identify CSO control alternatives that are supported by the public given that alternatives will involve significant costs. The LTCP will document the process used to inform the affected public about the alternatives for CSO control and obtain input for the decision process. The desired outcome of the public participation process is to inform the decisions made during the plan selection so that the selected alternatives consider the priorities and sensitivities of the stakeholders. This is essential for obtaining public support for the costly and disruptive projects and improvements that will be associated with the CSO LTCP.

The objectives of the public participation process are to:

- Maintain an open and transparent process throughout the LTCP development by providing timely and accessible information to identified stakeholder groups about the need to address CSOs.
- Raise awareness about CSO issues, and increase understanding of ongoing efforts to address water quality impairment and protect the designated uses of the Arthur Kill, Newark Bay, and Elizabeth River.
- Encourage public input on the options for addressing CSOs and establish a process to maintain two-way communication with interested stakeholders.
- Identify areas of concern and gather input on possible resolutions.
- Balance expectations associated with the costs of the LTCP program, other regulatory mandates, and potential cumulative impacts on customer rates.

This report presents a framework for communicating with and soliciting input from interested stakeholders and the broader public on receiving water quality and the challenges and opportunities of CSO controls. It includes descriptions of the various methods of messaging, outreach, information sharing, and information gathering available; the public engagement and outreach efforts that have been completed; and the ongoing and planned activities.

1.5 Reference Materials and Resources

Guidance documents and other resources made available by the NJDEP were consulted to develop the public participation program, including:

- "Public Participation Process Report: A Guide to Developing Your Public Participation Report for New Jersey's Combined Sewer Overflow Permits and Long Term Control Plans", New Jersey Department of Environmental Protection, April 2018. Website, http://www.nj.gov/dep/dwq/pdf/CSO_Public_Participation_Resource_Document.pdf. This document provides guidance to assist permittees in the development of the Public Participation Process Report consistent with permit.
- "Forming and Utilizing Your Supplemental CSO Team: For New Jersey's Combined Sewer Overflow (CSO) Permits and Long Term Control Plans", New Jersey Department of Environmental Protection, May 2016. Website, http://www.nj.gov/dep/dwq/pdf/supplemental-team-resource-doc-5.9.16.pdf.
- "CSO: Public Participation" presentation slides, New Jersey Department of Environmental Protection, Fall 2015. Web, http://www.nj.gov/dep/dwq/pdf/cso-public-partic-ltcp-permittee-trng-10-19-15-v2.pdf. NJDEP also has given several presentations which were attended by representatives of the City and JMEUC. Furthermore, NJDEP presented at the first meeting of the Supplemental CSO Team to provide an overview of the CSO permit program and the public participation process.

The City of Elizabeth and JMEUC have also been actively involved with numerous workshops and meetings discussing pubic outreach organized by the Jersey Water Works, New Jersey Future, CSO Permittee Network, NJ Urban Mayors Association, NJ CSO Group, and others. For example, the City of Elizabeth hosted a local kickoff meeting as part of the "Connecting with Stakeholders on Water Infrastructure" workshop series co-presented by Jersey Water Works, the NJ Urban Mayors Association, and the NJDEP, where representatives from DC Water (the Washington, D.C. public water and wastewater utility) presented strategies and examples on raising public awareness on water infrastructure needs. Representatives of the permittees also attended the full day workshop under this program specially developed for officials and employees of cities and utilities with combined-sewer systems. Through these meetings, permittees are sharing resources, obtaining feedback from peers on challenges with CSO mitigation and the LTCP process, and reviewing techniques on public messaging.

1.6 Prior CSO Public Participation Reports

As part of the previous permit cycle submissions, the City and JMEUC prepared separate Public Participation Reports. The City's report, dated April 2007, identified the public participation activities completed at that time, including the methods used to inform the public of the requirements and the Long Term Control Plan; descriptions of the issues and matters on which the public was consulted; and a summary of the public's views, comments, criticisms, and suggestions. These prior information dissemination and public input mechanisms included:

- Citizens Advisory Committee – Much of the public participation effort centered on the formation and involvement of a Citizen Advisory Committee (CAC). Newspaper/cable news releases, advertisements, and mailings to targeted groups were used to solicit members for the CAC and once formed, the general public was continually invited to participate in the CAC. Meetings of the CAC were held four times. Presentations were made at each meeting to provide general education on the issues associated with the program and public input and comments were sought during or following each meeting. Handouts and informal interviews were used during these events to gather feedback. The Citizen Advisory Committee

explored all issues and alternatives and ultimately offered recommendations about how the project should proceed.

- News Releases – These occurred at key points during the process and were distributed to all local media, including the *Star Ledger* as well as local cable and radio stations. A release was used to promote the CAC and prior to the final public meeting.
- Field trip – One field trip was held for interested parties to view sections of the combined sewer system including control facilities and outfalls.
- Posters and flyers – Flyers and poster were used to promote the Citizens Advisory Committee and to disseminate information on CSO-related issues to the general public. They were distributed in schools and at other public buildings. Brochures and flyers were used at the Citizen Advisory Committee meetings and other public events to support the information presented. Some of the topics that were covered included the public information process, general facts about CSOs and alternatives. Whenever possible, existing brochures and materials available through the NJDEP were used.
- Advertisements – Legal advertisements in the *Star Ledger* were used to advise the general public of the Citizens Advisory Committee formation and the final public meeting.
- Activities to educate the public – copies of newsletters and brochures were made available at public buildings such as schools, the Municipal Building, and the library in an effort to reach the general public and children.
- General mailings – a mailing at the start of the program ensured that all businesses and residents had the opportunity to participate.

The JMEUC's prior Public Participation Report, dated March 2007, documented the series of public participation meetings conducted by JMEUC, including the presentations made, handouts distributed, the questions and comments received, and responses made. JMEUC also participated in the Elizabeth Citizen Advisory Committee meetings, field trip, and public meeting, where it presented information on conveyance and treatment capacity requirements related to CSO alternatives. The report also discussed the public outreach program of site tours, water infrastructure awareness, stormwater inflow disconnection, and other educational programs that JMEUC actively maintains.

These prior reports and resources were used to inform and strengthen the current public outreach and educational efforts.

2 Public Participation Process

2.1 Stakeholder Identification

A robust public participation plan should address a diverse range of stakeholders from the community, including both those who are interested and voluntarily attend CSO-related events as well as those members of the community who may not yet be aware of CSOs and the LTCP program. The affected public includes rate payers (comprising also customers in hydraulically connected communities), industrial users of the sewer system, persons who reside downstream from the CSOs, persons who use and enjoy the downstream waters, and any other interested persons. The City of Elizabeth and JMEUC desire to maintain an open process in engaging these different audiences and to tailor participation activities and communication tools based on specific needs of the groups.

2.1.1 Affected public

A summary of some of the relevant stakeholders in the CSO LTCP process are listed below:

- Government and governing body representatives – the Mayor, Council members, department heads, and organization leadership at the City of Elizabeth, JMEUC, and surrounding municipalities.
- People with economic interest/ratepayers – anyone who would be affected financially by the project.
- Industrial users of the sewer system – representatives of industries in and around Elizabeth.
- Upstream and downstream residents, as well as any interested persons.
- Recreational users – any individual or group that uses the receiving waters for recreation.
- Residents or businesses that may be affected by construction – anyone who lives or works near CSO regulators and receiving waters, which are the areas that would likely be largely impacted by construction of controls.
- Special interest groups – any groups that would have an interest in the CSO issue invited as suggested by the permittees (i.e., citizen, business, environmental and regional groups).
- Private citizens – All private citizens in the affected areas are to be given the opportunity to provide input and participate fully in the public participation program.
- Students – Educating students is important in changing the way the general public thinks about and controls pollution, and changes public behavior over time.

Public education and input approaches were selected to engage these diverse communities.

2.1.2 Hydraulically Connected Municipalities

The JMEUC wastewater treatment plant serves 11 member communities: East Orange, Hillside, Irvington, Maplewood, Millburn, Newark, Roselle Park, South Orange, Summit, Union, and West Orange. It also serves four customer communities: Elizabeth, Livingston, New Providence, and Orange. Given the structure of this public entity (a joint meeting of separate member municipalities), each member municipality has representation on the JMEUC Board, which is its governing body. As members of JMEUC, these member communities will be actively involved in addressing the CSO Permit conditions as it relates to JMEUC. JMEUC and the City of Elizabeth are collaborating in the development of presentations, reports, and alternatives analysis.

To identify the location and flow volume of inter-municipal sewer connections, the City of Elizabeth corresponded with adjacent municipalities to request record plans and documents related to the sewer networks along the city border. The City also worked through the Joint Meeting to request record sewer information from member municipalities adjoining the City. From a prior investigation into localized street flooding at the intersection of Park Avenue and Glenwood Road, the City became aware of a 42" diameter storm sewer from the Borough of Roselle Park connecting to the City's combined sewer system in Park Avenue along the municipal boundary at Galloping Hill Road.

The City has also reviewed its available sewer mapping to find other potential inter-municipal connections. Various locations were identified where a local sewer crosses the municipal boundary and these locations were subsequently investigated and physically inspected. Except for the Roselle Park storm sewer on Park Avenue, the other locations are small sewers of short lengths, following local topography, and of limited tributary flow.

The City has been corresponding with the Borough of Roselle Park regarding the hydraulic connection to the combined sewer system and its impacts and responsibilities of complying with the NJPDES CSO permits. Initial meetings were held and flow data and sewer system information has been provided to Roselle Park representatives. As a hydraulically connected community affecting CSO events in Elizabeth, Roselle Park was also invited and is participating as a member of the Supplemental CSO Team to solicit input and share information on the LTCP development.

2.2 Engagement Methods

Effective long term participation relies on a range of strategies and activities, implemented in a consistent and sustained manner and targeted to diverse stakeholder needs and interests. The permittees are undertaking a public outreach program to share information and gather feedback for the LTCP development.

By taking a multi-pronged approach to stakeholder engagement, it is anticipated that information will be distributed and input will be obtained from a broader base of individuals and groups, and that public visibility and awareness of the CSO LTCP process will be maximized. In addition to the options outlined below, additional approaches may be developed throughout the program in response to stakeholder needs and understanding of issues, challenges, alternatives, and opportunities associated with the LTCP program. Any additional work will be described in the subsequent LTCP reports.

Generating public support for CSO controls requires raising the public's awareness of and interest in combined sewer overflows and wet weather controls. The permittees are seeking to deepen the public's understanding of the regulatory requirements, potential water quality benefits, and cost implications of LTCP options. The efforts are intended to make the public more informed and generate meaningful community involvement in the planning process. By raising awareness, generating interest, promoting understanding, and soliciting and responding to constructive input, the desired outcome is the public's informed support of the selected CSO Long Term Control Plan.

2.3 Public Education and Outreach

Public education and outreach is being achieved through a variety of media as summarized below.

2.3.1 Supplemental CSO Team

A Supplemental CSO Team has been formed to provide input on the planning process and to serve as points of connection to the larger community. Much of the meetings to date have been informational in nature, exposing the members to the characteristics of the sewer systems, combined sewer overflows, the planning approach and the CSO Permit requirements, such as the public participation process. This educational effort assists in establishing an understanding of the LTCP issues and challenges for the team members so that they can indicate and facilitate discussions of these issues and challenges within their organizations, groups, and communities. Further information on the Supplemental CSO Team activities is provided in Section 3.

2.3.2 Posters, Flyers, Brochures, and Handouts

Printed materials like posters, flyers, brochures, and handouts can assist in explaining combined sewer overflows, the regulatory context for CSO controls, and the public's role in water quality protection. These materials can serve as key sources of project information for circulation throughout the planning process at group meetings, public meetings, presentations, and open houses. Copies of leaflets can be placed at public buildings such as City Hall, schools, and libraries. The materials can also be shared with stakeholder groups and interested parties for display in their offices and distribution to their constituents. Electronic copies can be posted on permittee and interest group websites for further media coverage.

The City has developed posters, flyers, and handouts that it has used at public education events, which are shown in Appendix C. Posters regarding stormwater issues and the CSO LTCP are being considered for displays at Elizabeth City Hall, Peterstown Community Center, and elsewhere. The posters and flyers have also been provided to Future City, Inc., an environmental and community development organization, for their use at student fairs and public outreach events. Other stakeholder groups have been given handouts and offered educational materials for distribution. For example, the Greater Elizabeth Chamber of Commerce has been given information for distribution through its membership list. The permittees are also considering additional posters, flyers, and brochures from NJDEP, EPA, and other organizations for distributing to schools, posting in public buildings, and use at meetings to support the information presented. These examples are also included in Appendix C.

2.3.3 Websites

The City of Elizabeth maintains a page on the Division of Engineering website (http://www.elizabethnj.org/engineering-division) which includes information on the CSO control plan, the municipal stormwater management plan, the stormwater pollution prevention plan, sewer system mapping, and a link to the CSO notification webpage. In addition, the City has posted its current stormwater management ordinances on the website. Maintenance of this website also fulfills in part the public outreach requirements of the MS4 permit. The City also plans to post informational handouts on CSOs, green infrastructure, and other educational information on the website.

The JMEUC website also includes a public outreach section, which has information about water infrastructure, sewer rates, F.R.O.G. (fats, roots, oil, and grease), and scheduling of plant tours.

2.3.4 Community Organization and School Events

The permittees have been participating in various events to educate the public, including working with school groups and community organizations. The City of Elizabeth has been an active participant in semi-annual educational events hosted by Future City Inc., which aims to facilitate sustainable environmental and community development. The organization's

Environmental Day and Estuary Day events are held in April and October each year, respectively. At these events, the City hosts several educational sessions for middle and high school students on the topics of combined sewers, green infrastructure, stormwater management, and water quality.

The City of Elizabeth has collaborated with Future City recently on its Environmental Day and Estuary Day activities of April 28, 2017, October 6, 2017, and April 27, 2018. At each event, the City made about 8 presentations to over 200 students from different City schools on topics such as combined sewers, rainfall infiltration on different types of land surfaces, and the structure and function of rain gardens. The City will continue to participate in these 2 annual student outreach events as an excellent way to reach many students from various parts of the city.

The City also participates in the annual Union County Bio-Blitz event, which is held to raise awareness among children and adults about nature conservation in County parks. The permittees intend to participate in events held in the community, and use these events as an opportunity to share information about the CSO LTCP process.

2.3.5 News Releases and Media Coverage

News media can serve as a connector to various community sectors and the greater public, as it may be the primary source of information for certain constituents. Occasional press releases on public education and outreach events and interviews with local online and print publications can increase interest in the LTCP.

News releases have been published by the City for notable CSO-related projects such as the urban green space and stormwater storage facilities at Trumbull Street and the rain garden which was installed as part of the Kenah Field Park improvements. A press release (enclosed in the Appendix C) was circulated in May 2017 for the Trumbull Street Flood Control project, which provides information to city residents and stakeholders on the purpose, methods, funding and design components of the project. The City Engineer also gave an interview with TAPintoElizabeth, an online neighborhood news website, to explain the Trumbull Street project.

The permittees are collaborating with regional groups such as the NJ CSO Group and Jersey Water Works to develop and circulate regionally-relevant public education material. Media advisory notices indicating the City of Elizabeth's participation in public education events such as the Future City, Inc. and Elizabeth River/ Arthur Kill Watershed Association also provides certain press coverage. A copy of such a media advisory from the October 2017 Estuary Day event is included in Appendix C.

Further news releases are planned to publicize meetings presenting information on LTCP alternatives and plan selection. Media advisories may also be issued to invite other interested groups to participate in the Supplemental CSO Team.

It is anticipated that paid advertising will be limited to legal notices for 2 public meetings.

2.3.6 Regional and Watershed Based Partnerships

The permittees recognize the value in collaboration with regional groups focused on CSO issues and they have and will continue to actively participate in events hosted by the groups such as Jersey Water Works or the NJ CSO Group. The City of Elizabeth hosted a local kickoff meeting as part of the "Connecting with Stakeholders on Water Infrastructure" workshop series co-presented by Jersey Water Works, the NJ Urban Mayors Association, and the NJDEP, where representatives from DC Water (the Washington, D.C. public water and wastewater utility) presented strategies and examples on raising public awareness on water infrastructure

needs. Through these meetings, permittees are sharing resources, obtaining feedback from peers on challenges with CSO mitigation and the LTCP process, and reviewing techniques on public messaging.

The permittees will collaborate with regional and watershed management groups to develop and circulate regionally-relevant public education and outreach material. Watershed partnerships can broaden the planning objectives beyond CSO controls and selected receiving water quality parameters to such aspects as healthy and safe parks and stream corridors with opportunities for fishing, birding, hiking, and biking. These watershed considerations can lead to a healthier natural environment and better quality of life for the people who live, work, and are active in the watersheds, along with wet weather water quality and quantity controls.

2.3.7 CSO Outfall Identification Signs

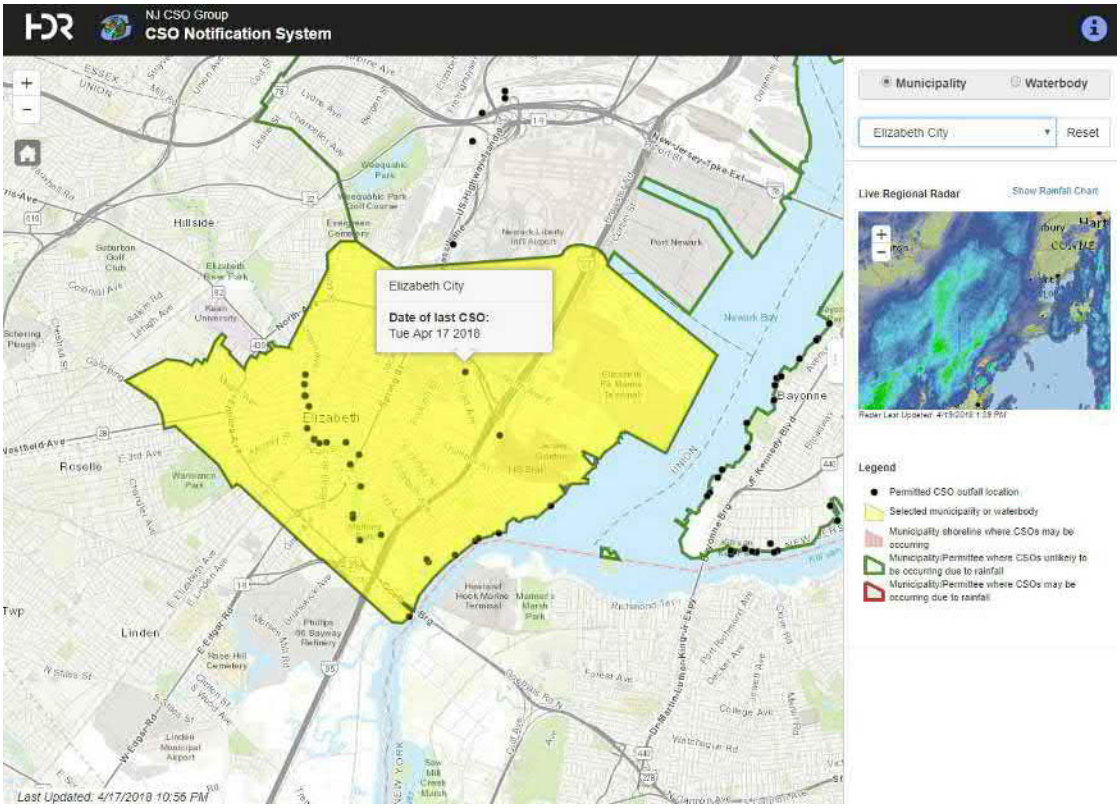
In collaboration with the NJ CSO Group, the City of Elizabeth produced and installed signs at each CSO outfall to educate the public of the potential hazards associated with water contact during and following wet weather. The signs are located close to the outfalls and such that they can be accessed by the public. Each sign includes a warning, written in English and Spanish, of possible combined sewage overflow during and following wet weather and that contact with the water may cause illness. Symbols prohibiting swimming, fishing, and kayaking are included, along with notices to report dry weather discharges to the NJDEP hotline and foul odors or unusual discoloration to NJDEP Hotline and the City of Elizabeth, with contact telephone numbers. The NJPDES permit number, the outfall discharge serial number, and the NJDEP CSO information website are also indicated on the signs. Example of these signs are provided below.

Figure 2-1: Representative CSO Outfall Identification Signs in Elizabeth

2.3.8 CSO Notification System

As part of NJ CSO Group, an online CSO notification system has been developed (https://njcso.hdrgateway.com/) as a public information tool advising on the status of CSO occurrences in the City of Elizabeth and certain other communities participating in the NJ CSO Group. The website provides up-to-date information regarding where CSO discharges may be occurring or that discharges are unlikely to be occurring in the City of Elizabeth. A screenshot from the CSO notification system is provided below.

Figure 2-2: CSO Notification System



2.3.9 Green Infrastructure Signage

The City is in the process of installing rain gardens in the City of Elizabeth, one at the urban green space at Trumbull Street and one as part of the Kenah Field Park improvements. These rain gardens are labelled with signs explaining the function and purpose of green infrastructure as a strategy in stormwater management, as shown in the figure below.

Figure 2-3: Kenah Field Park Rain Garden Signage

2.3.10 Combined Sewer Infrastructure and Treatment Plant Tours

Tours to community, environmental, and media groups of the combined sewer outfall and control facilities, receiving waterways, JMEUC wastewater treatment plant, and green infrastructure installations may be hosted by the permittees to foster understanding of the sewer system, water quality, and CSO issues and control alternatives. From these tours, stakeholder groups can experience firsthand the sewer infrastructure conditions and challenges associated with discharges to the Elizabeth River, Arthur Kill, and Newark Bay. They can witness where the CSO outfalls discharge and the various constraints involved.

The JMEUC hosts several tours each year of its wastewater treatment facilities upon request by interested parties. Likewise, on July 26, 2017, the City of Elizabeth and its sewer system operator, E'Town Services LLC, conducted a tour of a CSO outfall and its associated netting facility for solids and floatables control to an interested group of individuals from the Future City Inc. community organization. The tour was coordinated through City Councilman William Gallman, Jr., who also attended. As illustrated in Figure 2-4, participants were shown and provided with an explanation of the function and operation of the netting systems and other CSO outfall infrastructure that typically goes unnoticed, hidden below ground.

Figure 2-4: Tour of Solids/Floatables Control Netting Facility

2.3.11 Social Media

The City of Elizabeth maintains a Twitter page followed by over 2,200 users and a Facebook page followed by over 9,700 users. With such a large following, the permittees may use these two social media platforms to post educational information about CSOs as well as to advertise any education events or opportunities to provide input on the LTCP process and CSO alternatives.

2.3.12 Mailings

Printed materials compiled for handout at meetings, public events, permittee offices, and other venues may be adapted for mass or targeted mailings to residents, businesses, neighborhood and community groups, environmental organizations, and elected officials. Bill stuffers with information on the CSO LTCP program may also be considered for distribution to customers within the City of Elizabeth and the JMEUC service area.

In collaboration with regional and watershed groups, the permittees may also produce and distribute informational newsletters which may be posted on the websites, linked on social media, and distributed at public events and at the City Hall. The newsletters would convey information on the status of the LTCP development, regional cooperation, and steps that citizens can take to protect the receiving waters and decrease the amount of CSO occurrence.

2.4 Public Input and Involvement

This section outlines the avenues for public input being utilized and considered as part of the public participation process for the City of Elizabeth and JMEUC CSO LTCP. Public outreach and education helps create a more informed public that can participate meaningfully in the planning process by providing feedback on control options that may generate public support. With this background knowledge, the public input mechanisms then provide stakeholders the opportunity to share their questions, issues, and preferences on CSO control alternatives and receiving water quality priorities.

2.4.1 Supplemental CSO Team

The Supplemental CSO Team is the key means of conveying information to the community on the CSO LTCP process and for obtaining input on CSO-related issues from the targeted public. The team meets quarterly to review developments in the LTCP process and to exchange information between the different representative parties. More detail about the Supplemental CSO Team meetings is provided in Section 3.

2.4.2 Public Meetings

Public meetings will be held at key points in the alternatives evaluation and plan selection steps to obtain feedback from the public on the LTCP development. Notifications and advertisements for the public meetings will be made by legal notice publications, news releases to media outlets, and website announcements. Other promotions for scheduled public meetings, like targeted invitations through community and interest group email distribution lists, will be investigated.

The focus of the meetings will be to provide an open forum for the public to provide feedback on CSO alternatives and costs. Comments from the public will be considered by the permittees in finalizing the LTCP report and determining recommendations. The public meetings may cover the following topics:

- Combined sewer systems and regulatory requirements;

- Existing sewer system characterization and receiving waters conditions;
- Options and alternative approaches for CSO control, including descriptions and examples of gray (traditional infrastructure) and green stormwater approaches;
- Planning level cost estimates and rate implications; and,
- Preferences on plan alternatives and priorities for control projects.

The permittees plan to request input from public meeting participants by using survey forms. These forms will solicit comments and rankings for program goals and concerns, preferred control options, acceptable cost levels, and considerations for additional actions or initiatives.

2.4.3 Municipal Officials and Governing Body Meetings

City and JMEUC representatives have been informing their respective executive and governing bodies of the various NJPDES CSO permit compliance activities. Furthermore, presentations will be made to city government and JMEUC executive and board officials at key points in the alternatives evaluation and plan selection steps of the LTCP development to identify potential constituent wet weather and water quality interests and concerns, review options for controlling CSOs, identify preferred control options and priorities, and obtain input on public involvement strategies.

Council and board committee meetings may also be considered for discussions on the CSO LTCP to allow municipal and JMEUC officials, member municipalities (i.e., hydraulically connected municipalities served by the same publicly owned treatment works), and the public to raise questions or concerns regarding the CSO control approach and alternatives.

2.4.4 Regional and Watershed Based Collaboration

The City of Elizabeth and JMEUC are members of the NJ CSO Group along with other municipalities and publicly owned treatment works, each of whom owns or operates components of a combined sewer system. This collaborative group functions to provide a regional unified effort to understanding and addressing CSO, stormwater, and related water quality issues. The permittees are engaged in the active participation and collaboration with the members of this regional group.

2.4.5 Telephone or Mail Surveys

A telephone or mail survey of residents and businesses in the region is another potential public input mechanism that can be used to obtain information on local public opinions. With an appropriate sample size and statistical analysis, a public opinion survey of multiple questions can be designed to measure ratepayers' positions on the quality of local waterways; pollution sources and responsibilities for water quality improvement and protection; willingness to implement CSO and stormwater controls; and tolerance for rate increases. However, given the significant expense and time involved, the permittees are not currently planning to conduct any such public opinion survey.

2.5 Approach to Addressing Public Comments

The permittees are committed to working with the public on the LTCP development process. Public participation strategies are being selected so as to educate and obtain input from a broad range of constituents before, during, and after implementation of the CSO controls. Comments received through the engagement process will be duly considered in the development of the LTCP and will be incorporated into the recommended alternatives where appropriate.

The permittees anticipate that written public comments may be delivered through mail, email, fax, or comment sheets provided at meetings. The permittees will compile the comments received through the various public input vehicles implemented and will address the comments as appropriate. The permittees will respond to questions and comments presented at public meetings and will answer questions received via mail, email, fax, or comment sheets.

3 Supplemental CSO Team

3.1 Purpose and Goals

Invitations were made and a Supplemental CSO Team was formed for the City of Elizabeth and JMEUC LTCP development in accordance with the requirements of Part IV, Sections G.2.b. and c. of the NJPDES CSO permits. The purpose of the Supplemental CSO Team is to foster long term public involvement in the CSO control program through an informal workgroup of community, environmental, business, public health, and regional representatives. The Supplemental CSO Team serves as a forum to solicit input from the public throughout the LTCP development process. It is meant to be a mechanism for two-way dialogue: both as an opportunity for the permittees to share information about LTCP work, as well as an opportunity for team members to provide input on the plan. The goals of the Supplemental CSO Team include:

- Meet periodically to assist in the sharing of information, and to provide input to the planning process;
- Review the proposed nature and extent of data and information to be collected during the LTCP development;
- Provide input for consideration in the evaluation of CSO control alternatives; and
- Provide input for consideration in the selection of those CSO controls, including commenting on cost burdens and affordability.

The members of the Supplemental CSO Team are not expected to be experts on CSOs or to have extensive engineering backgrounds, rather they were invited to represent the various interests of the communities served by the combined sewer system and the sewage treatment plant. The members of the Supplemental CSO Team are also requested to provide feedback on flooding issues, neighborhood priorities, and potential issues with community acceptance of CSO alternatives.

The Supplemental CSO Team is also intended to reach a broad base of citizens by working with representatives of key local organizations. It allows the permittees to obtain feedback from the public through these representatives on CSOs, local water quality issues and sewer system problems, and to gain an understanding of the public's willingness to accept or participate in alternatives to reduce CSOs.

3.2 Supplemental CSO Team Formation

The City of Elizabeth and JMEUC corresponded and developed an invitation list for the Supplemental CSO Team participation. The mailing list was compiled and invitation letters were sent to all suggested individuals and groups on March 17, 2017. Table 3-1 presents a summary of the groups invited and the replies received. Copies of the invitation letters and responses are also incorporated in Appendix A of this report.

Table 3-1: Invited Organizations and Groups

Entity /Organization	Interests	Response
Community Investment Strategies	Significant Water User / Economic Development	Declined
Elizabeth Avenue Partnership Inc.	Resident and Business Community	Accepted
Elizabeth Destination Marketing Organization	Business / Economic Development	Accepted

Entity /Organization	Interests	Response
Elizabeth Development Company	Business / Economic Development	No reply
Elizabeth River/Arthur Kill Watershed Association	Resident and Environmental Community	Accepted
Future City Inc.	Resident, Education, and Environmental Community	Accepted
Greater Elizabeth Chamber of Commerce	Business / Economic Development	Accepted
Groundwork Elizabeth	Resident and Environmental Community	Accepted
Hackensack Riverkeeper, Inc.	Environmental	No reply
Elizabeth Planning and Zoning Boards (represented by Harbor Consultants)	Government / Community Planning	No reply
Historic Midtown Elizabeth Special Improvement District	Resident and Business Community	No reply
Hub Realty	Significant Water User / Economic Development	Accepted
Kean University	Education Community	No reply
Borough of Roselle Park represented by Neglia Engineering Associates)	Hydraulically connected community	Accepted
NY/NJ Baykeeper	Environmental	Accepted
Paramount Assets	Significant Water User / Economic Development	No reply
Union County Dept. of Engineering, Public Works & Facilities Management	Government / Community Planning	Accepted
United Way of Greater Union County	Resident and Business Community	No reply

Organizations were invited to participate based on their ability to provide feedback as well as disseminate information to their constituents in order to accomplish the team's objectives. Where an organization did not respond to the invitation, the permittees have continued to correspond and invite the group to team meetings.

As indicated in the table, the Supplemental CSO Team membership covers groups and organizations for several different sectors and is representative of the area and its needs. The team members represent resident and business communities, economic development interests, significant water consumers, environmental groups, the principal hydraulically connected adjacent municipality, and local and county government planning groups. These organizations can provide vital input on the community planning, environmental, economic, and social aspects of the LTCP development.

Participation by the permittees in the team discussions also provides representation of the targeted stakeholders, such as the City of Elizabeth governing body and mayor and the member municipalities of the JMEUC. Participation by the NJDEP further enlarges the Supplemental CSO Team consideration of the regulatory requirements, land use restrictions, and potential state revolving loan funding options.

3.3 Overview of Meeting Procedures

The Supplemental CSO Team was first convened on June 9, 2017 and meetings are held quarterly, which is believed to be frequent enough for the team to be able to meaningfully provide input on the evaluation of CSO alternatives as well as to obtain feedback when important milestones and report deliverables are due throughout the LTCP development process. The first three meetings were held in the Council Chambers of Elizabeth City Hall (50 Winfield Scott Plaza, Elizabeth, NJ) and the fourth meeting was held at the Peterstown Community Center (418 Palmer Street, Elizabeth, NJ).

Scheduling of Supplemental CSO Team meetings is done using the Doodle web application. Several meeting times are suggested by the permittees during a selected week approximately one month in advance of a meeting, and invitees are asked to respond with the times that they would be able to attend. The meeting time is selected based on the most preferred time indicated from the Doodle poll. A meeting invitation is then sent to the invitees as a Microsoft Outlook Calendar invitation, and invitees are asked to confirm their planned attendance. The Outlook invitation includes an agenda so that Supplemental CSO Team members are aware of the items that would be presented and discussed.

As not all team members are able to attend each meeting, invitations to each meeting are made and the meetings start with a recap of the previous discussions, the objectives of the CSO LTCP process, and the role of the CSO Supplemental Team. Members of the permittee team are then given a presentation updating them on the status of the LTCP activities and summarizing any developments made since the previous meeting. Meeting sign-in sheets are distributed and collected. Copies of the sign-in sheets and presentations for the Supplemental CSO Team meetings to date are contained in Appendix B.

Feedback from the Supplemental CSO Team is solicited on issues they may have observed or encountered, any informational needs they would want to convey to constituents, and any feedback on items identified for input.

A copy of the meeting presentation materials and any handouts are provided to members of the Supplemental CSO Team within one week of each meeting. Supplemental CSO Team meeting agendas and presentations are distributed via email or posted on a web site that the members can access.

3.4 Information Sharing and Input Collection Approach

The series of informal meetings with the Supplemental CSO Team are designed to share important information with the group through presentations and handouts summarizing the data collected, model simulation results, and technical evaluations. The information is consolidated into a format that is as non-technical and accessible as possible. Presentation, handouts, and interviews during the meetings are used to solicit feedback and to better understand the issues of public concern. The permittees are collecting input from the team members on the key items of the LTCP at the team meetings by presenting information on critical topics, promoting group discussion by posing open-ended questions, and sharing presentation materials for comments.

The Supplemental CSO Team is provided the opportunity to review draft submittal information through the meeting presentation materials and handouts. The team is encouraged to discuss and provide any comments or feedback during the periodic team meetings, but can also provide input to the project team after the meetings or in response to the distribution of meeting summaries via email. Input is requested on presentation content as well as comments on draft report information, handouts, and public outreach activities. Team members have been informed that additional information on the submittal contents can be provided upon request.

The permittees are seeking input from the Supplemental CSO Team prior to submission of the following components of the LTCP:

- System Characterization Reports
- Public Participation Process Report
- Consideration of Sensitive Areas Information
- Baseline Compliance Monitoring Program
- Evaluation of Alternatives

- Cost and Performance Considerations
- Financial Capability Assessment
- Plan Selection and Implementation Schedule

The permittees have advised the Supplemental CSO Team of the various permit milestones and due dates for the 3 steps of the LTCP development process. These milestones include the System Characterization Reports, Public Participation Process Report, and Consideration of Sensitive Areas Information due July 1, 2018; Development and Evaluation of Alternatives Report due July 1, 2019; and the Selection and Implementation of Alternatives Report due June 1, 2020.

The Supplemental CSO Team is being informed of the alternatives being considered for evaluation and selection under the LTCP at the group meetings being held in 2018 through mid-2019. For example, a presentation on green infrastructure concepts being considered was made to the group in January 2018. These presentations will be expanded as the alternatives analysis task develops.

Input collected from the Supplemental CSO Team will be considered in the decision-making process for determining the appropriate wet weather controls for the City of Elizabeth and JMEUC communities. The permittee team will review all comments and feedback received from the Supplemental CSO Team, both through meetings as well as written comments, and will consider this feedback in the development and evaluation of CSO control alternatives. Comments will be evaluated to determine the actions appropriate to carry into plan development and implementation.

It is anticipated that the content of the team meetings and feedback solicited from the group will grow increasing complex as the program progresses through data gathering, system characterization, alternatives evaluation, and plan selection. The team's input will inform decisions on waterbody priorities, type and level of CSO controls proposed, rate implications and financial burden tolerances, public involvement and partnership initiatives, and public amenities for value-added benefits. This input should assist in gaining the general public's support of the selected LTCP.

The Supplemental CSO Team may also continue to be consulted on an as-needed basis after the completion of the LTCP development, to obtain feedback during the LTCP implementation. The team's feedback on the proposed compliance monitoring program for the selected LTCP will be sought and means by which the public will be informed of the status of LTCP project implementation will be identified. Potential media platforms for LTCP implementation updates and opportunities for enhancing the LTCP effectiveness through public outreach and education on stormwater control incentives and sustainable green practices will be investigated.

3.5 Summary of Participant Comments to Date

The sections below summarize the comments that were received from members of the Supplemental CSO Team at each of the meetings to-date.

3.5.1 Meeting No. 1

The first meeting, held on June 9, 2017, was attended by 22 individuals of which five were from NJDEP, eight were from the permittee team including Elizabeth, JMEUC and consultants, and nine were stakeholder representatives from the other invited groups. The questions and comments from this meeting were as follows:

1. Will there be State or federal funding for the work that may be necessary?

NJDEP explained that there is no guaranteed funding. There are currently some programs available from the State, such as a 50 percent principal forgiveness program for green infrastructure projects. Some permittees have leveraged grants through private organizations. The NJDEP indicated that it will be creating a guidance document related to funding. The goal is for permittees to use all available funding, but the CSO control projects will be expensive. The implementation schedule must take cost into consideration and extend out the costs according to the community's financial capability.

2. Can a surcharge or fee based on usage be considered to finance the costs?

The group discussed the ways that various entities calculate sewer rates (based on real estate tax or water usage). The City of Elizabeth bills sewer charges based on water usage as part of the water bill. There was a discussion of financing wet weather controls through a separate charge for storm water runoff or giving credits for anything that reduces runoff, such as rain gardens or green roofs.

3. Is there any treatment of the stormwater before it reaches the waterways?

Screens and nets in control facilities upstream of the CSO outfalls currently capture and remove solids and floatable materials greater than 1/2 inch in size. It was noted that treatment is one alternative that the LTCP feasibility will be evaluating to meet the permit requirements.

3.5.2 Meeting No. 2

The second meeting, held on October 11, 2017, was attended by 17 individuals of which two were from NJDEP, eight were from the permittee team including Elizabeth, JMEUC and consultants, and seven were stakeholder representatives from the other invited groups. The questions and comments from this meeting were as follows:

1. Where was the sampling done?

The sampling discussed at the meeting took place in the landside sewer system, not the receiving waters. Receiving water quality sampling and modeling is being conducted under the NJ CSO Group shared services agreement, which is being led by Passaic Valley Sewerage Commission (PVSC).

2. What were the locations of the sampling?

The map of wastewater sampling locations was displayed and it was explained how these locations were selected to represent different land uses around the City and how they would be applied as necessary to the other outfalls with similar land use characteristics.

3. How often did the team take samples, and how did the team determine when to sample?

The weather was monitored daily, and if the forecast showed a large rain event predicted over the following few days, the sampling team would mobilize and get ready to sample. The sampling procedures were outlined in a work plan report and agreed upon in advance with NJDEP.

4. The scale of the graphs showing pathogen concentrations from the wastewater quality sampling was questioned and it was requested that this be related to treated effluent standards.

Although much lower than raw sewage, the pathogen results for the combined sewage near the end of the sampling events were significantly higher than the standard for the discharge from a wastewater treatment plant, where disinfection would be provided to meet the standards.

5. Did the hydraulic model include contributions from outside municipalities?

Contributions from external locations are accounted in the model based on the sewer system documentation compiled and verification field work conducted.

6. When were the meters installed?

Meters were installed for the period from August 21, 2015 to December 22, 2015. Once calibrated and validated, the Elizabeth and JMEUC sewer and plant models will be integrated together.

7. Was any outreach done for the design of Trumbull Street project?

This is a flood control project that has been in development for several years based on public input. The performance of green infrastructure elements incorporated in the Trumbull Street project design will be monitored and similar features may be incorporated for future projects in the City. It is an excellent example of how amenities can be added to large infrastructure projects for the public interest.

8. Team member asked to receive information on when construction of pending projects would take place, or if the City could send any other public information which the Elizabeth Chamber of Commerce could circulate to its membership. The member noted that the Chamber of Commerce has over 500 business members and could send notices to them regarding press releases, pending projects, and road closures.

Paper copies of recent flyers on combined sewers were provided at the meeting and it was noted that electronic versions are available to the team for their use upon request. Mailings, press releases, and newsletters are being considered and will be shared with team members for distribution through organization networks.

9. Groundwork Elizabeth has a nature center at Peterstown Community Center, and can distribute information to children and parents through the center. They are also building an outdoor pavilion in Phil Rizzuto Park and could distribute flyers there as well.

The Groundwork Elizabeth community centers and networking system will be used an information distribution mechanism.

10. Does Elizabeth have any social media accounts? Suggested information could be posted there.

Elizabeth has a Facebook account. A team member suggested reaching out to decision makers such as the environmental planning commission or similar master planner to incorporate CSO control strategies such as green infrastructure into redevelopment policy and master plans. Representatives of the City planning and zoning board offices are on the Supplemental CSO Team. It was noted that the next master plan will be issued in 2020 and the City engineering division has been working with the planning department on stormwater control strategies. The City Director of Planning is being consulted and the City is reviewing the current stormwater management ordinances.

Team members were provided with the handouts that were previously produced and it was noted that a copy of the presentation would be circulated to the group.

11. In response to requested input on sensitive areas consideration, the group generally indicated that areas around the CSO discharge points are not accessible to the public and would be unsafe for extensive contact recreational use. Members noted that fishing occurs along the Arthur Kill and Newark Bay off the piers at Slater Park and Veterans Memorial Waterfront Park.

It was noted that it was not advised to consume fish caught from these locations and that signs indicating such are posted. Future City Inc. has an advisory group that educates the public regarding the consumption of fish caught in the area. Furthermore, fishing is not identified by the regulations as a sensitive area attribute.

12. A team member stated that jet skiing and tubing has been observed on the Arthur Kill.

While jet skiing and kayaking have been observed on the Arthur Kill, such activities are uncommon. No wading or swimming in the receiving waters was reported. Furthermore, heavy container ship and barge traffic on the Arthur Kill and Newark Bay make these receiving waters non-conducive to primary contact recreational or other activities such as kayaking, canoeing, or jet skiing. Given the extensive use of the waterways for marine shipping and commercial navigation, swimming beaches and other primary contact recreational uses would not be encouraged as the large commercial vessels would endanger swimmers and kayakers.

3.5.3 Meeting No. 3

The third meeting, held on January 29, 2018, was attended by 21 individuals of which two were from NJDEP, nine were from the permittee team including Elizabeth, JMEUC and consultants, and ten were stakeholder representatives from the other invited groups. The questions and comments from this meeting were as follows:

1. Team members were asked for any feedback on CSO related issues they have noted or received by from constituents. No issues were reported.

2. Team members were asked for suggestions on how to solicit input. A team member suggested producing CSO fact sheets in different languages with the City's contact information included, and information such as a map of the areas, high level information, and a link to a website. They also suggested that it would be helpful for the public to have a better understanding of when and where they can provide input, in terms of the timeline of the project, or through tools like comment forms.

3. Are New York or Staten Island being evaluated for sensitive areas, since they are nearby? Team member noted that new parks are being created for recreational use on Staten Island and asked whether the Elizabeth Marina would be considered a sensitive area. They noted that boating is a secondary contact activity, but asked if there is a CSO located there.

Sensitive areas are considered to define specific CSO discharge locations that appear to be of more prominence, greater concern, or higher ecological or recreational value than other locations and the assessment is confined to within the municipal boundary or its immediate vicinity. There is a CSO outfall located at the marina and it is marked with a sign. The marina would be discussed in the sensitive areas assessment report; however, it should not be considered as a sensitive area based on the criteria prescribed in the National CSO Policy and the permits.

4. A team member asked about the specific actions to be conducted for the public participation program, including the points and timeframes for public comment.

5. A team member expressed support for green infrastructure initiatives. It has many benefits and the member would like to see it promoted.

6. A team member indicated that the costs of green infrastructure can also be high and that the effectiveness needs to be considered on a dollar-to-dollar basis.

7. Team member noted that a cost analysis might be helpful to this group. They indicated that it would be helpful for those doing work to see what the costs of green infrastructure are, and whether it could be incentivized.

3.5.4 Meeting No. 4

The fourth meeting, held on June 5, 2018, was attended by 24 individuals, of which two were from NJDEP, nine were from the permittee team including Elizabeth, JMEUC and consultants, and thirteen were stakeholder representatives from the other invited groups. The organization and contents of upcoming permit compliance submissions was presented. Input on the CSO issues and public engagement was requested and the questions and comments from this meeting were as follows:

1. It was suggested that information on the CSO control alternatives could be disseminated through the Shaping Elizabeth Community Health Initiative.

2. It was requested that information about CSOs and potential alternatives could be posted on the City's website, so that member groups could provide a link to the website in their communications with constituents.

3. Text or graphics about CSOs was requested so that it could be posted on member groups social media pages.

4. Members expressed interest in learning more about the signage and educational material prepared for rain gardens that the city is working on, as well as an interest in rainwater harvesting.

5. It was suggested that any educational material should be translated into the language of the local residents as applicable (e.g. Spanish, Portuguese, etc.)

6. It was suggested that information could be also distributed at libraries.

In addition, feedback from the Supplemental CSO Team members was solicited electronically through an interactive web-based survey application. Participants anonymously answered survey questions on a website using their mobile devices during the meeting and the poll results were presented in real-time. Feedback on items such as perceptions of the cleanliness of water bodies, and priorities for developing CSO alternatives will be utilized to guide the analysis of CSO alternatives in future. Incorporating these live polls was also an effective communication strategy as it encouraged CSO Team members to provide instant feedback and remain engaged throughout the meeting. The results of the survey are shown below, ordered by descending response count.

Question Possible Selections	Response Count
What kind of organization do you represent?	
Government	3
Environmental	3
Community/Resident	1
Business/Industry	0
Total	**7**
How clean do you think the Elizabeth River is?	
Very polluted	9
Slightly polluted	5
Somewhat clean	0
Very clean	0
Total	**14**
What is the main cause of pollution in local waterways?	
Rainwater runoff/Non-point sources	8
Background/Upstream sources	4
Don't Know	2
Sewer overflows	2
Wildlife	0
Total	**16**
Whose responsibility is it to protect local waters from pollution?	
Shared responsibility of local stakeholders (residents, businesses, institutions)	8
Local government / Treatment plant	4
State government	2
Federal government	1
Total	**15**
What is the most effective way to engage with the public for CSO awareness?	
Website / social media	4
Community events	4
News media	1
Displays at public buildings	1
Mail / bill stuffers	1
Facility tours	0
Total	**11**
What is the most important criteria in developing CSO controls?	
Green infrastructure / community spaces	5
Make waterway healthier for fish/wildlife	3
Make waterway more usable by people,	3
Reduce overflows	2
Keep rates as low as possible	1
Total	**14**
Would you/your group be willing to add green elements at home, like a rain garden?	
Yes	16
No	1
Total	**17**

Question	Response
What is your preferred level of CSO control?	
Water quality-based cost/performance analysis	11
Prescribed minimums (4/yr or 85% capture)	5
Complete elimination	1
Total	**17**
What increase per month would you/your group accept for the CSO Control Program?	
$15	15
$30	1
$0	1
$45	0
Total	**17**

4 Process Implementation

The implementation of public engagement activities throughout the 3 stages of the LTCP development is outlined below.

4.1 Public Participation during System Characterization

4.1.1 Supplemental CSO Team Meetings

A Supplemental CSO Team has been formed to provide input on the planning process and to serve as points of connection to the larger community. An invitation list for the Supplemental CSO Team participation was developed and invitation letters were sent to suggested individuals and groups on March 17, 2017. Four (4) meetings have been held thus far, attended by between 18 and 24 people each time, as summarized in Section 3.

Goals and statement of purpose for the Supplemental CSO Team have been established and communicated. Team members have acquired an understanding of the LTCP issues and challenges through information presented at the meetings so that they can indicate and facilitate discussions of these issues and challenges within their organizations, groups, and communities.

The series of informal meetings with the Supplemental CSO Team are designed to share important information with the group through presentations and handouts summarizing the data collected, model simulation results, and technical evaluations. The information is consolidated into a format that is as non-technical and accessible as possible. Presentation, handouts, and interviews during the meetings are used to solicit feedback and to better understand the issues of public concern. Meeting presentations will be posted on the City of Elizabeth Division of Engineering website. Other related CSO resources may also be posted there for reference and use by the Team and other interested parties.

The Supplemental CSO Team has been informed and input has been solicited at the meetings to date on the following components:

- System Characterization Reports
- Public Participation Process Report
- Consideration of Sensitive Areas Information
- Baseline Compliance Monitoring Program
- Evaluation of Alternatives

Feedback was also solicited from the members of the Supplemental CSO Team through interactive online survey questions that was conducted during Meeting No. 4.

The permittees have advised the Supplemental CSO Team of the various permit milestones and due dates for the 3 steps of the LTCP development process and it is anticipated that the content of the team meetings and feedback solicited from the group will grow increasing complex as the program progresses through data gathering, system characterization, alternatives evaluation, and plan selection. The Supplemental CSO Team's input and involvement will be sought throughout the 3 stages of the planning process.

4.1.2 Posters, Flyers, Brochures, and Handouts

The permittees have developed posters, flyers, and handouts that have been used at public education events to assist in explaining combined sewer overflows, the regulatory context for CSO controls, and the public's role in water quality protection. Handouts have been placed at the Elizabeth City Hall for circulation. The posters and flyers have also been provided to Future City, Inc., an environmental and community development organization, for their use at student fairs and public outreach events. Other stakeholder groups have been given handouts and offered educational materials for distribution. Development and distribution of such outreach and educational materials will continue through the 3 stages of the LTCP development process.

4.1.3 Websites

The City of Elizabeth maintains a Division of Engineering website that contains information on the CSO control plan, the municipal stormwater management plan, the stormwater pollution prevention plan, sewer system mapping, and a link to the CSO notification webpage. The JMEUC website also includes a public outreach section, which has information about water infrastructure, sewer rates, F.R.O.G. (fats, roots, oil, and grease), and lists the opportunity to schedule plant tours. These websites will be maintained and augmented throughout the 3 stages of the LTCP development process.

4.1.4 Outreach and Educational Events

The permittees have been participating in various events to educate the public, including working with school groups and community organizations. The City of Elizabeth has been collaborating with the environmental and community development group, Future City Inc., and participated in the organization's annual Environmental Day events in April 2017 and 2018 and annual Estuary Day event in October 2017. At each event, the City completed about 8 presentations to over 200 students from different schools in the Elizabeth school district on topics such as combined sewers, rainfall infiltration into different types of land surfaces, and the structure and function of rain gardens. The City also took part in the annual Union County Bio-Blitz event, which is held to raise awareness among children and adults about nature conservation in County parks. The City is also installing outdoor display boards and signs at green infrastructure installations such as the Kenah Field rain garden to provide public information on wet weather projects. Community outreach and education efforts will be maintained throughout the 3 stages of the LTCP development.

4.1.5 News Releases and Media Coverage

News releases have been published by the City for notable CSO-related projects such as the urban green space and stormwater storage facilities at Trumbull Street and the rain garden which was installed as part of the Kenah Field Park improvements. A press release was circulated in May 2017 for the Trumbull Street Flood Control project, which provides information to city residents and stakeholders on the purpose, methods, funding, and design components of the project. The City Engineer has also been interviewed on TAPintoElizabeth, an online neighborhood news website, to explain the Trumbull Street project. Media advisory notices indicating the City of Elizabeth's participation in public education events such as the Future City, Inc. and Elizabeth River/ Arthur Kill Watershed Association has also provided certain press coverage. News releases and media advisories will continue to be issued during the alternatives and plan selection stages.

4.1.6 Regional and Watershed Based Partnerships

The permittees are collaborating with regional groups, such as the NJ CSO Group, Jersey Water Works, and New Jersey Future, on strategies and activities to actively involve the public on CSO related issues and receiving water quality concerns. For example, the City of Elizabeth hosted a "Connecting with Stakeholders on Water Infrastructure" kick-off meeting on September 21, 2016, which was co-presented by Jersey Water Works, the NJ Urban Mayors Association, and the NJDEP. On October 24, 2016, City representatives participated in the "Making Infrastructure Matter: A Hands-On Workshop for Stakeholder Communications" conducted by the same group of organizations. Participation in these regional and watershed based networks will be maintained throughout the 3 stages of the LTCP development and opportunities for shared or regional public engagement methods will be sought.

4.1.7 CSO Notification System and Outfall Identification Signs

As part of NJ CSO Group, an online CSO notification system has been developed as a public information tool advising on the status of CSO occurrences in the City of Elizabeth and certain other communities participating in the NJ CSO Group. The website provides up-to-date information regarding where CSO discharges may be occurring or that discharges are unlikely to be occurring in the City of Elizabeth. The City has also installed signs at each CSO outfall to educate the public of the potential hazards associated with water contact during and following wet weather. The CSO notification system and outfall identification signs will be in place throughout the LTCP development process and thereafter per NJPDES CSO permit conditions.

4.2 Public Participation during Alternatives Evaluation

In addition to actively educating and involving the public through the activities initiated to date, the permittees plan to perform the following additional activities during the Development and Evaluation of Alternatives stage:

- Continued periodic meetings of the Supplemental CSO Team. The team is being informed of the alternatives being considered for evaluation and selection under the LTCP at the group meetings being held in 2018 through mid-2019. For example, a presentation on green infrastructure concepts being considered was made to the group in January 2018. These presentations will be expanded as the alternatives analysis task develops.
- Additional distribution to public schools, libraries, and community groups of CSO LTCP related posters and flyers.
- Posting of additional CSO control information on the City and JMEUC website and social media pages.
- Presentations to city government and JMEUC executive and board officials to review options for controlling CSOs, identify preferred control options and priorities, and obtain input on public involvement strategies.
- Issuing public notice and holding public meeting in late May or early June 2019 on the development and evaluation of alternatives for CSO control.

4.3 Public Involvement during Plan Selection and Implementation Scheduling

In addition to actively educating and involving the public through the activities initiated to date, the permittees plan to perform the following additional activities during the Selection and Implementation Scheduling of Alternatives stage:

- Continued periodic meetings of the Supplemental CSO Team to provide input for consideration in the selection of those CSO controls, including commenting on cost burdens

and affordability. The team's input will inform decisions on waterbody priorities, type and level of CSO controls proposed, rate implication and financial burden tolerances, financial capability assessment, and potential public amenities for value-added benefits. Comments will be evaluated to determine the actions appropriate to carry into plan development and implementation.

- Posting of additional CSO control information on the City and JMEUC website and social media pages.
- Presentations to city government and JMEUC executive and board officials to review the CSO control options and costs, financial capability assessments, and plan selection and implementation schedule recommendations.
- Issuing public notice and holding public meeting in late April or early May 2020 on the alternatives review, planning level cost estimates and rate implications, and proposed plan selections and priorities for control projects.

Appendices

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A. Supplemental CSO Team Invitation Letters and Responses

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CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Ms. Barbara K. Schoor
Vice President
Community Investment Strategies
1970 Brunswick Avenue, Suite 100
Lawrenceville, NJ 08648

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Ms. Schoor:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

NJDEP has issued the CSO permits to control receiving water discharges from combined sewer systems in accordance with the National CSO Policy and the Federal Clean Water Act. The CSO Long Term Control Plan is a feasibility study to evaluate the means, costs, and effectiveness of alternatives for reducing the frequency, duration, and intensity of the CSO discharges. As the costs associated with controlling CSOs are extremely large and the related environmental and social issues are diverse and complex, the public's involvement throughout the LTCP process will be essential.

The City of Elizabeth and JMEUC are inviting members of the affected public to form a Supplemental CSO Team that will act as a public advisory group and a liaison between the public and the decision makers for the permittees. The activities of the Supplemental CSO Team may involve the following elements:

- Meet periodically to assist in the sharing of information and to provide input to the planning process;
- Review the proposed nature and extent of data and information to be collected during LTCP development;
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- Provide input for consideration in the selection of those CSO controls that will cost effectively meet the Clean Water Act requirements.

As such, the Supplemental CSO Team will coordinate with the City and JMEUC project team members to provide information on local concerns and community priorities as they relate to the combined sewer system and CSOs. Input will be solicited on various items, including community views on CSOs, local water quality issues, sewer system problems, and the community's willingness to accept or participate in CSO control alternatives. The Supplemental CSO Team will be provided with information to help it better understand the issues, costs, and operation of the collection and treatment systems. It will hear presentations; offer feedback; learn about alternative control measures and their estimated costs and benefits; and assist in developing an outreach program to reach a broad base of citizens.

It is anticipated that the Supplemental CSO Team will have its first meeting in May 2017 and will meet approximately every six months. Meetings will be held at a time most convenient for the majority of the group at a central location in Elizabeth, such as City Hall. While attendance at all meetings is not required, it is encouraged that only individuals or groups capable of making a commitment through June 2020, corresponding to the completion of the LTCP process, consider joining.

We kindly request that you confirm your interest in participating in the Supplemental CSO Team by returning the attached response form to my attention via email or fax as noted at the bottom of the form. You can also respond via telephone by calling me at (908) 820-4271. If you or your organization will not be able to participate, we ask that you mark the appropriate line on the response form and return the form to me for our tracking purposes.

Notifications of interest should be submitted on or before April 14, 2017. You or your organization will be notified on or about April 21, 2017 with the details about the time and location of the first meeting.

We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
E. Burgess - CDM Smith (via email)
J. Bonaccorso - CME (via email)
A. Gagliostro, J. Dening - Mott MacDonald (via email)

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Dave Strochak
Executive Director
Elizabeth Avenue Partnership Inc.
913 Elizabeth Avenue, Suite 2A
Elizabeth, NJ 07201

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Strochak:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

NJDEP has issued the CSO permits to control receiving water discharges from combined sewer systems in accordance with the National CSO Policy and the Federal Clean Water Act. The CSO Long Term Control Plan is a feasibility study to evaluate the means, costs, and effectiveness of alternatives for reducing the frequency, duration, and intensity of the CSO discharges. As the costs associated with controlling CSOs are extremely large and the related environmental and social issues are diverse and complex, the public's involvement throughout the LTCP process will be essential.

The City of Elizabeth and JMEUC are inviting members of the affected public to form a Supplemental CSO Team that will act as a public advisory group and a liaison between the public and the decision makers for the permittees. The activities of the Supplemental CSO Team may involve the following elements:

- Meet periodically to assist in the sharing of information and to provide input to the planning process;
- Review the proposed nature and extent of data and information to be collected during LTCP development;
- Provide input for consideration in the evaluation of CSO control alternatives; and
- Provide input for consideration in the selection of those CSO controls that will cost effectively meet the Clean Water Act requirements.

As such, the Supplemental CSO Team will coordinate with the City and JMEUC project team members to provide information on local concerns and community priorities as they relate to the combined sewer system and CSOs. Input will be solicited on various items, including community views on CSOs, local water quality issues, sewer system problems, and the community's willingness to accept or participate in CSO control alternatives. The Supplemental CSO Team will be provided with information to help it better understand the issues, costs, and operation of the collection and treatment systems. It will hear presentations; offer feedback; learn about alternative control measures and their estimated costs and benefits; and assist in developing an outreach program to reach a broad base of citizens.

It is anticipated that the Supplemental CSO Team will have its first meeting in May 2017 and will meet approximately every six months. Meetings will be held at a time most convenient for the majority of the group at a central location in Elizabeth, such as City Hall. While attendance at all meetings is not required, it is encouraged that only individuals or groups capable of making a commitment through June 2020, corresponding to the completion of the LTCP process, consider joining.

We kindly request that you confirm your interest in participating in the Supplemental CSO Team by returning the attached response form to my attention via email or fax as noted at the bottom of the form. You can also respond via telephone by calling me at (908) 820-4271. If you or your organization will not be able to participate, we ask that you mark the appropriate line on the response form and return the form to me for our tracking purposes.

Notifications of interest should be submitted on or before April 14, 2017. You or your organization will be notified on or about April 21, 2017 with the details about the time and location of the first meeting.

We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
E. Burgess - CDM Smith (via email)
J. Bonaccorso - CME (via email)
A. Gagliostro, J. Dening - Mott MacDonald (via email)

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Ms. Jennifer Costa
Director
Elizabeth Destination Marketing Organization
456 North Broad Street
Elizabeth, NJ 07208

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Ms. Costa:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

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The City of Elizabeth and JMEUC are inviting members of the affected public to form a Supplemental CSO Team that will act as a public advisory group and a liaison between the public and the decision makers for the permittees. The activities of the Supplemental CSO Team may involve the following elements:

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It is anticipated that the Supplemental CSO Team will have its first meeting in May 2017 and will meet approximately every six months. Meetings will be held at a time most convenient for the majority of the group at a central location in Elizabeth, such as City Hall. While attendance at all meetings is not required, it is encouraged that only individuals or groups capable of making a commitment through June 2020, corresponding to the completion of the LTCP process, consider joining.

We kindly request that you confirm your interest in participating in the Supplemental CSO Team by returning the attached response form to my attention via email or fax as noted at the bottom of the form. You can also respond via telephone by calling me at (908) 820-4271. If you or your organization will not be able to participate, we ask that you mark the appropriate line on the response form and return the form to me for our tracking purposes.

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We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

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_____
Signature and Date

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Bill O'Dea
Executive Director
Elizabeth Development Company
205 First Street, Suite 114
Elizabeth, NJ 07206

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. O'Dea:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

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We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
E. Burgess - CDM Smith (via email)
J. Bonaccorso - CME (via email)
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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Gordon Haas
Director
The Greater Elizabeth Chamber of Commerce
456 North Broad Street
Elizabeth, NJ 07208

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Haas:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Signature and Date

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Ms. Michelle Doran-McBean
Chief Executive Officer
Elizabeth River/Arthur Kill Watershed Association
1045 East Jersey Street, Suite 204
Elizabeth, NJ 07201

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Ms. Doran-McBean:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Signature and Date

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Ms. Michelle Doran-McBean
Chief Executive Officer
Future City Inc.
1045 East Jersey Street, Suite 204
Elizabeth, NJ 07201

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Ms. Doran-McBean:

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Primary Contact Name and Title

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Organization Name (if applicable)

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Signature and Date

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CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Jonathan Phillips
Executive Director
Groundworks Elizabeth
205 First Street
Elizabeth, NJ 07206

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Phillips:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Signature and Date

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(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Hugh Carola
Program Director
Hackensack Riverkeeper, Inc.
231 Main Street
Hackensack, NJ 07601-7304

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Carola:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Victor E. Vinegra, PE PLS PP
President
Harbor Consultants
320 North Avenue East
Cranford, NJ 07016

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Vinegra:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

NJDEP has issued the CSO permits to control receiving water discharges from combined sewer systems in accordance with the National CSO Policy and the Federal Clean Water Act. The CSO Long Term Control Plan is a feasibility study to evaluate the means, costs, and effectiveness of alternatives for reducing the frequency, duration, and intensity of the CSO discharges. As the costs associated with controlling CSOs are extremely large and the related environmental and social issues are diverse and complex, the public's involvement throughout the LTCP process will be essential.

The City of Elizabeth and JMEUC are inviting members of the affected public to form a Supplemental CSO Team that will act as a public advisory group and a liaison between the public and the decision makers for the permittees. The activities of the Supplemental CSO Team may involve the following elements:

- Meet periodically to assist in the sharing of information and to provide input to the planning process;
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As such, the Supplemental CSO Team will coordinate with the City and JMEUC project team members to provide information on local concerns and community priorities as they relate to the combined sewer system and CSOs. Input will be solicited on various items, including community views on CSOs, local water quality issues, sewer system problems, and the community's willingness to accept or participate in CSO control alternatives. The Supplemental CSO Team will be provided with information to help it better understand the issues, costs, and operation of the collection and treatment systems. It will hear presentations; offer feedback; learn about alternative control measures and their estimated costs and benefits; and assist in developing an outreach program to reach a broad base of citizens.

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Notifications of interest should be submitted on or before April 14, 2017. You or your organization will be notified on or about April 21, 2017 with the details about the time and location of the first meeting.

We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

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Fax Number (if available)

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Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

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DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Ms. Janice de Avila
Executive Director
Historic Midtown Elizabeth Special Improvement District
1139 East Jersey Street, Suite 616
Elizabeth, NJ 07201

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Ms. de Avila:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Steven Bernhaut
Managing Director
Hub Realty
447 Northfield Avenue, Suite 200
West Orange, NJ 07052-3088

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Bernhaut:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Signature and Date

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DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Dr. Keith Bostian
Dean, New Jersey Center for Science, Technology & Mathematics
Kean University
1000 Morris Avenue, STEM Building, Room 5-13D
Union, NJ 07083

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Dr. Bostian:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

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Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

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Primary Contact Name and Title

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Organization Name (if applicable)

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Signature and Date

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DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Michael J. Neglia, PE PLS PP
Roselle Park Borough Engineer
Neglia Engineering Associates
34 Park Avenue, P.O. Box 426
Lyndhurst, NJ 07071

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Neglia:

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CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Signature and Date

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DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Ms. Debbie Mans
Executive Director
NY/NJ Baykeeper
52 West Front Street
Keyport, NJ 07735

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Ms. Mans:

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The City of Elizabeth and JMEUC are inviting members of the affected public to form a Supplemental CSO Team that will act as a public advisory group and a liaison between the public and the decision makers for the permittees. The activities of the Supplemental CSO Team may involve the following elements:

- Meet periodically to assist in the sharing of information and to provide input to the planning process;
- Review the proposed nature and extent of data and information to be collected during LTCP development;
- Provide input for consideration in the evaluation of CSO control alternatives; and
- Provide input for consideration in the selection of those CSO controls that will cost effectively meet the Clean Water Act requirements.

As such, the Supplemental CSO Team will coordinate with the City and JMEUC project team members to provide information on local concerns and community priorities as they relate to the combined sewer system and CSOs. Input will be solicited on various items, including community views on CSOs, local water quality issues, sewer system problems, and the community's willingness to accept or participate in CSO control alternatives. The Supplemental CSO Team will be provided with information to help it better understand the issues, costs, and operation of the collection and treatment systems. It will hear presentations; offer feedback; learn about alternative control measures and their estimated costs and benefits; and assist in developing an outreach program to reach a broad base of citizens.

It is anticipated that the Supplemental CSO Team will have its first meeting in May 2017 and will meet approximately every six months. Meetings will be held at a time most convenient for the majority of the group at a central location in Elizabeth, such as City Hall. While attendance at all meetings is not required, it is encouraged that only individuals or groups capable of making a commitment through June 2020, corresponding to the completion of the LTCP process, consider joining.

We kindly request that you confirm your interest in participating in the Supplemental CSO Team by returning the attached response form to my attention via email or fax as noted at the bottom of the form. You can also respond via telephone by calling me at (908) 820-4271. If you or your organization will not be able to participate, we ask that you mark the appropriate line on the response form and return the form to me for our tracking purposes.

Notifications of interest should be submitted on or before April 14, 2017. You or your organization will be notified on or about April 21, 2017 with the details about the time and location of the first meeting.

We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
E. Burgess - CDM Smith (via email)
J. Bonaccorso - CME (via email)
A. Gagliostro, J. Dening - Mott MacDonald (via email)

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Ronnie Levy
President
Paramount Assets
142 Broad Street, 2nd Fl
Elizabeth, NJ 07201

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Levy:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

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The City of Elizabeth and JMEUC are inviting members of the affected public to form a Supplemental CSO Team that will act as a public advisory group and a liaison between the public and the decision makers for the permittees. The activities of the Supplemental CSO Team may involve the following elements:

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It is anticipated that the Supplemental CSO Team will have its first meeting in May 2017 and will meet approximately every six months. Meetings will be held at a time most convenient for the majority of the group at a central location in Elizabeth, such as City Hall. While attendance at all meetings is not required, it is encouraged that only individuals or groups capable of making a commitment through June 2020, corresponding to the completion of the LTCP process, consider joining.

We kindly request that you confirm your interest in participating in the Supplemental CSO Team by returning the attached response form to my attention via email or fax as noted at the bottom of the form. You can also respond via telephone by calling me at (908) 820-4271. If you or your organization will not be able to participate, we ask that you mark the appropriate line on the response form and return the form to me for our tracking purposes.

Notifications of interest should be submitted on or before April 14, 2017. You or your organization will be notified on or about April 21, 2017 with the details about the time and location of the first meeting.

We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
E. Burgess - CDM Smith (via email)
J. Bonaccorso - CME (via email)
A. Gagliostro, J. Dening - Mott MacDonald (via email)

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH, NEW JERSEY
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
50 WINFIELD SCOTT PLAZA, ELIZABETH, NEW JERSEY 07201-2462
(908) 820-4270

DANIEL J. LOOMIS, PE
City Engineer

J. CHRISTIAN BOLLWAGE
Mayor

March 17, 2017

Mr. Joseph A. Graziano Sr., CPWM
Director
Union County Dept. of Engineering, Public Works & Facilities Management
2325 South Avenue
Scotch Plains, NJ 07076

RE: City of Elizabeth and Joint Meeting of Essex and Union Counties
Combined Sewer Overflow Long Term Control Plan Public Participation Program
Invitation to Participate in the Supplemental CSO Team

Dear Mr. Graziano:

On behalf of the City of Elizabeth and the Joint Meeting of Essex and Union Counties (JMEUC), I am writing to invite you to participate as a member of a public advisory group for a major public works program.

The City of Elizabeth and JMEUC are each under permit actions issued by the New Jersey Department of Environmental Protection (NJDEP) that require the development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The City of Elizabeth and JMEUC have agreed to jointly develop a single LTCP for submittal to NJDEP no later than June 1, 2020. Combined sewer systems are typically located in older urban areas and were constructed to provide for the collection of sanitary sewage, industrial wastewater, and stormwater runoff within the same sewer pipe. The combined sewer system in our area was designed to convey all dry weather flow and some wet weather flows to the JMEUC's Wastewater Treatment Plant located in Elizabeth. The combined sewer system was also designed to discharge excess wet weather flows through permitted CSO outfalls to adjacent receiving waters. If the excess flows were not discharged through the outfalls under the existing conditions, stormwater runoff would routinely flood the communities served by the system.

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We kindly request that you confirm your interest in participating in the Supplemental CSO Team by returning the attached response form to my attention via email or fax as noted at the bottom of the form. You can also respond via telephone by calling me at (908) 820-4271. If you or your organization will not be able to participate, we ask that you mark the appropriate line on the response form and return the form to me for our tracking purposes.

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We look forward to your acceptance of this invitation and your participation in the group. Should you have any questions, please contact me at (908) 820-4271 or by email at dloomis@elizabethnj.org.

Sincerely yours,

Daniel J. Loomis, PE
City Engineer
City of Elizabeth, NJ

cc: S. McGhee, S. Dowhan, J. Paluch, F. Bonaccorso - JMEUC (via email)
J. Papetti, S. Rinaldi - City of Elizabeth (via email)
E. Burgess - CDM Smith (via email)
J. Bonaccorso - CME (via email)
A. Gagliostro, J. Dening - Mott MacDonald (via email)

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

_____
Primary Contact Name and Title

_____
Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

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Primary Contact Name and Title

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Organization Name (if applicable)

_____
Address (for notifications)

_____
Phone Number (for notifications – organization, work, or home)

_____
Fax Number (if available)

_____
Email Address (for notifications)

X No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

3·29·17
_____
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

(Yes,) Your organization **will** participate in the Supplemental CSO Team

David Strochak, Executive Director
Primary Contact Name and Title

Elizabeth Avenue Partnership
Organization Name (if applicable)

913 Elizabeth Ave 2-A, Eliz NJ 07201
Address (for notifications)

908-590-2600
Phone Number (for notifications – organization, work, or home)

908-353-0989
Fax Number (if available)

davestro@optonline.net
Email Address (for notifications)

____ No, Your organization **will not** be able to participate in the Supplemental CSO Team.

3-28-17
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

✓ Yes, I/our organization **will** participate in the Supplemental CSO Team

JENNIFER COSTA, DIRECTOR
Primary Contact Name and Title

ELIZABETH DESTINATION MARKETING ORG. EDMO (Elizabeth's Tourism)
Organization Name (if applicable)

456 N. BROAD ST. ELIZABETH, NJ 07208
Address (for notifications)

908-355-9797 office / 908-220-9643 cell.
Phone Number (for notifications – organization, work, or home)

Fax Number (if available)

JCOSTA@ElizabethNJ.com
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

3/21/17
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

Arthurkill
~~ERIAK~~ blueway WEWAY @gmail.com
Primary Contact Name and Title

Elizabeth River / Arthur Kill Watershed Assoc.
Organization Name (if applicable)

1045 East Jersey Street
Address (for notifications)

908 230 9126
Phone Number (for notifications – organization, work, or home)

908 353 1511
Fax Number (if available)

arturkill ~~erak~~ blueway @gmail.com
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

_____ Yes, I/our organization **will** participate in the Supplemental CSO Team

Future City Inc
Primary Contact Name and Title

Organization Name (if applicable)

1045 East Jersey Street
Address (for notifications)

908 659 0689
Phone Number (for notifications – organization, work, or home)

908 353 1511
Fax Number (if available)

futurecityinc@gmail.com
Email Address (for notifications)

_____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

✓ Yes, I/our organization will participate in the Supplemental CSO Team

GORDON HAAS CEO/PRESIDENT
Primary Contact Name and Title

GREATER ELIZABETH CHAMBER OF COMMERCE
Organization Name (if applicable)

456 N. BROAD ST ELIZABETH NJ 07208
Address (for notifications)

908-355-7600
Phone Number (for notifications – organization, work, or home)

908 436-2054
Fax Number (if available)

ghaas.geacc@gmail.com
Email Address (for notifications)

____ No, I/our organization will not be able to participate in the Supplemental CSO Team.

Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

✓ Yes, I/our organization **will** participate in the Supplemental CSO Team

Jonathan Phillips, Executive Directo
Primary Contact Name and Title

Groundwork Elizabeth
Organization Name (if applicable)

205 1st Street, Elizabeth 07206
Address (for notifications)

Phone Number (for notifications – organization, work, or home)

Fax Number (if available)

jonathan@groundworkelizabeth.or
Email Address (for notifications)

____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

3/29/17
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

TO: Daniel Loomis
1 page.

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

X Yes, I/our organization will participate in the Supplemental CSO Team

Debbie Mans, Exec. Director
Primary Contact Name and Title

NY/NJ Baykeeper
Organization Name (if applicable)

52 W. Front St, Keyport, NJ ~~07735~~ 07735
Address (for notifications)

732-888-9870 x2
Phone Number (for notifications' – organization, work, or home)

732-888-9873
Fax Number (if available)

debbie@nynjbaykeeper.org
Email Address (for notifications)

____ No, I/our organization will not be able to participate in the Supplemental CSO Team.

DMann April 3, 2017
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

✓ Yes, I/our organization **will** participate in the Supplemental CSO Team

Emil J. Bustamante / ~~[illegible]~~ "~~[illegible]~~"
Primary Contact Name and Title BOARD MEMBER

Special Improvement District - Historic Midtown Elizabeth, NJ
Organization Name (if applicable)

31 LYON PL. ELIZABETH, NJ 07202
Address (for notifications)

908 - 230-8129 cell
Phone Number (for notifications – organization, work, or home)

Fax Number (if available)

embustam@kean.edu
Email Address (for notifications)

____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

[signature] 4/21/17
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

447 Northfield Avenue
West Orange, NJ 07052
Phone (973) 731-2600
Phone (973) 731-6654
Facsimile (973) 731-6279
Cell Phone (201) 960-9204
steveLwarehouse@aol.com

HUB REALTY MANAGEMENT, LLC.

Fax

To:	Daniel Loomis, PE City Engineer	**From:**	Steve Bernhaut
	City of ELizabeth	**Pages:**	3
Phone:	908-820-4270	**Date:**	March 28, 2017
Fax:	908-820-4087	**RE:**	**PARTICIPATION IN THE SUPPLEMENTAL CSO TEAM**

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

• **Comments:**

Dear Mr. Loomis:

Attached please find the completed response form.

Regards,

Steve

Steven Bernhaut

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

✔ Yes, Your organization will participate in the Supplemental CSO Team

Steven Bernhaut, Member
Primary Contact Name and Title

HUB Realty Management, LLC.
Organization Name (if applicable)

447 Northfield Avenue, West Orange, NJ 07052
Address (for notifications)

973-731-6654
Phone Number (for notifications – organization, work, or home)

973-731-6647
Fax Number (if available)

stevelwarehouse@aol.com
Email Address (for notifications)

___ No, Your organization will not be able to participate in the Supplemental CSO Team

March 27, 2017
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

HUB REALTY MANAGEMENT, LLC.

447 Northfield Avenue
West Orange, NJ 07052
SteveLwarehouse@aol.com

Tel: 973-731-6654
Fax: 973-731-6279
Cell: 201-960-9204

June 18, 2012

Daniel Loomis, PE
City Engineer
Engineering Department
CITY OF ELIZABETH
50 Winfield Scott Plaza
Elizabeth, NJ 07201-2462

RE: INVITATION TO PARTICIPATE IN THE SUPPLEMENTAL CSO TEAM
CITY OF ELIZABETH, NEW JERSEY

Dear Dan:

I would be pleased to participate as a member of the public advisory group and be involved in the Long Term planning process outlined in your letter.

An additional item for consideration. Brian Edwards from our organization would also be willing to share his experience and expertise as part of the advisory group if there is room. I suggest Brian because his four decades of construction experience in at least ½ dozen states, dealing with large and small construction jobs, make him uniquely qualified (at least more qualified than I am) to address the practicalities of the future planned construction projects from the builder's point of view.

Regards,

Steven Bernhaut
Member

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

✓ Yes, I/our organization **will** participate in the Supplemental CSO Team

EVAN M. JACOBS, P.E. (PROJECT MGR.)
Primary Contact Name and Title

NEGLIA ENGINEERING ASSOCIATES
Organization Name (if applicable)

34 PARK AVE - P.O. BOX 426, LYNDHURST, NJ 07071
Address (for notifications)

(201) 939-8805
Phone Number (for notifications – organization, work, or home)

(201) 939-0846
Fax Number (if available)

ejacobs@negliaengineering.com
Email Address (for notifications)

____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

E M J 04/17/17
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

CITY OF ELIZABETH AND JOINT MEETING OF ESSEX AND UNION COUNTIES
COMBINED SEWER OVERFLOW LONG TERM CONTROL PLANS
SUPPLEMENTAL CSO TEAM

INVITATION RESPONSE FORM

X Yes, I/our organization **will** participate in the Supplemental CSO Team

Paul J. Leso, Supervising Engineer
Primary Contact Name and Title

County of Union
Organization Name (if applicable)

2325 South Avenue, Scotch Plains, NJ 07076
Address (for notifications)

908-789-9075
Phone Number (for notifications – organization, work, or home)

908-789-3674
Fax Number (if available)

Plsso@ucnj.org
Email Address (for notifications)

____ No, I/our organization **will not** be able to participate in the Supplemental CSO Team.

Paul J. Leso 3/27/2017
Signature and Date

Please return the completed response form to:
Daniel J. Loomis, PE
Email: dloomis@elizabethnj.org
Fax: (908) 820-4087

B. Supplemental CSO Team Meeting Presentations

B.1 Meeting No. 1 - June 9, 2017

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City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting #1

Sign-In Sheet

June 9, 2017 at 1 pm

Name	Organization	Address	Phone	Email
Joseph BonAccorso	CME/JM	22 Jefferson	908 208 6685	JosephB222@verizon.net
Kelly Perez	NJDEP	401 E State St Trenton	609 292 4860	Kelly.perez@dep.nj.gov
Rachael Pepe	NJDEP	401 E. State St Trenton	609)292-4860	Rachael.Pepe@dep.nj.gov
Amy Caruso	NJDEP	401 E. State St. Trenton	609-292-4860	Amy.caruso@dep.nj.gov
Matt Bialynski	NJDEP	401 E. State St. Trenton	609-292-4800	matt.bialynski@dep.nj.gov

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting #1

Sign-In Sheet

June 9, 2017 at 1 pm

Name	Organization	Address	Phone	Email
Glenn Lautenbach	Future City Inc.	237 Magie Avenue	908-370-1824	glenn@futurecityinc.org
Tathiana Leguizamon	Future City Inc.	502 Franklin St	(908)-290-8525	tl01@futurecityinc.org
Sebastian Prado Cuacheta	Future City Inc	298 Morris Ave	(908) 242-2990	sp01@futurecityinc.org
FRANCIS BONACCORSO	JOINT MEETING OF ESSEX & UNION COUNTIES	500 S. 1ST STREET	908-353-1313	FBONACCORSO@JMEUC.com
Emil J. Bustamante	Special Improvement District for Historic Midtown Elizabeth	Home: 31 Lyon Pl. Elizabeth, NJ 07202	908.230.8129	embustam@kean.edu

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting #1

Sign-In Sheet

June 9, 2017 at 1 pm

Name	Organization	Address	Phone	Email
Jonathan Phillips	Groundwork Elizabeth	205 First St. Elizabeth NJ	908-289-0262	jonathan@groundworkelizabeth.org
STEVEN BERNHANT	LAUNDRY WAREHOUSE	447 NORTHFIELD AVE WEST ORANGE 07052	973-731-6654	steelwarehouse@aol.com
GORDON HAAS	GREATER ELIZABETH CHAMBER OF COMMERCE	456 N. BROAD ST. ELIZABETH NJ. 07208	908 355-7600	ghaas.gecc@gmail.com
CHRISTIAN CUETO	HARBOR CONSULTANTS	320 NORTH AVE CRANFORD, NJ 07726	908-276-2715	CHRISTIANC@HCICG.NET
STEVEN RINALDI	CITY OF ELIZABETH	50 WINFIELD SCOTT PLAZA ELIZABETH	908-820-4278	SRINALDI@ELIZABETHNJ.ORG

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting #1

Sign-In Sheet

June 9, 2017 at 1 pm

Name	Organization	Address	Phone	Email
Nancy Kempel	NJDEP	401 E. State Trenton, NJ 08625	609 984-4428	nancy.kempel@dep.nj.gov
EVAN JACOBS	NEGLIA ENG'G ROSELLE PARK BOROUGH ENG	34 PARK AVE LYNDHURST, NJ 07071	(201) 939-8805	ejacobs@negliaengineering.com
Edgar Lopez	ELIZABETH DEVELOPMENT CO.	205 1ST ST ELIZ NJ 07206	908 289 0262	elopez@edcnj.org
Dan Loomis	City of Elizabeth	50 Winfield Scott Plaza Elizabeth, NJ	908-820-4269	dloomis@elizabethnj.org
Anthony Gagliostro	Matt MacDonald	111 Wood Ave South Iselin, NJ 08830	973-912-2442	anthony.gagliostro@mattmac.com

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting #1

Sign-In Sheet

June 9, 2017 at 1 pm

Name	Organization	Address	Phone	Email
Sabina Martyn	Mott MacDonald	111 Wood Ave South Iselin, NJ 08830	973-912-3467	sabina.martyn@mottmac.com
Donna Gregory	Mott MacDonald	111 Wood Ave South Iselin, NJ 08830	973-379-3400	donna.gregory@mottmac.com

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:

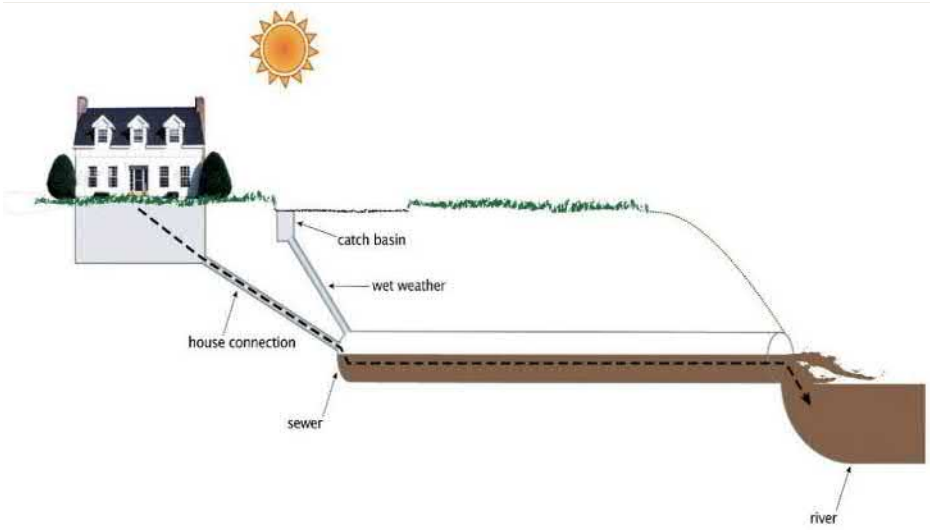
- Introductions
- What is a Combined Sewer System?
- What is a Combined Sewer Overflow?
- Why are the City and JMEUC undertaking this project?
- What are the regulatory requirements?
- What have the City and JMEUC done so far, and what's left?
- What is my role?

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?

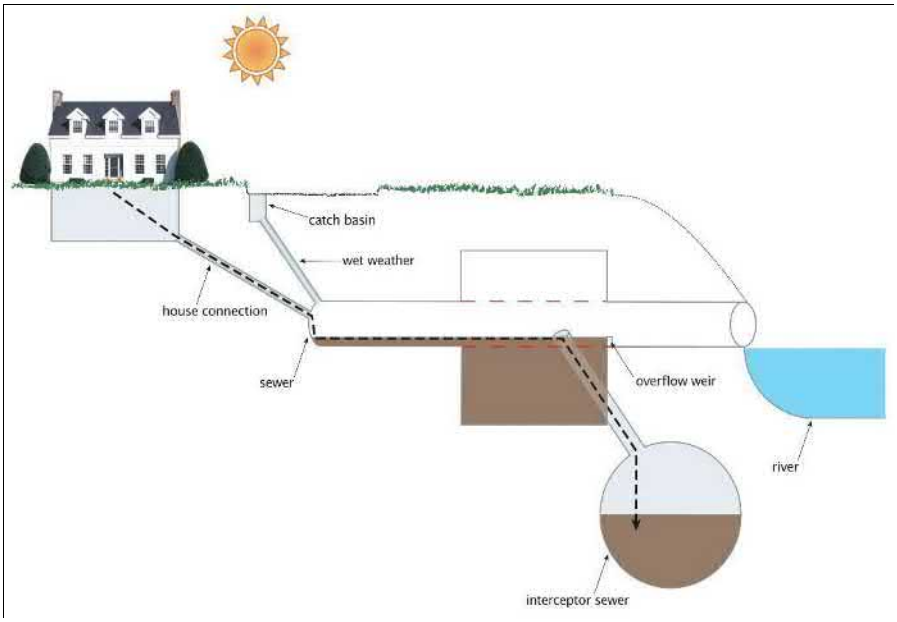


What is a Combined Sewer System?

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.

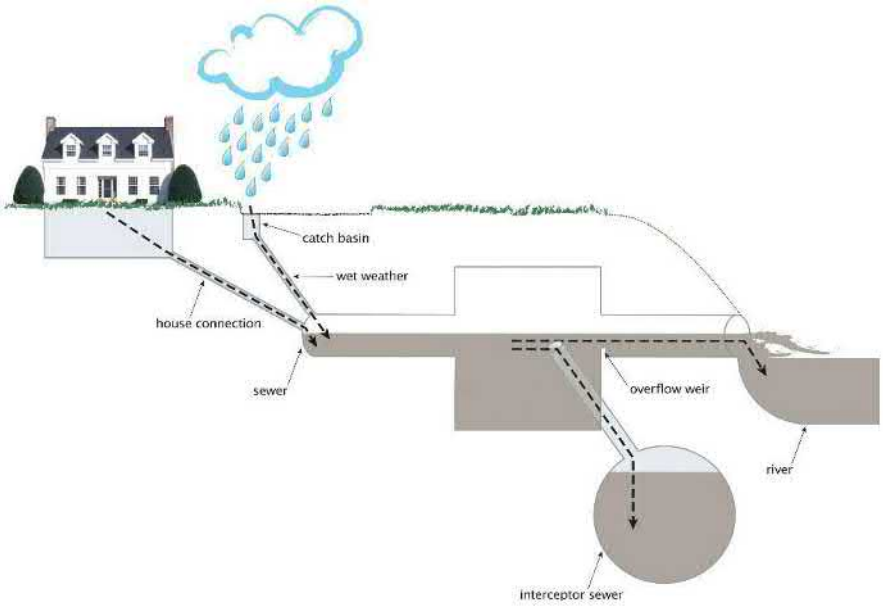
Dilution is not the solution!



What is a Combined Sewer Overflow?

Oldest Sewers in Country

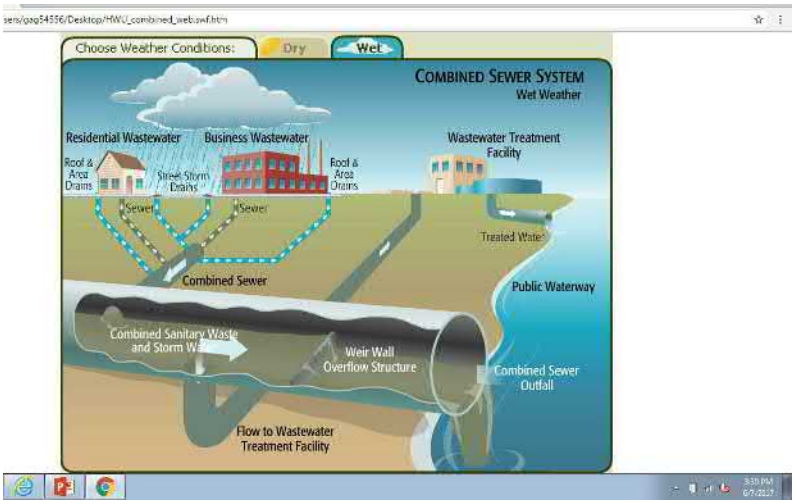
Dilution is not the solution, but hydraulic relief is needed in wet weather to limit the size and cost of Interceptor Sewers and Sewage Treatment Plants.



What is a Combined Sewer Overflow?

Combined Sewer Flow Animation File:

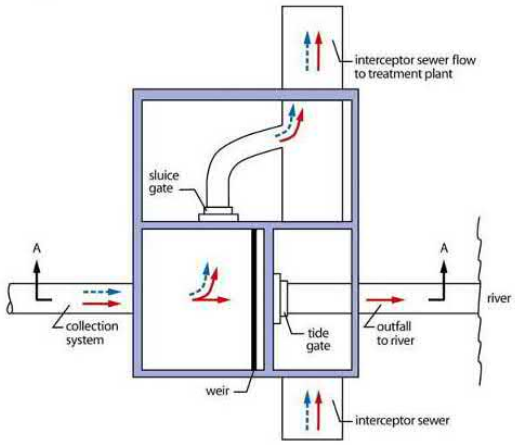
HWU_combined_web.swf



What is a Combined Sewer Overflow?

Oldest Sewers in Country

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



Typical Automatic Regulator

LEGEND
DRY WEATHER FLOW
WET WEATHER FLOW

PLAN

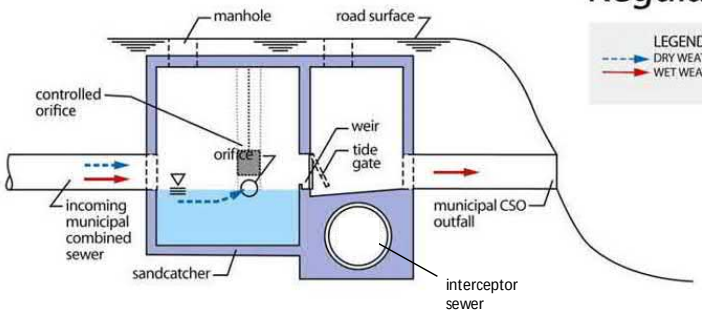
What is a Combined Sewer Overflow?

Oldest Sewers in Country

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

Typical Automatic Regulator

LEGEND
DRY WEATHER FLOW
WET WEATHER FLOW



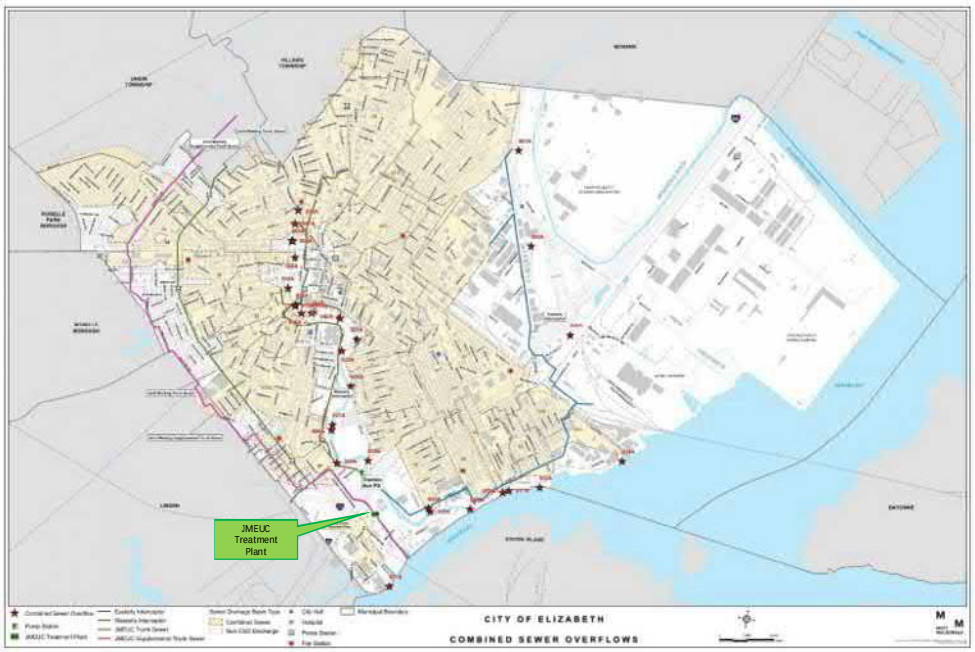
SECTION A–A

City of Elizabeth – CSO Locations

Population: 129,000

CSO Characteristics: 29 CSO Discharge Points

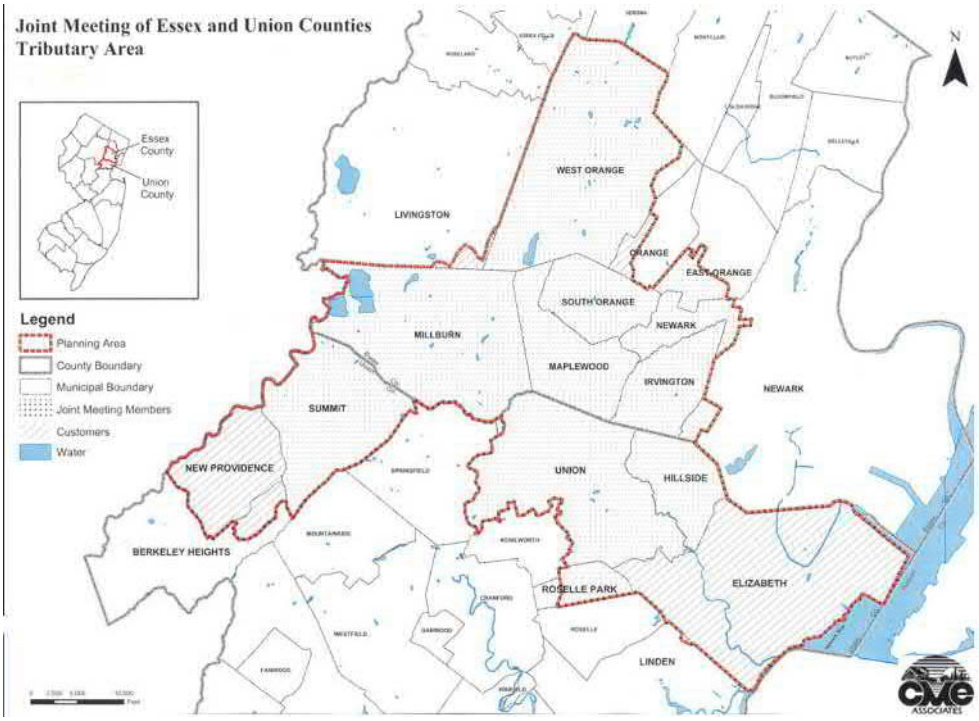
Receiving Waters: Elizabeth River, to the Arthur Kill



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



JMEUC Interceptor Sewer System

Total Service Area = 60 square miles

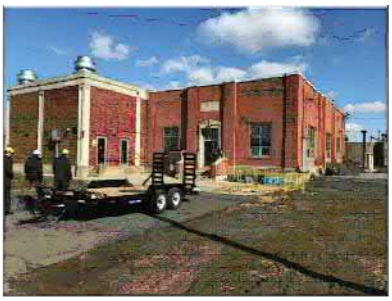
Gravity sewers ranging from 10-inches in diameter to the twin 67 x 68-inch rectangular sewers at WWTP

WWTP capacity:

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

JMEUC Wastewater Treatment Plant

JMEUC Wastewater Treatment Plant



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

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

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

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

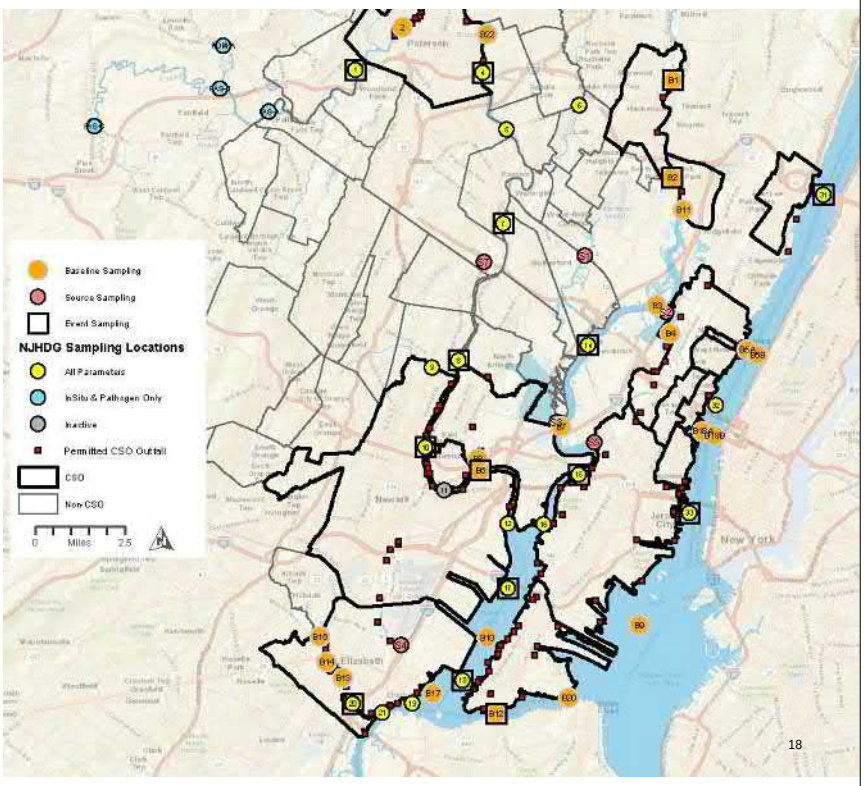
What are the regulatory requirements?

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

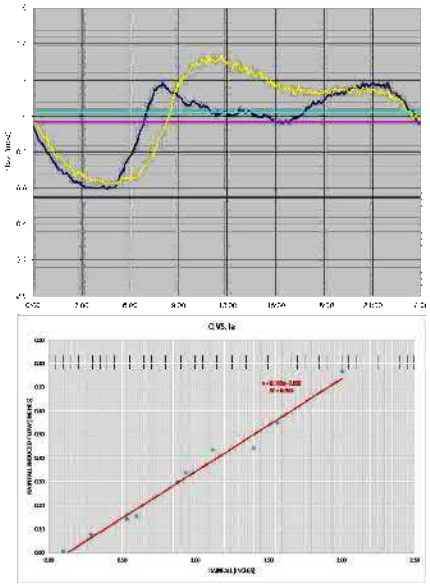
Working Together in NJ

- 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.



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



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

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

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

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

Stakeholders Invited to Participate

Department of Engineering, Public Works and Facilities Management

Elizabeth River / Arthur Kill Watershed Association

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

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

System Characterization and Sensitive Areas

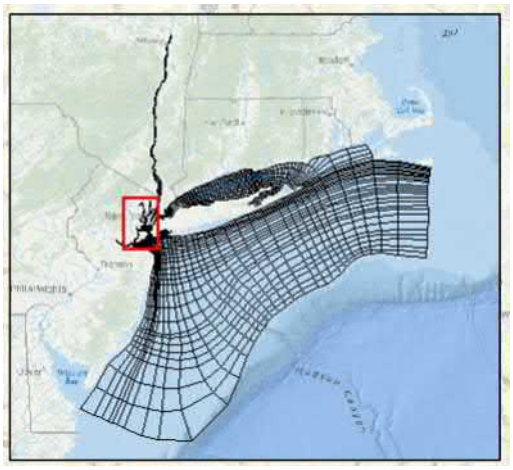
Deadline for submission July 1, 2018

- 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

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



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

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

Scheduling of Future Meetings

- Quarterly
- Next meeting: September 2017

Questions?

Thank you

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

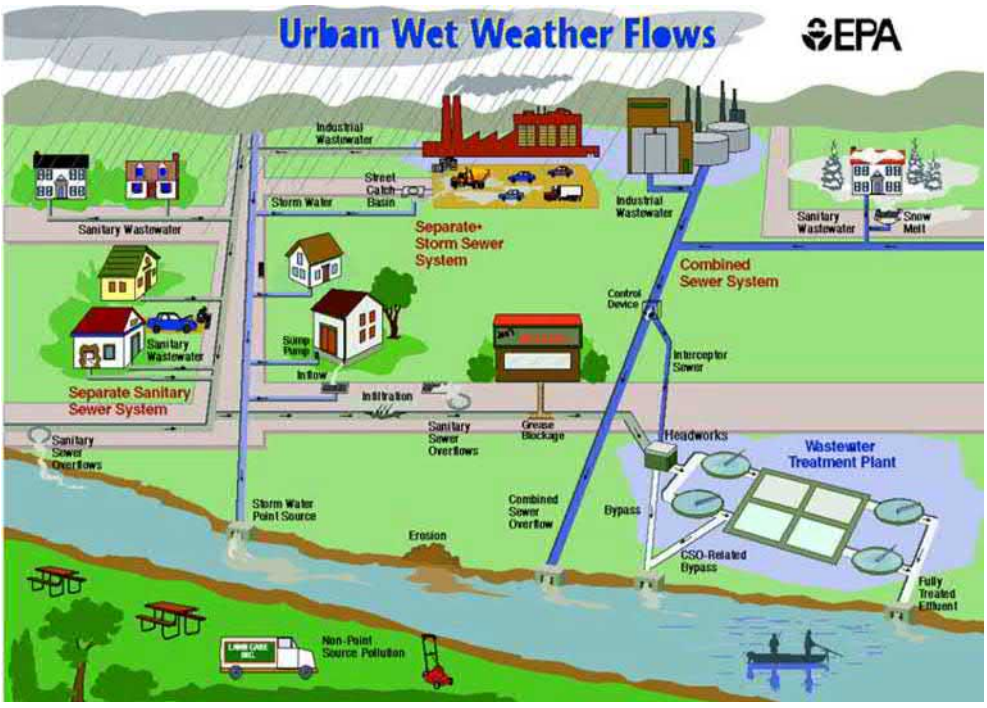
Supplemental CSO Team

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

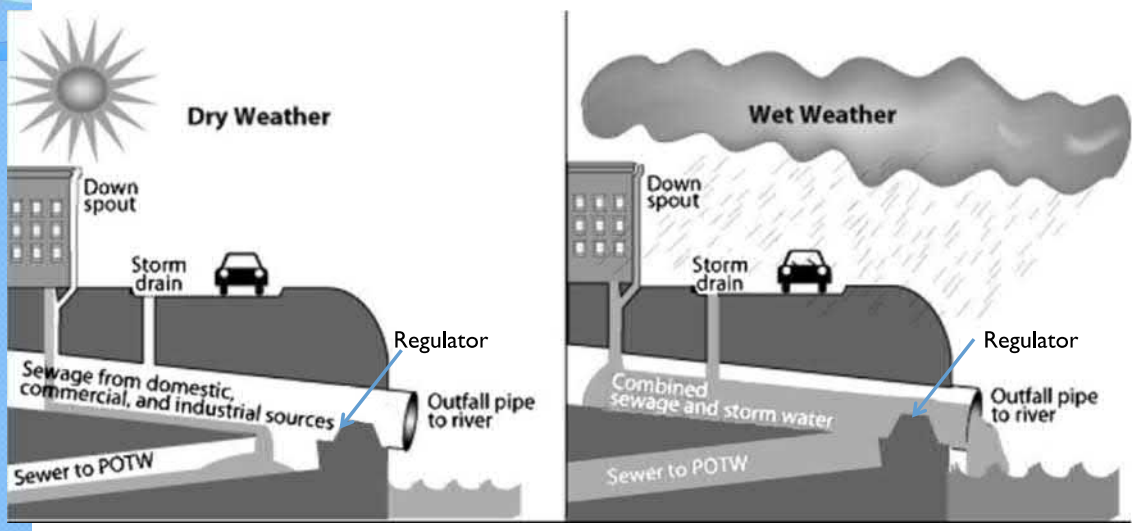
Combined Sewer Overflow Program Overview

Division of Water Quality

Sewer System Types



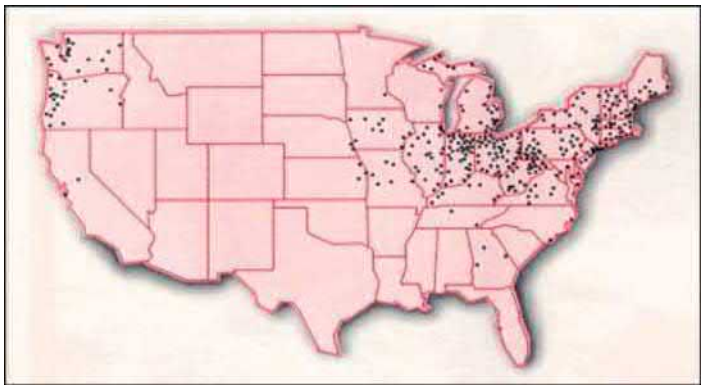
Combined Sewer System Operation



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

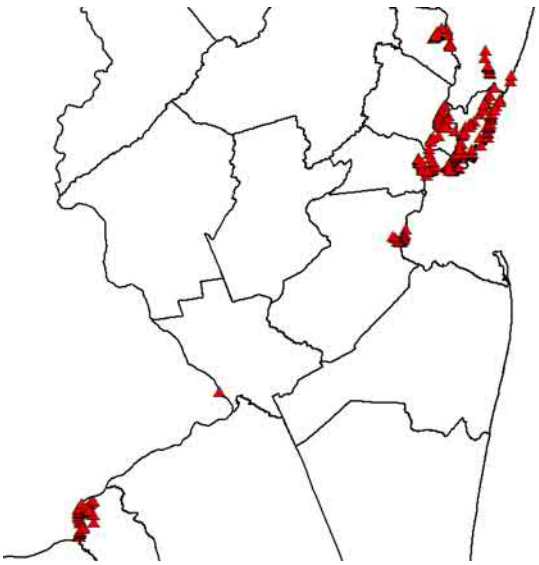


-772 communities

-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?

Nancy Kempel
CSO Program
Division of Water Quality
Nancy.Kempel@dep.nj.gov
(609) 984-4428

B. Supplemental CSO Team Meeting Presentations

B.2 Meeting No. 2 - October 11, 2017

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City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting No. 2
Sign-In Sheet
October 11, 2017 at 1 pm

Name	Organization	Title	Phone	Email
Anthony Gagliostro	Mott MacDonald	Sr. Associate	973-912-2442	anthony.gagliostro@mottmac.com
STEPHEN DOWHAN	JMEUC	SUPERINTENDENT	908-353-1317	SDOWHAN@JMEUC.COM
Joseph Bonaccorso	CME	JMEUC CONSULTANT	908-208-6695	JosephB222@verizon.net
Sabina Martyn	Mott MacDonald -	Eng IIB	973-912-3467	sabina.martyn@mottmac.com
Avishell Chhibber	Mott MacDonald	Proj. Engr	973-912-7530	avishell.chhibber@mottmac.com
Esther Pierre	Future City Inc.		862-900-6398	espierre45@gmail.com
PAUL LESO	UNION COUNTY	SUPERVISING ENGINEER	908-789-5075	PLESO@UCNJ.ORG
Eric Sedmen	Neglia Engineering	Sr. Engineer	201-939-8805	esedman@neglia.engineering.com
Rachael Pepe	NJDEP	Envir. Spec.	609-292-4860	Rachael.Pepe@dep.nj.gov
Jennifer Feltis Gates	NJDEP	Planner	609-984-3451	jennifer.feltis@dep.nj.gov
STEVEN P. RINALDI	CITY OF ELIZABETH	PRINCIPAL ENG.	908-820-4278	SRINALDI@ELIZABETHNJ.ORG
Victor Vinegra	Elizabeth	Planning Eng	908 276 2715	victorv@hcicg.net
Jonathan Phillips	Groundwork Eliz	E. Director	908-289-0262	Jonathan@groundworkeliz.org

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting No. 2
Sign-In Sheet
October 11, 2017 at 1 pm

Name	Organization	Title	Phone	Email
[signature]	EDC	Finance/HR	908-789-0762	ddevanney@edcnj.org
[signature]	EDMO	Director	908-220-9643	JCOSTA@ELIZABETHNJ.com
John Dening	Mott MacDonald	Sr. Project Engineer	973-912-2464	john.dening@mottmac.com
Debbie Mans	NY/NJ Baykeeper	Exec Director	732 888 9870	debbie@nynjbaykeeper.org

Supplemental CSO Team

Meeting No. 2 – Project Update
Long-Term Control Plan Permit Compliance

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

October 11, 2017 – 1:00 pm
Elizabeth City Hall Council Chambers

Supplemental CSO Team
Meeting No. 2 Agenda

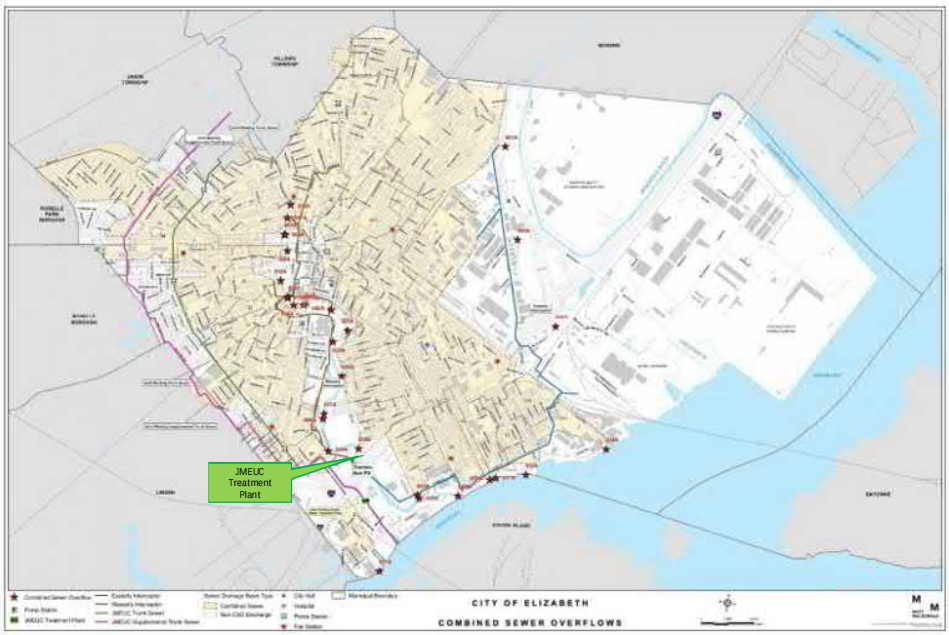
- Previous meeting recap
- CSO outfall locations
- Sewer sampling summary
- Modeling updates (Elizabeth and JMEUC)
- Recent and pending sewer improvement projects
- Input on public outreach opportunities
- Input on potential sensitive areas
- 6-month look-ahead

Prior Meeting Recap:
City of Elizabeth Combined Sewer System

Population: 129,000

CSO Characteristics:
29 CSO Discharge Points

Receiving Waters:
Elizabeth River,
to the Arthur Kill



Prior Meeting Recap:
Why are the City and JMEUC undertaking this work?

- Long history of regulatory action on combined sewers
- Most recently, NJDEP issued Individual NJPDES Permits 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

Prior Meeting Recap:
What are the regulatory requirements?

Nine elements of the Long-Term Control Plan:

1. System characterization, monitoring, and modeling
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

Prior Meeting Recap:
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 willing to assist in the public participation efforts

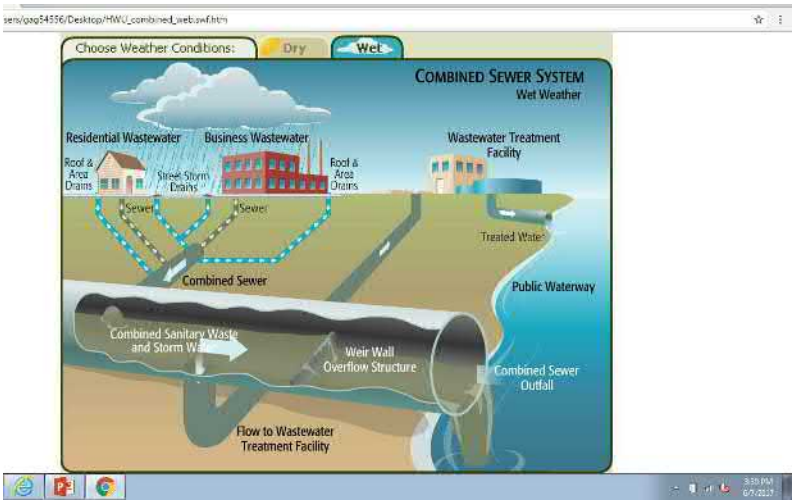
Prior Meeting Recap: Supplemental CSO Team

- Advisory role; two-way communications is key
- Our link to the general public
- Provide input throughout LTCP process
- Provide input 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

Prior Meeting Recap: What is a Combined Sewer Overflow?

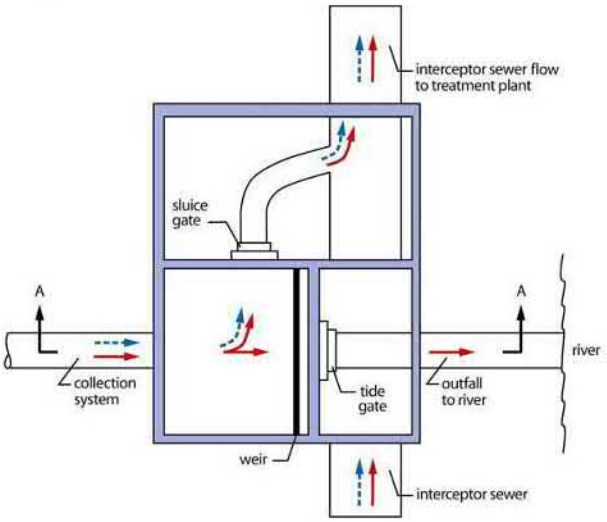
Combined Sewer Flow Animation File:

HWU_combined_web.swf



Prior Meeting Recap:
What is a Combined Sewer Overflow?

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



Typical Automatic Regulator

LEGEND
DRY WEATHER FLOW
WET WEATHER FLOW

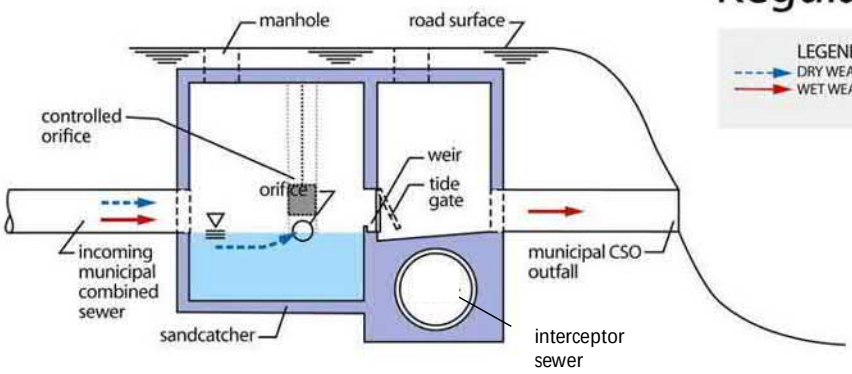
PLAN

Prior Meeting Recap:
What is a Combined Sewer Overflow?

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

Typical Automatic Regulator

LEGEND
DRY WEATHER FLOW
WET WEATHER FLOW



SECTION A–A

CSO Outfall Locations

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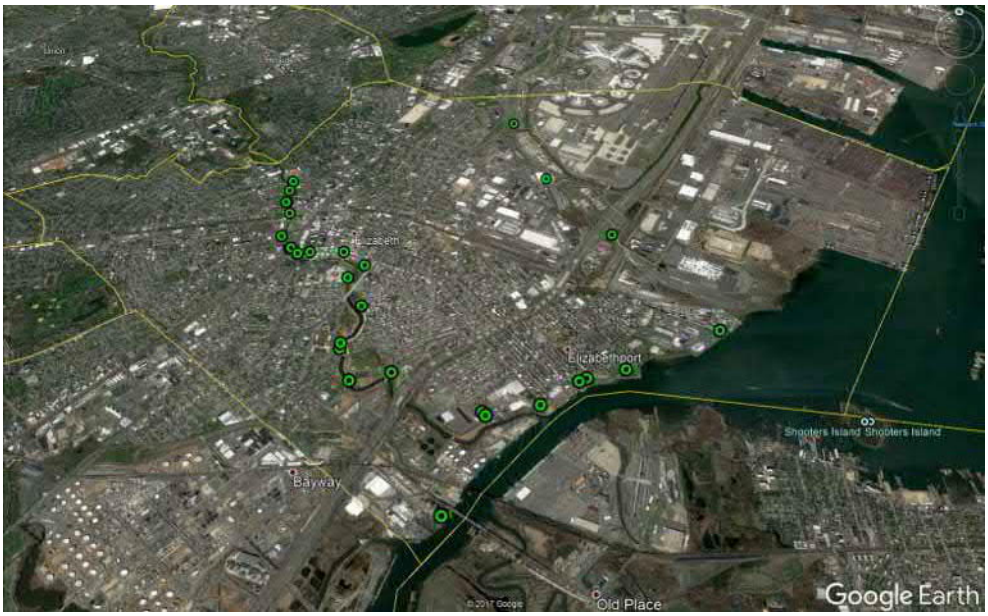
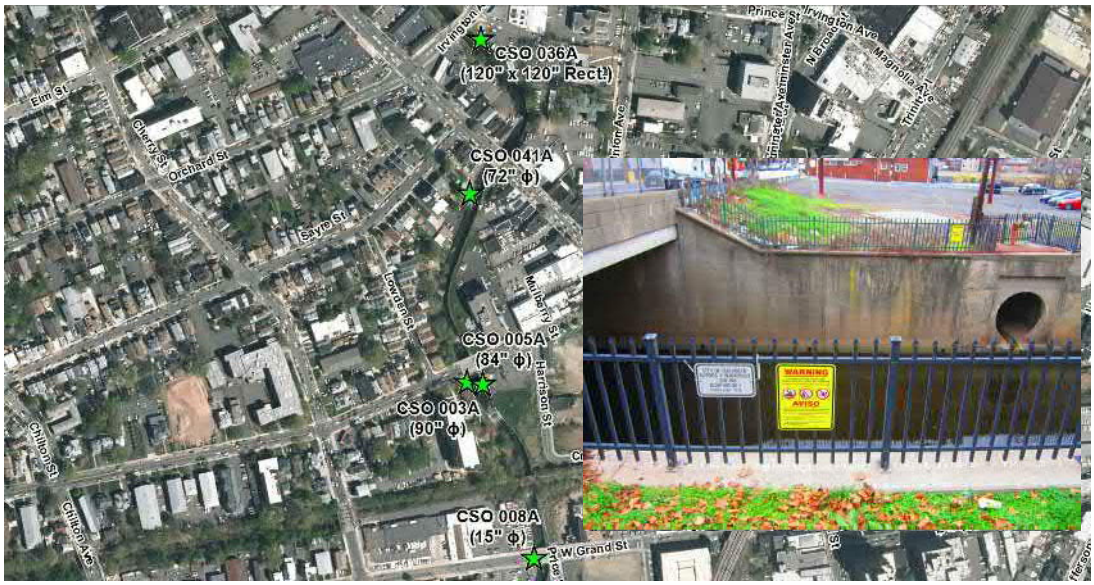
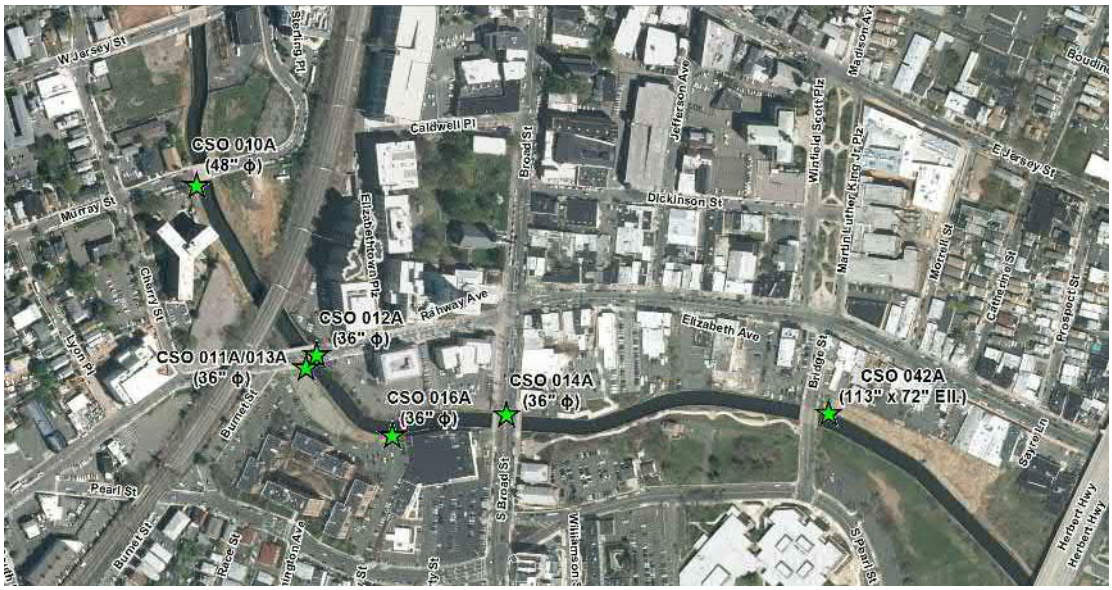


CSO Outfall Locations



CSO Outfall Locations



CSO Outfall Locations

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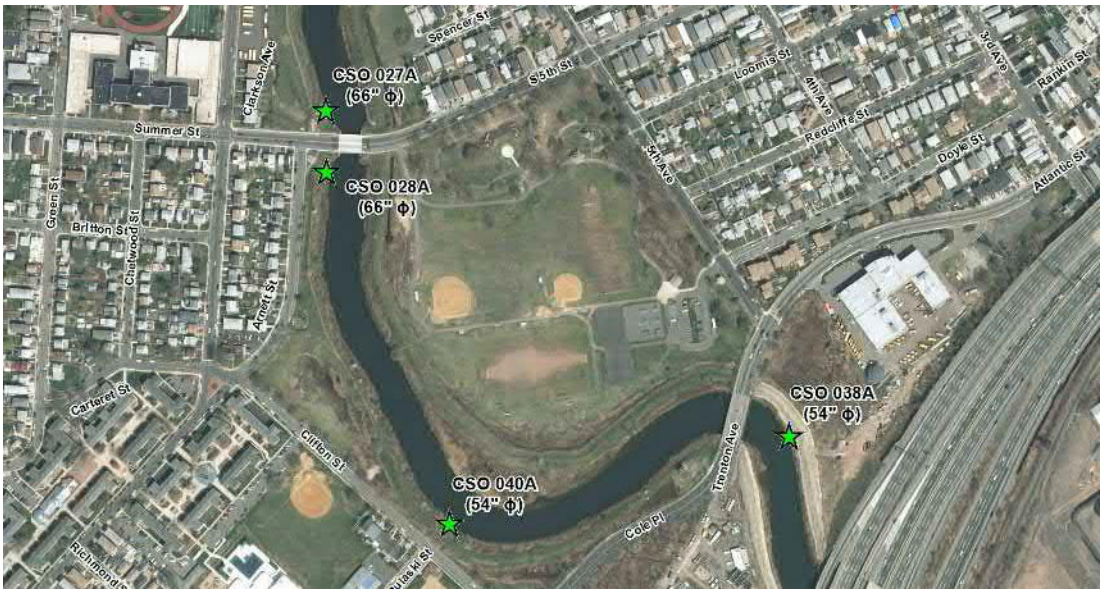

CSO Outfall Locations

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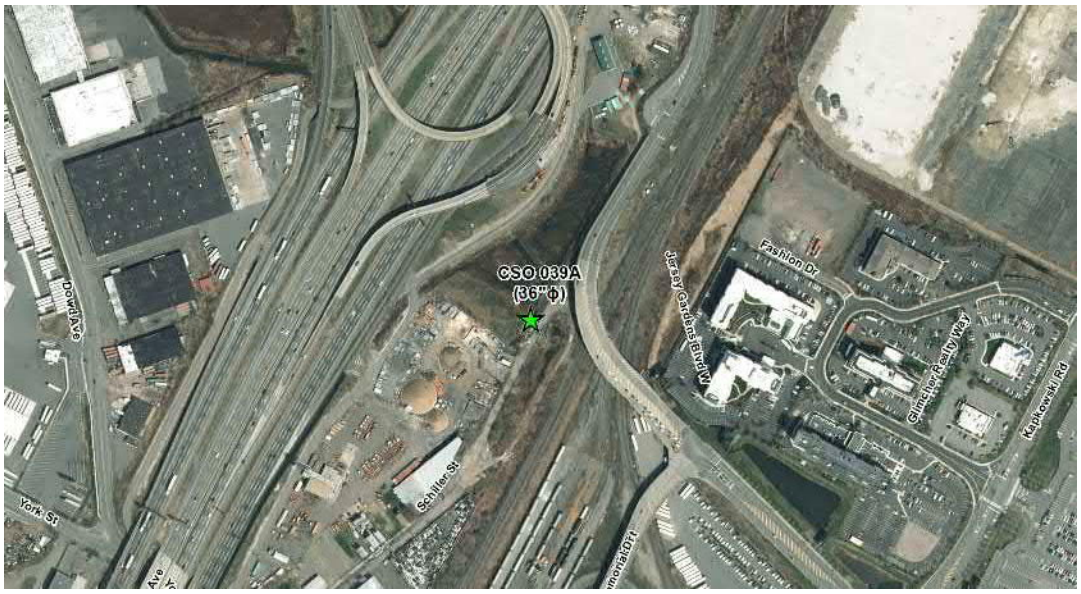
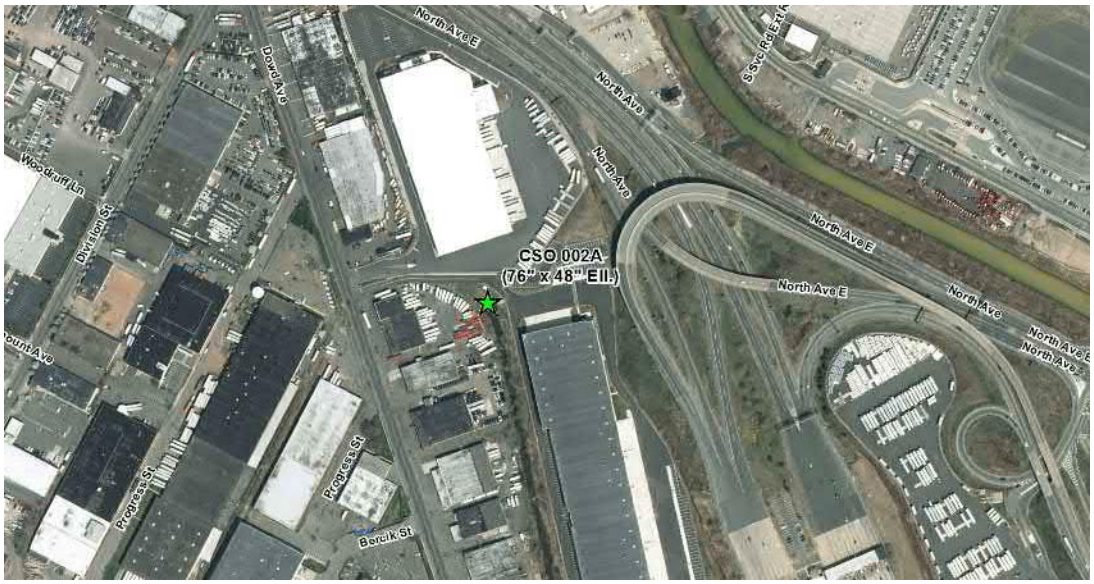
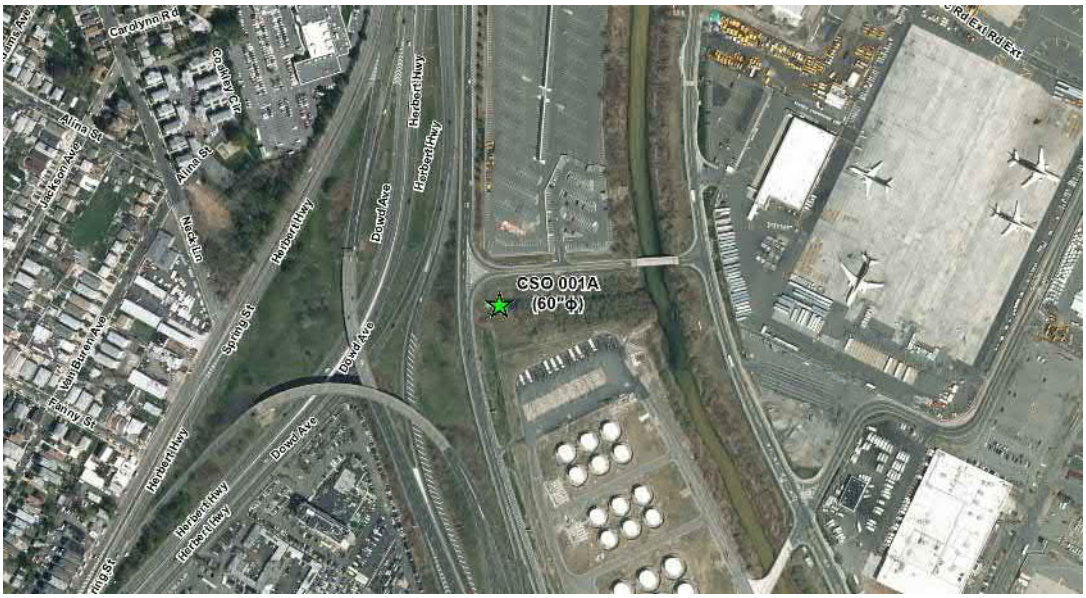


CSO Outfall Locations

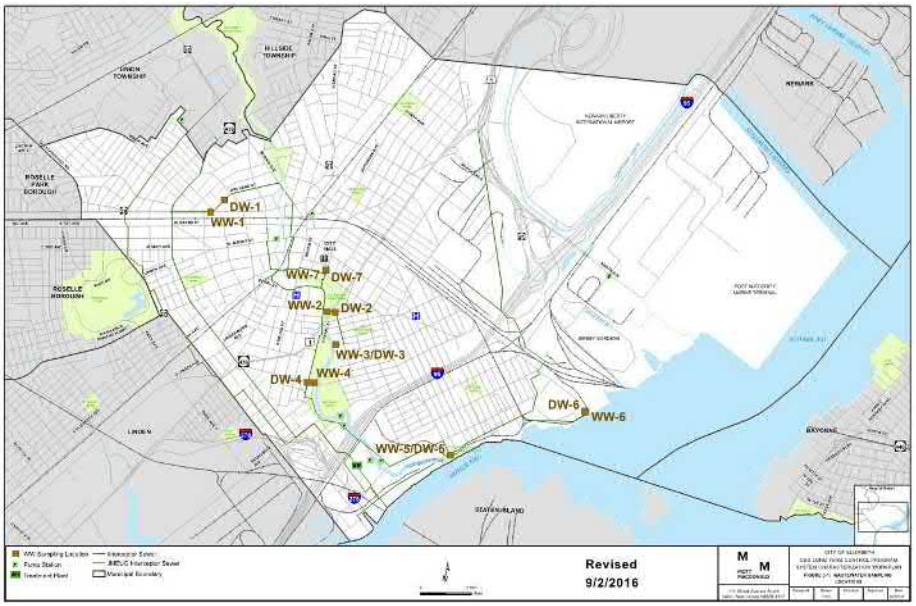


CSO Outfall Locations



Sewer Sampling Program

- Seven locations across the city with varied upstream land-use characteristics
- Samples taken upstream of outfall
- Testing for Fecal coliforms, Enterococci and E. coli

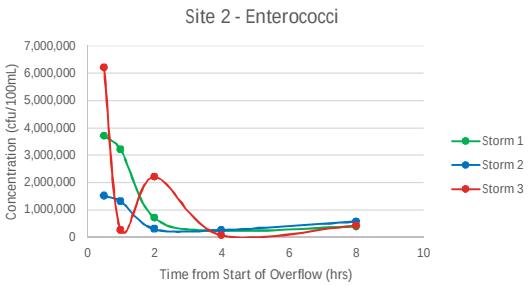


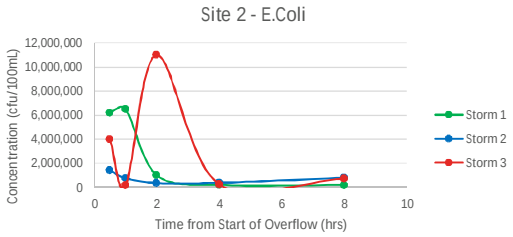
Sewer Sampling Program

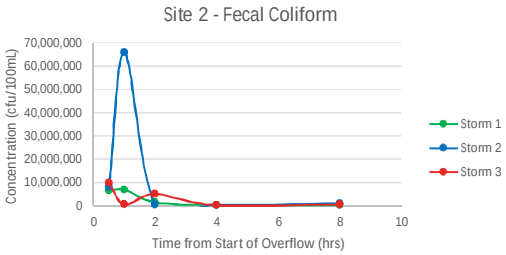
- Weather monitored between October 2016 and May 2017 for rainfall greater than 0.5”
- Three sampling events:
  - November 29, 2016 (2.02”)
  - April 25, 2017 (0.88”)
  - May 5, 2017 (3.05”)
- Dry weather samples taken the day before each rain event.
- Wet weather samples collected at 30mins, 1 hour, 2 hours, 4 hours and 8 hours from the beginning of overflow at each site.

Sewer Sampling Results

- Results fall within typical ranges and patterns
  - First flush
  - Concentrations generally decrease over the course of storm (dilution)

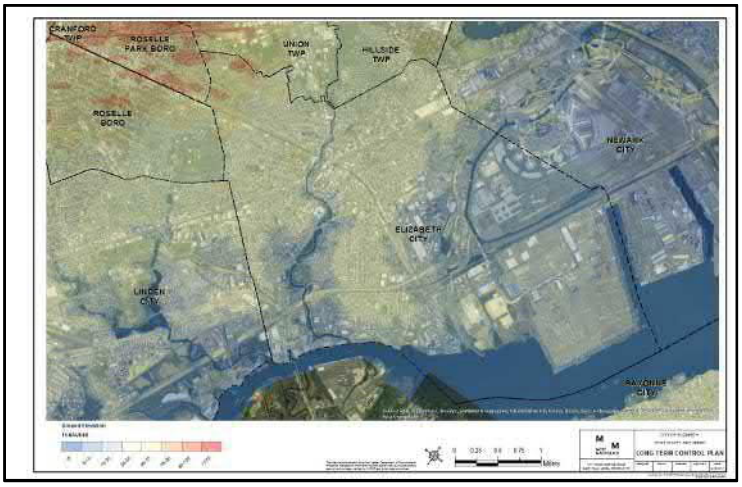






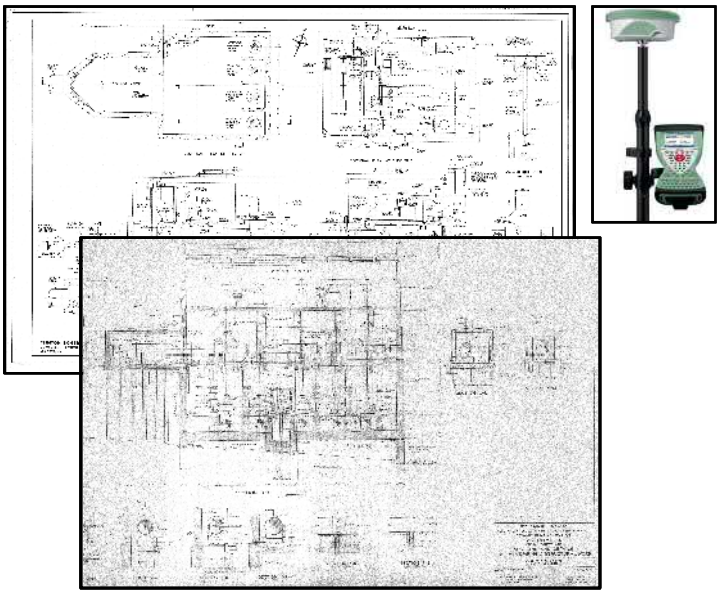
Elizabeth Combined Sewer System Model Update

- Lay of the Land



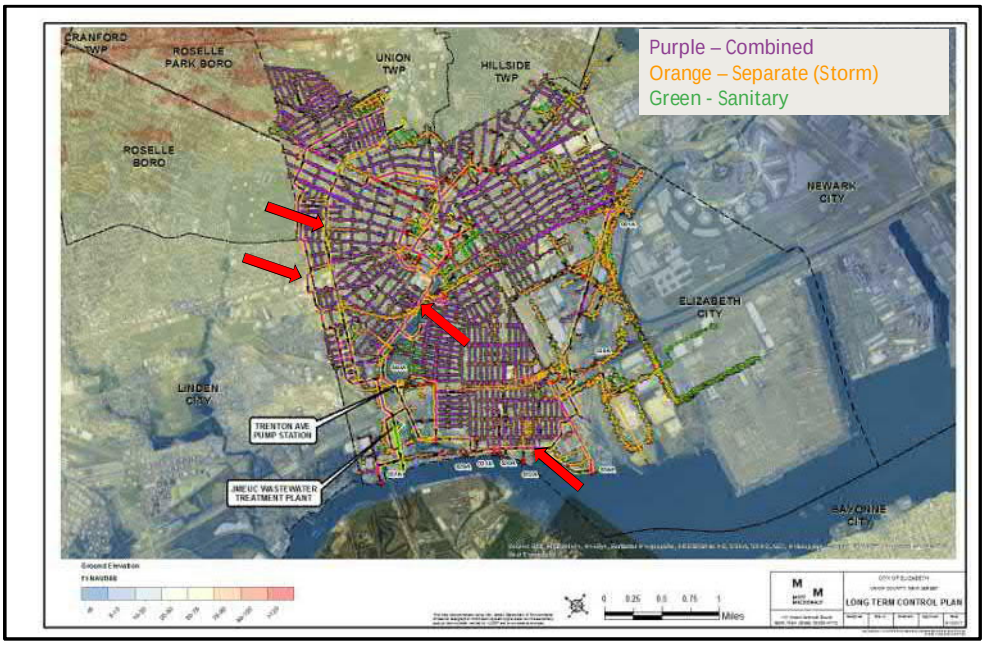
Sewer Data Collection

As-Built Drawings



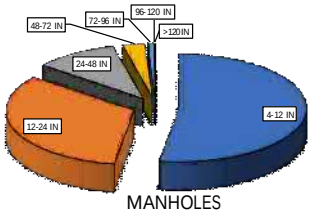
Field Data Collection

Existing Sewers



PIPES

TYPE	COUNT	LENGTH (LF)
Combined	6,352	766,035
Sewage	517	63,646
Storm	4,566	309,228
Grand Total	11,435	1,138,909



MANHOLES

TYPE	COUNT
Combined	5,858
Sewage	457
Storm	1,193
Grand Total	7,508

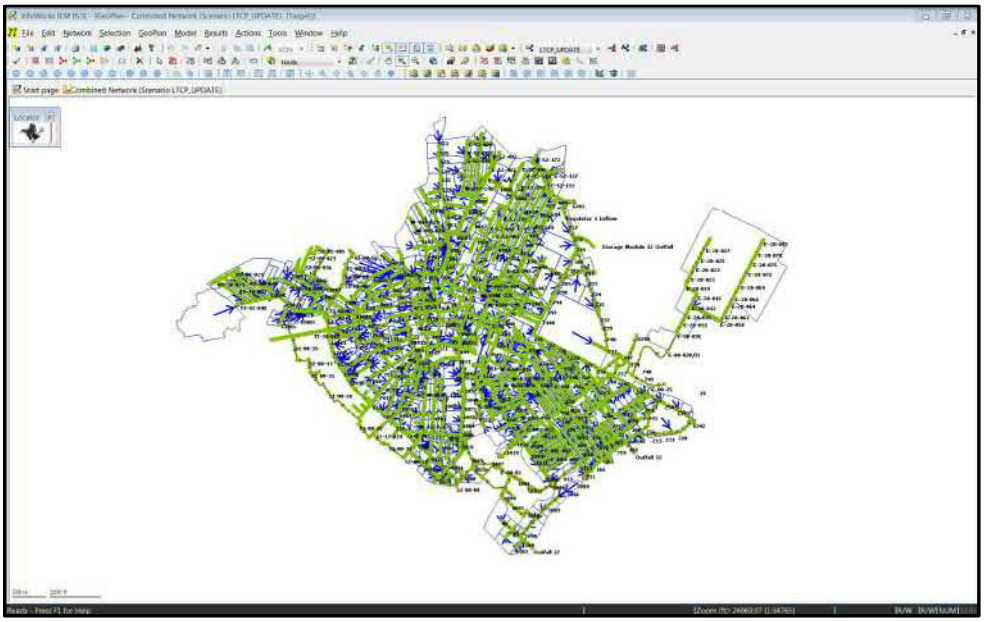
DRAINAGE

TYPE	COUNT
INLETS	4695

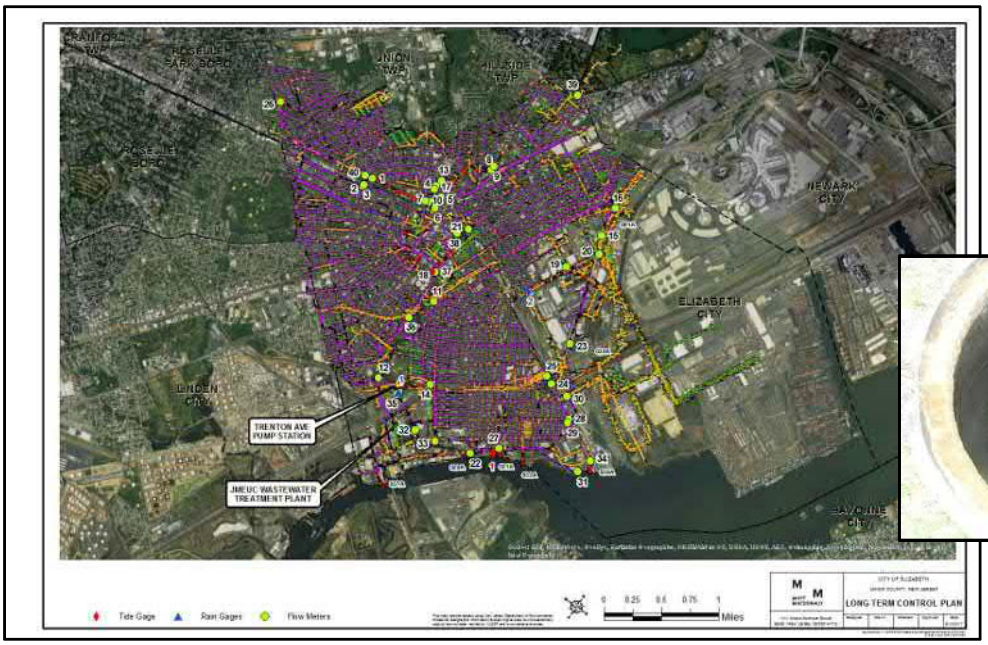
FACILITIES

FACILITY TYPE	COUNT
Treatment Plant	1
Pump Station	9
CSO Outfalls	29
Netting Chambers	28
Siphon Chambers	16
Regulators	39
Tide Gates	43
Sluice Gates	12

Hydraulic Model



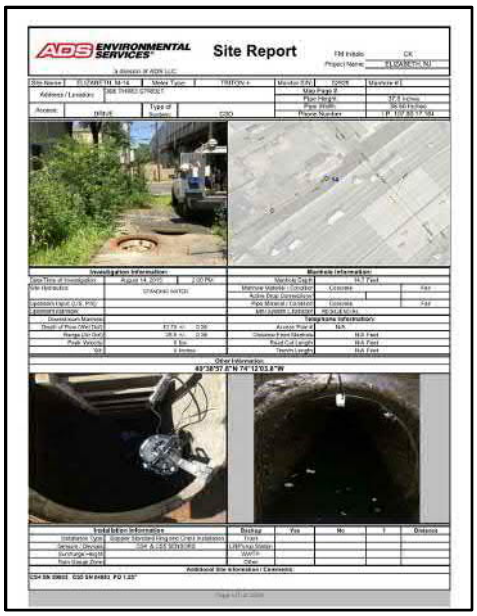
Monitoring Locations

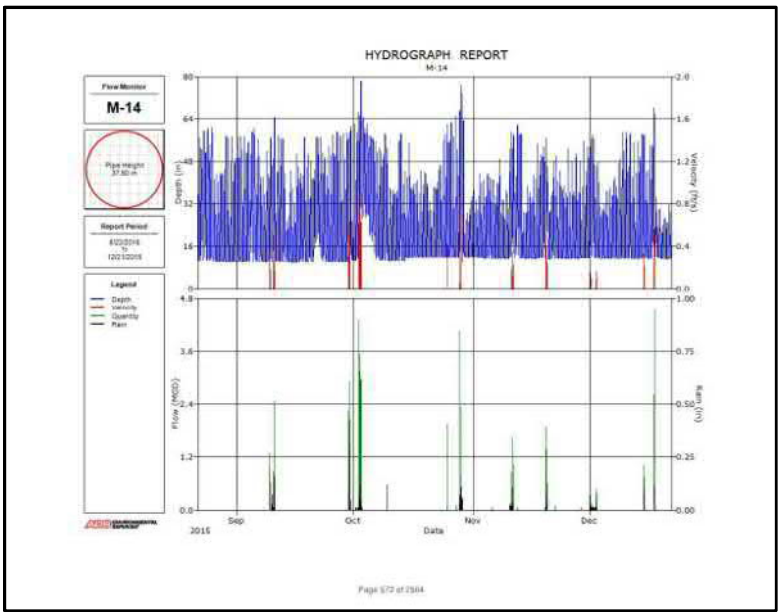


FLOW METERS

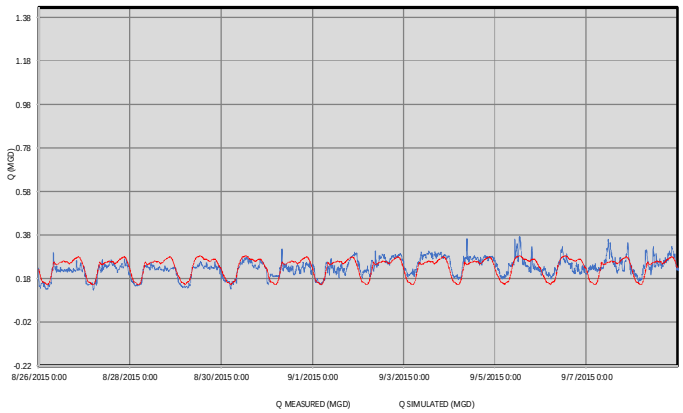
FLOW METER LOCATION	COUNT
DWF	14
EAST-INT	6
OVERFLOW	10
STORM	4
WEST-INT	6
Grand Total	40

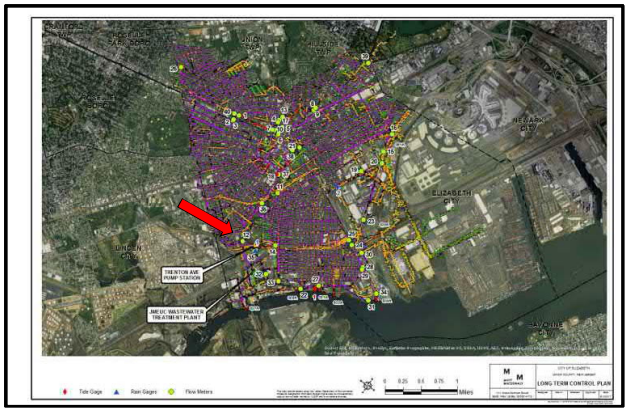
Flow Meter Data



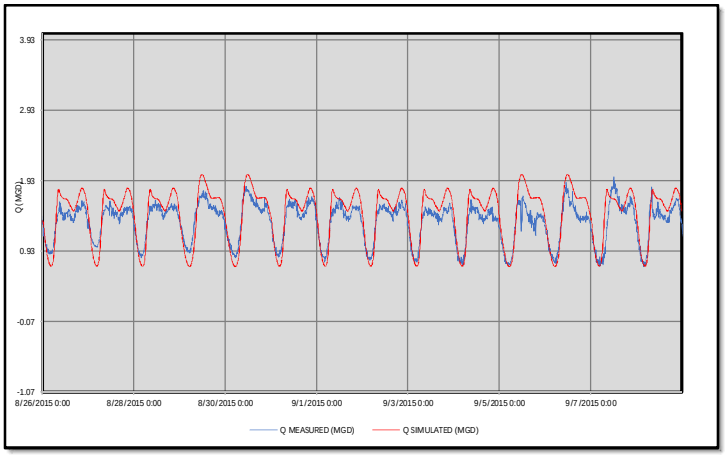


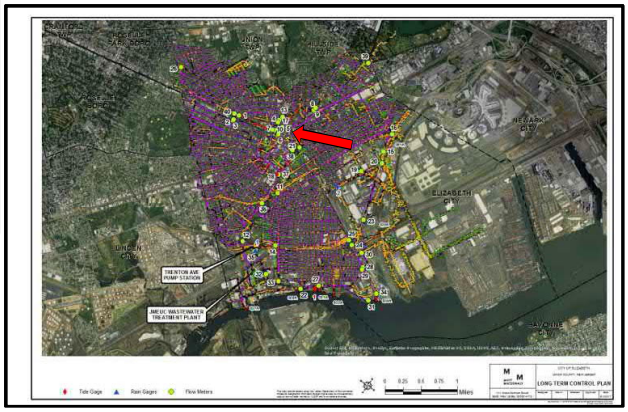
Meter vs. Model





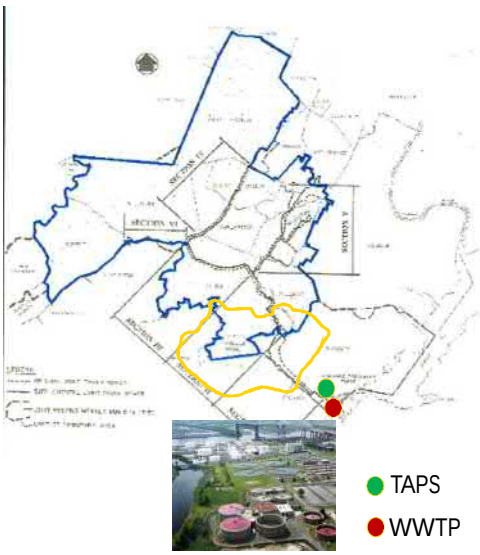
Meter vs. Model





Local CSO situation – physical system

- City of Elizabeth: 29 CSO outfalls discharging to Elizabeth River, Arthur Kill and other waterbodies
- Intercepted dry- and wet-weather flows conveyed to City of Elizabeth's Trenton Avenue Pump Station (TAPS)
- TAPS discharges to main sewer entering plant about 1500 feet above headworks
- Combined sewer flows from Elizabeth and separate sanitary sewer flows from JMEUC system all conveyed to and treated at JMEUC WWTP



Descriptions of current models

- City of Elizabeth and JMEUC have independently developed models of their respective sewer systems in InfoWorks ICM modeling software
  - Combined sewer system in Elizabeth to TAPS
  - JMEUC separate sanitary sewer system to WWTP
  - Independent models are being linked at common junction (TAPS connection to JMEUC system)
- JMEUC model:
  - Hydraulic model (does not route pollutants)
  - 43 miles of interceptor/trunk sewer conduits
  - No combined sewers or CSO outfalls

JMEUC Interceptor Model Sewer Network

Gravity sewers ranging from 10-inches in diameter to the twin 67 x 68-inch rectangular sewers at the wastewater treatment plant (WWTP)

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

JMEUC Wastewater Treatment Plant

JMEUC Interceptor Model Sewersheds

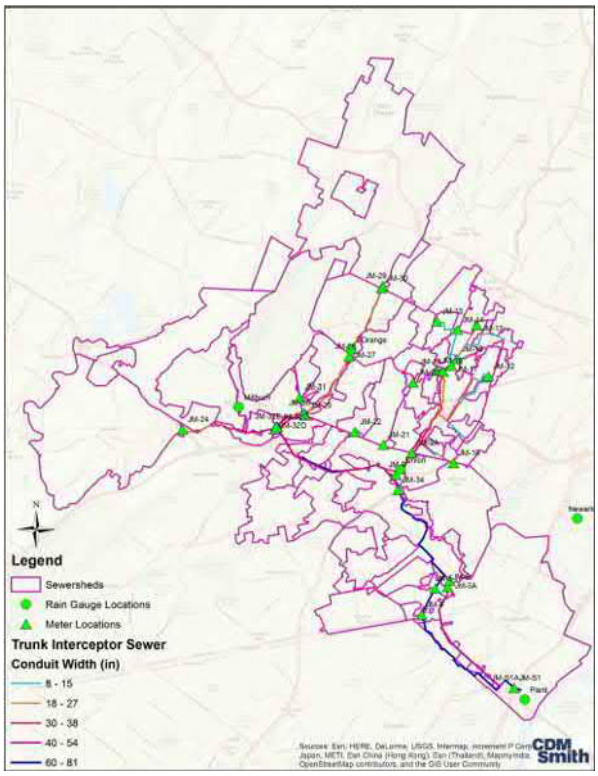
Total Service Area = 60 square miles

11 member communities:

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

4 customer communities:
City of Elizabeth (inflow from TAPS)
Livingston
Orange
New Providence

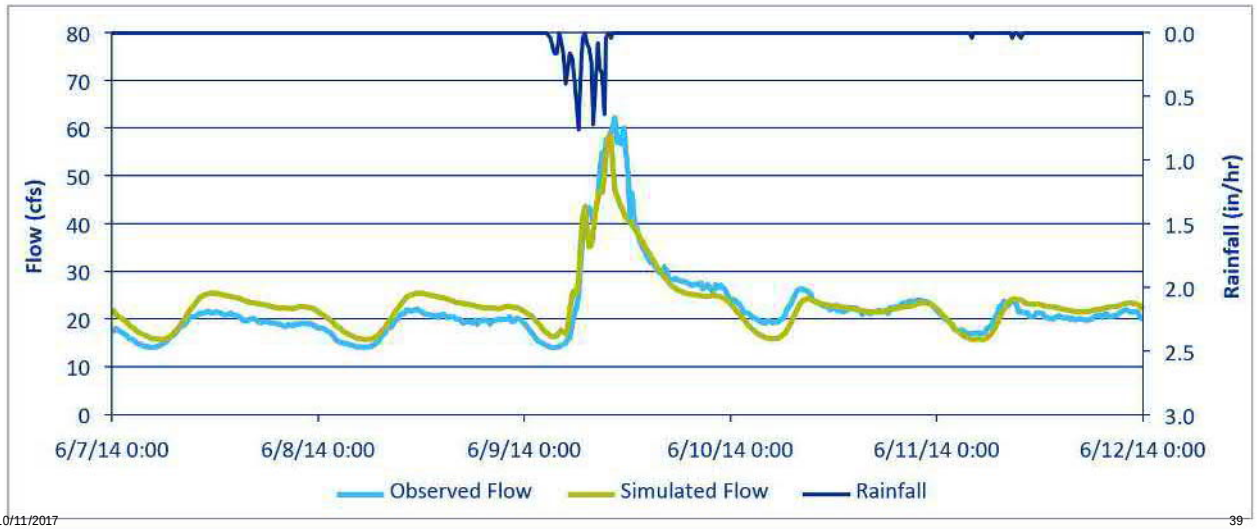
32 flow monitoring sites

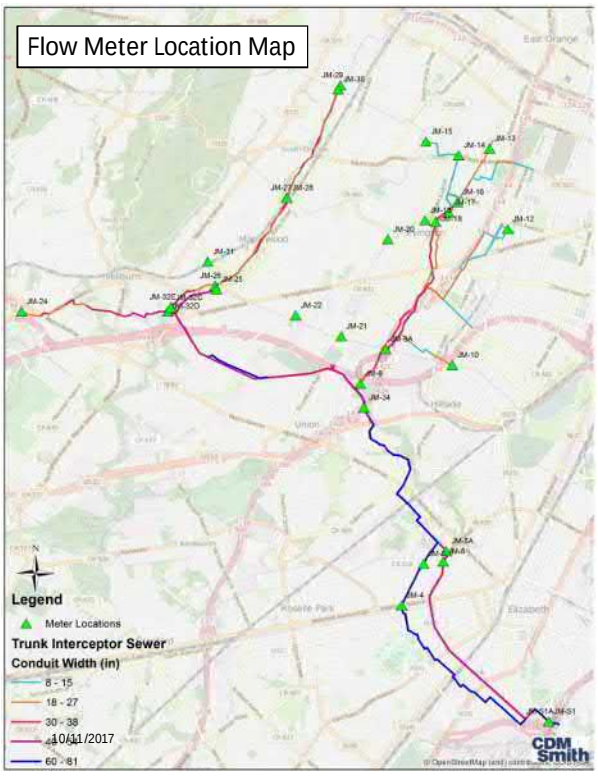


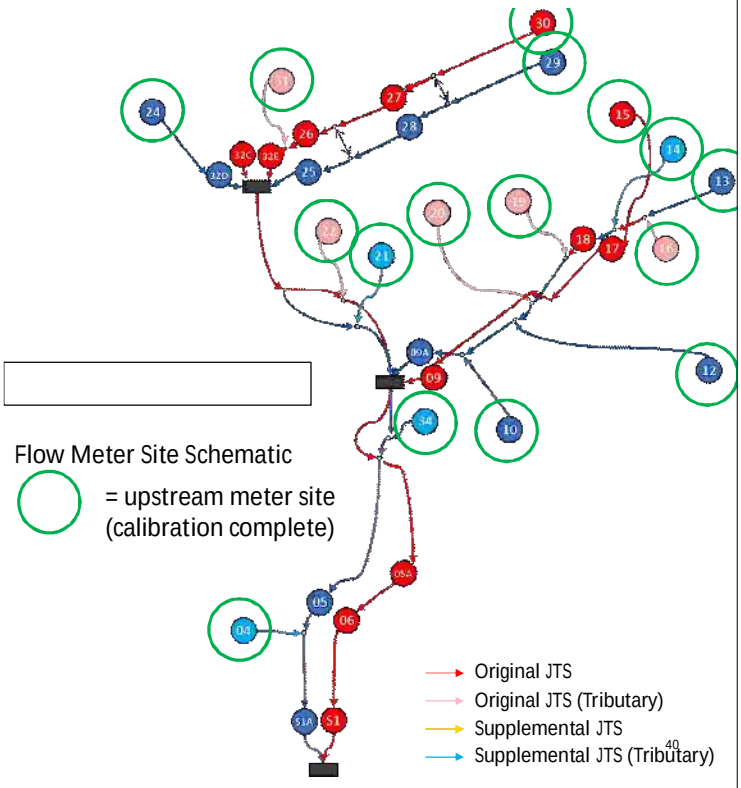
JMEUC modeling process

- Update previously developed model of system: newest software, improved level of detail in system representation (e.g. WWTP)
- Calibrate model – adjust parameters until model results agree with observed data at 32 meter sites for monitored rainfall events
- Complete linkage with City of Elizabeth model
- Initial simulations with combined JMEUC-Elizabeth model to characterize system performance during wet weather (the typical year precipitation record)

Calibration process – example calibration plot





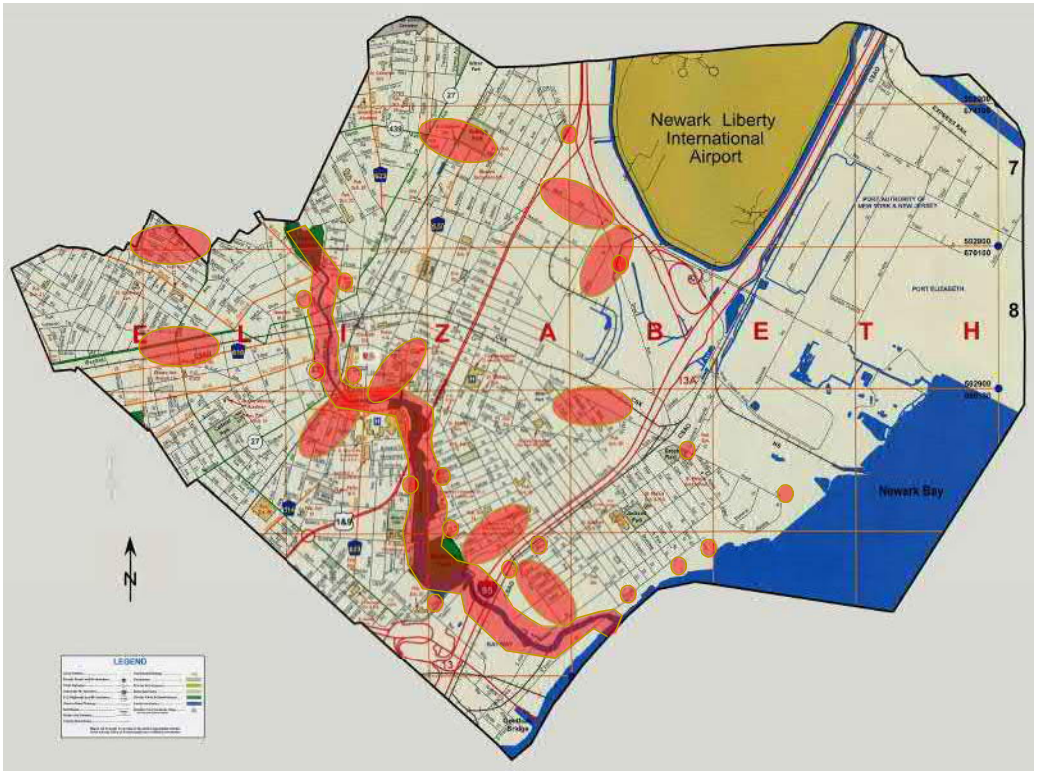


JMEUC model status and next steps

- Model updates substantially complete
  - Next steps: further refine WWTP elements in JMEUC model
- Model calibration complete at upstream sites
  - Next steps: complete calibration at downstream sites
- JMEUC sub-model linked with City of Elizabeth sub-model
  - Next steps: ensure both sub-models are fully consistent to finalize linkage with City of Elizabeth model
- Complete initial typical year simulations with combined JMEUC-Elizabeth model

Recent and Pending Improvement Projects: Partial Listing

- Progress Street Stormwater Control Project
- Verona Avenue/Gebhardt Avenue Storm Sewer Improvements Project
- Elizabeth River Flood Control Project - Levee and Drainage Structure Stabilization Work
- Midtown Infrastructure Improvements Project - CSO Abatement Work
- Westfield Avenue/Elmora Avenue Sewer Improvements Project
- South Street, North Avenue, & Third Avenue Flood Control Projects
- Westerly Interceptor Cleaning and Inspection Project
- Trumbull Street Stormwater Control Project



Recent Projects – Verona Gebhardt

Before

Recent Projects – Verona Gebhardt

During Construction

Recent Projects – Verona Gebhardt

After Construction

Recent Projects – Progress St Flood Control

During Construction

Recent Projects – Progress St Flood Control

After Construction

Recent Projects – Trumbull St Flood Control

Last Summer

Recent Projects – Trumbull St Flood Control

Construction to begin late 2017

Opportunities for Outreach

- Goal: Increase residents' understanding of environment and the connection to sewer infrastructure
- Environmental Day: April 28, 2017
- Estuary Day: October 6, 2017
- Press releases for upcoming projects: Trumbull Street

Other opportunities for engagement:

- Supplemental CSO members connection to community
- Other events?
- Information to share with constituents?

Input on Potential Sensitive Areas

- 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: Primary Contact Recreation Areas?

- 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.
  - No bathing beaches
  - Channelized portion of Elizabeth River upstream of South Broad St, no existing primary contact use. No access, concrete base and walls, shallow water depth.
  - No existing primary contact use in downstream earthen channel of Elizabeth.
  - Arthur Kill and Newark Bay – industrial / commercial shipping waterway. No primary contact recreation use present. (Boat ramp access at Elizabeth Marina)

Six-month Look Ahead

- Next meeting: January 2018
- 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
- Apply updated model to characterize interceptor sewer system performance
- Characterize WWTP performance
- Prepare System Characterization Report

Questions?

Thank you

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

Supplemental CSO Team

Meeting No. 2 – Project Update
Long-Term Control Plan Permit Compliance

B. Supplemental CSO Team Meeting Presentations

B.3 Meeting No. 3 - January 29, 2018

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City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting No. 3
Sign-In Sheet
January 29, 2018 at 1 pm

Name	Organization	Title	Phone	Email
Anthony Gagliostro	Mott MacDonald	Proj. Mgr	973-912-2440	anthony.gagliostro@mottmac.com
DAN LOOMIS	CITY OF ELIZABETH	CITY ENGINEER	908-820-4269	DLOOMIS@ELIZABETHNJ.ORG
Ted Burgess	CDM Smith	Project Mgr.	513-716-6524	burgesstl@cdmsmith.com
John Dening	Mott MacDonald	Sr. Proj Eng	973-912-2464	john.dening@mottmac.com
Sabina Martyn	Mott MacDonald	Eng. IV	973-912-3467	Sabina.martyn@mottmac.com
Glenn Counterman	Future City Inc.	Unleashed Scholar	(908)370-1824	glenn@futurecityinc.org
Sebastian Prado	Future City Inc	Intern	(908)242 2990	sp81@futurecityinc.org
Eric Sudman	Neglia Engineering	Sr. Staff Engr	201-939-8805	esudman@negliaengineering.com
PAUL LESO	UNION COUNTY	SUPERVISING ENGINEER	908-789-9075	PLESO@UCNJ.ORG
Steve Bernhaut	HUB MANAGEMENT	MEMBER	973-762-3682	steve.warehaus@aol.com
Jennifer Feltis Cortese	NJDEP	CSO Program		
Rachael Pepe		CSO Program		
STEVEN RINALDI	CITY OF ELIZABETH	PRINCIPAL ENG.	908-820-4278	SRINALDI@ELIZABETHNJ.ORG

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting No. 3
Sign-In Sheet
January 29, 2018 at 1 pm

Name	Organization	Title	Phone	Email
JOHN R. PAPATH JR	CITY OF ELIZABETH	DIRECTOR PUBLIC WORKS	908-820-4101	JPAPATH@ELIZABETHNJ.ORG
Debbie Mans	NY/NJ Baykeeper	Ex DV	732-8888870	debbie@nynjbaykeeper.org
Ayelen L. Crespo	Groundwork Elizabeth	Youth Leader	732-609-2048	lucycrespo8@gmail.com
Jessica Frago	Groundwork Elizabeth	AmeriCorps VISTA	201 916 6414	jessica@groundwork elizabeth.org
Ricardo Diaz	Groundwork Elizabeth	Conservation Director	215-290-0718	ricardo@groundworkelizabeth.org
Jonathan Phillips	Groundwork Elizabeth	Exec. Director	908-589-0262	jonathan@groundworkelizabeth.org
FRANCIS BONACCORSO	JOINT MEETING of ESSEX & UNION	ASSISTANT SUPERINTENDENT	908-353-1313	FBONACCORSO@JMEUC.COM

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

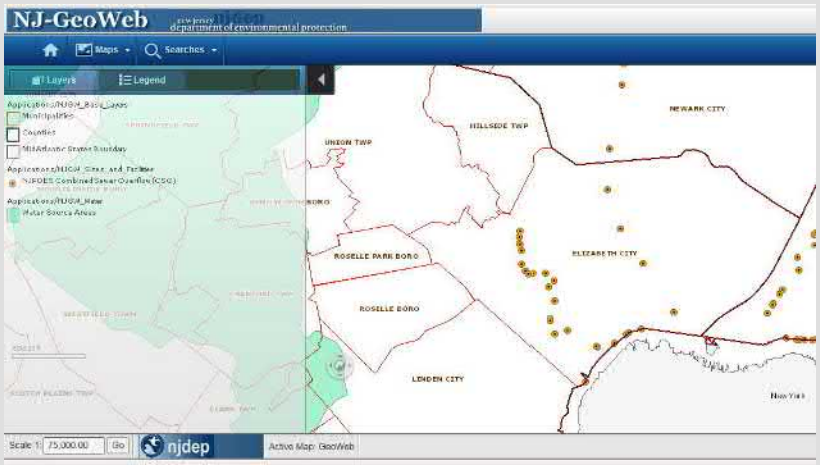
- Determine whether listed species are located in the area by checking the Endangered Species Act listings
- Review NJDEP Landscape Project critical wildlife habitat maps
- No presence of threatened or endangered species and critical habitat for specific outfall location anticipated

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

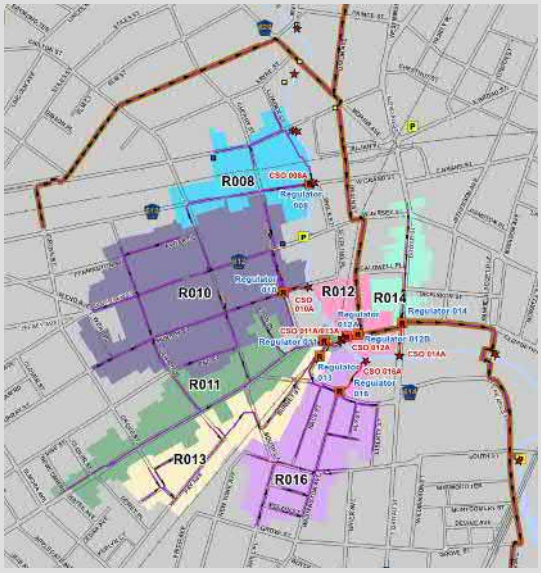
STATE OF NEW JERSEY

2016

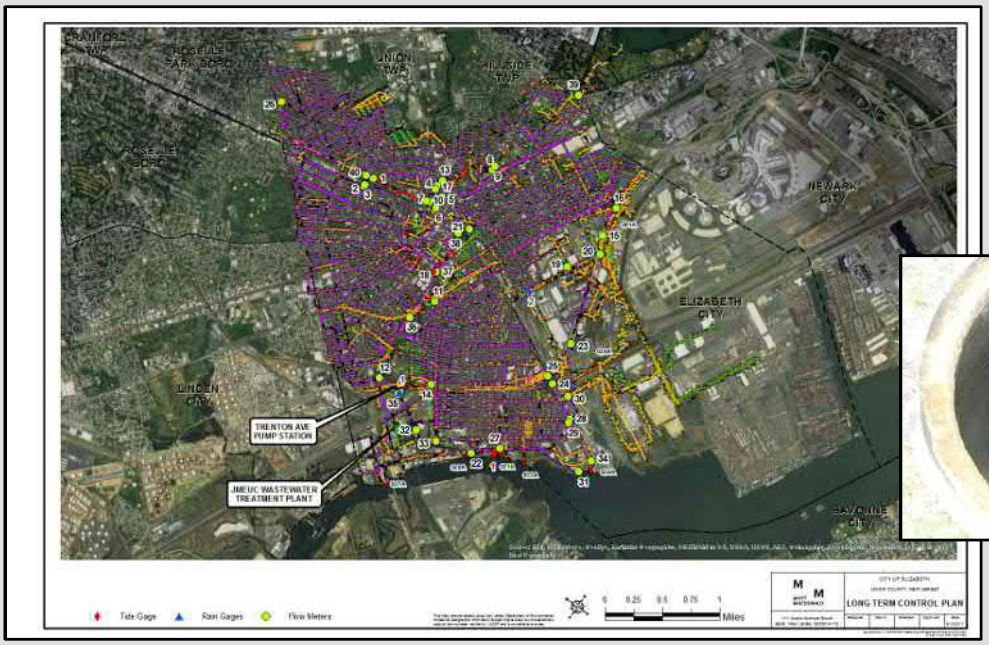
SHELLFISH GROWING WATER CLASSIFICATION CHARTS

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



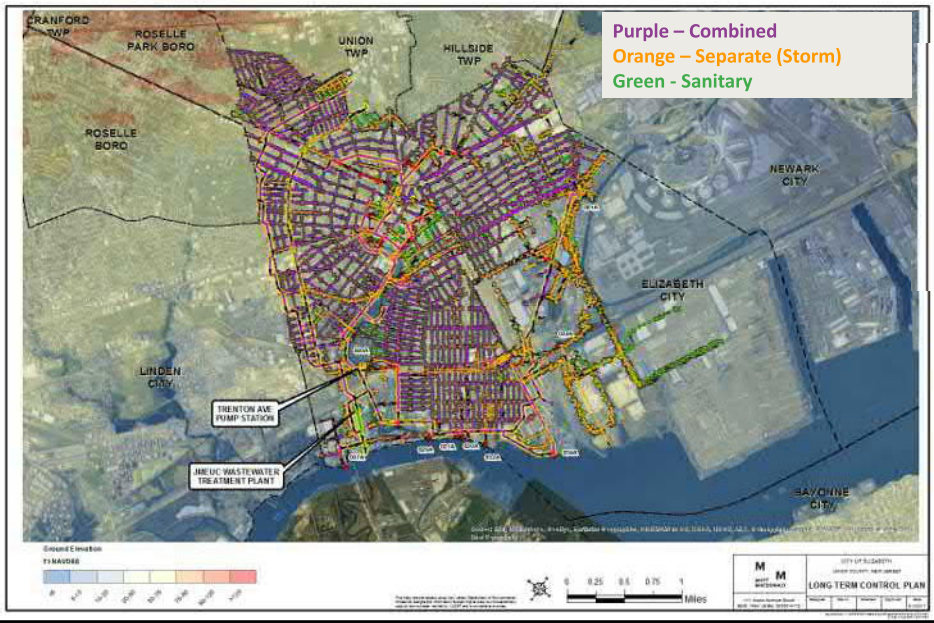
Monitoring Locations



FLOW METERS

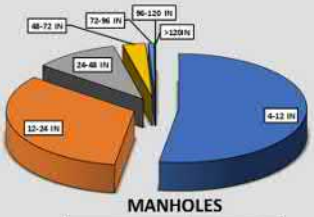
FLOW METER LOCATION	COUNT
DWF	14
EAST-INT	6
OVERFLOW	10
STORM	4
WEST-INT	6
Grand Total	**40**

Existing Sewers



PIPES

TYPE	COUNT	LENGTH (LF)
Combined	6,352	766,035
Sewage	517	63,646
Storm	4,566	309,228
Grand Total	11,435	1,138,909



MANHOLES

TYPE	COUNT
Combined	5,858
Sewage	457
Storm	1,193
Grand Total	7,508

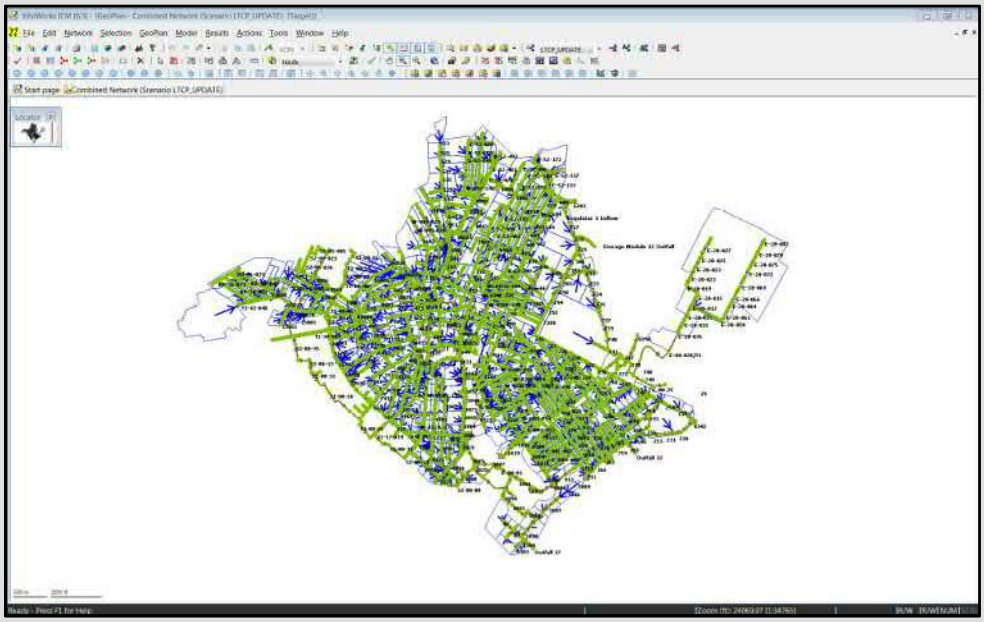
DRAINAGE

TYPE	COUNT
INLETS	4695

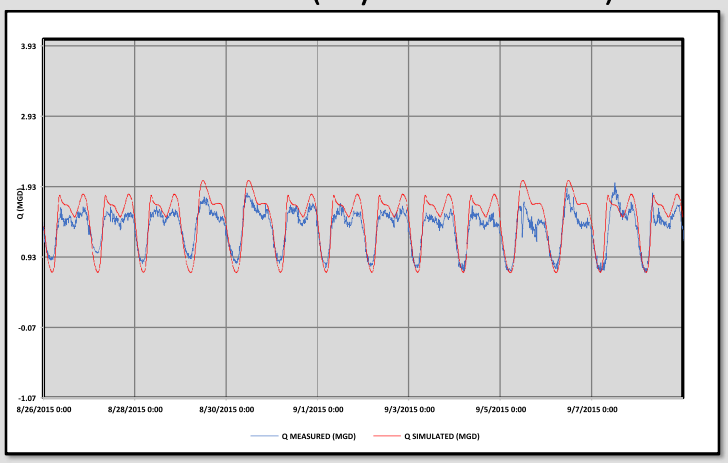
FACILITIES

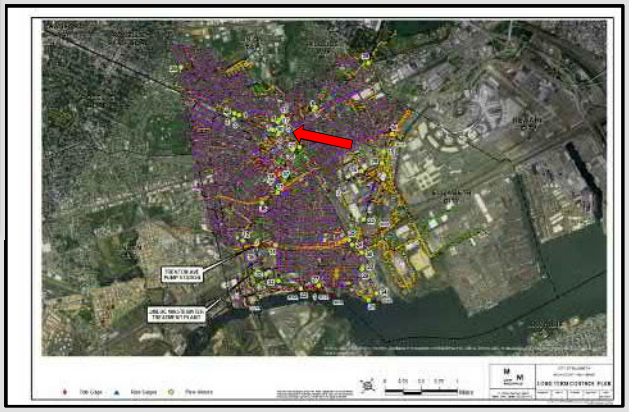
FACILITY TYPE	COUNT
Treatment Plant	1
Pump Station	9
CSO Outfalls	29
Netting Chambers	28
Siphon Chambers	16
Regulators	39
Tide Gates	43
Sluice Gates	12

Hydraulic Model

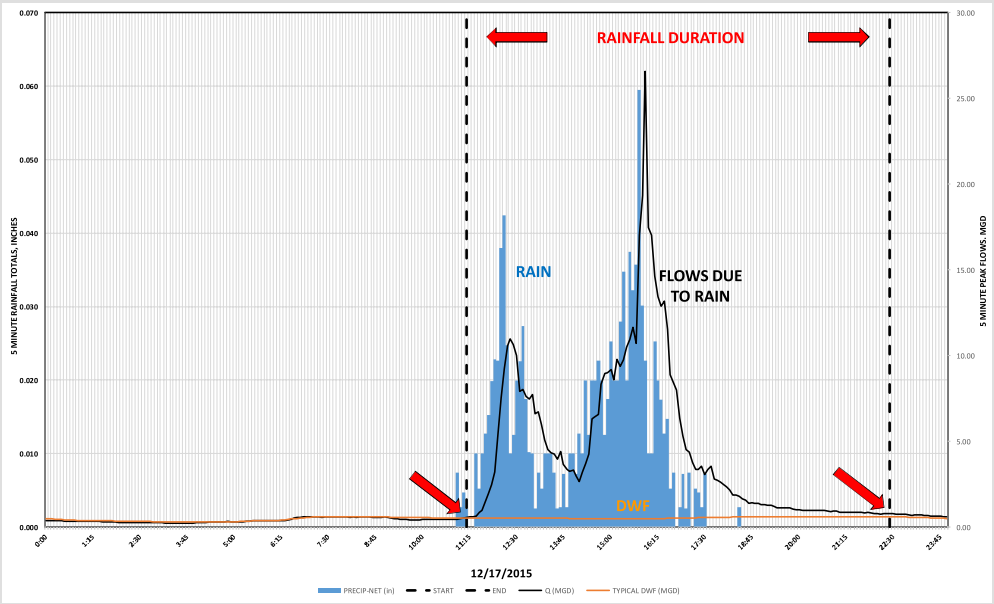


Meter vs. Model (Dry Weather Flows)





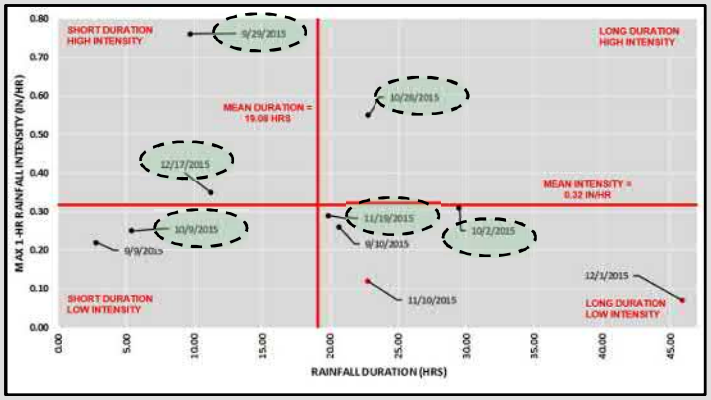
What Happens When it Rains?



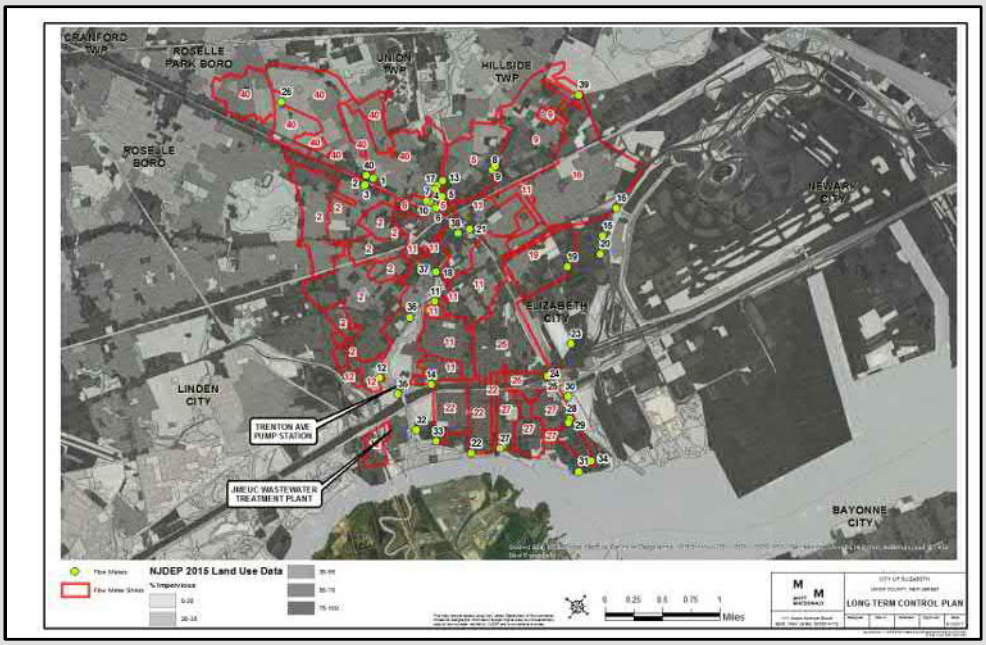
Step 1: Rainfall Selection

- **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

Storm #	Start Date	End Date	Start Time	End Time	Rain Depth (In)	Rain Duration (Hrs)	Max 1-Hr Rainfall Intensity (In/Hr)
#1	9/9/2015	9/9/2015	15:40	18:30	0.11	2.83	0.22
#2	9/10/2015	9/10/2015	3:05	23:45	0.99	20.67	0.26
#3	9/29/2015	9/30/2015	23:00	8:45	1.39	9.75	0.76
#4	10/2/2015	10/3/2015	4:30	10:00	1.91	29.5	0.31
#5	10/9/2015	10/9/2015	17:25	22:50	0.32	5.42	0.25
#6	10/28/2015	10/29/2015	10:25	9:15	1.65	22.83	0.55
#7	11/10/2015	11/11/2015	8:30	7:15	0.57	22.75	0.12
#8	11/19/2015	11/20/2015	13:35	9:30	1	19.92	0.29
#9	12/1/2015	12/2/2015	1:35	23:30	0.6	45.92	0.07
#10	12/17/2015	12/17/2015	11:15	22:30	1.15	11.25	0.35

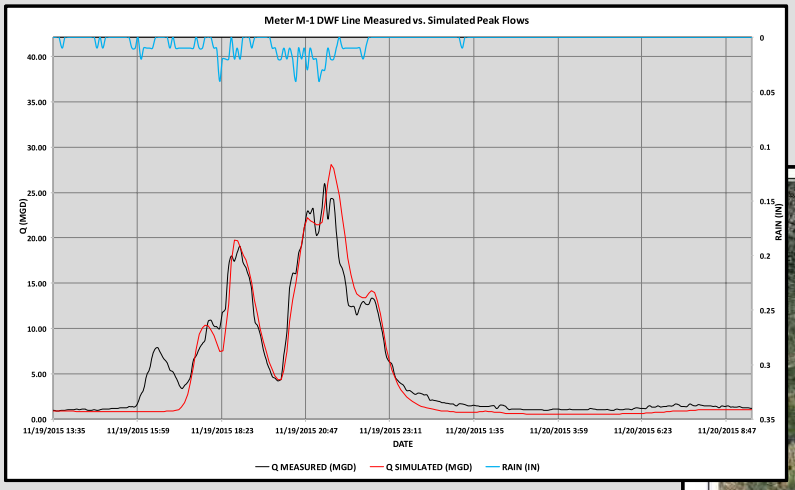


WWF - Impervious Areas

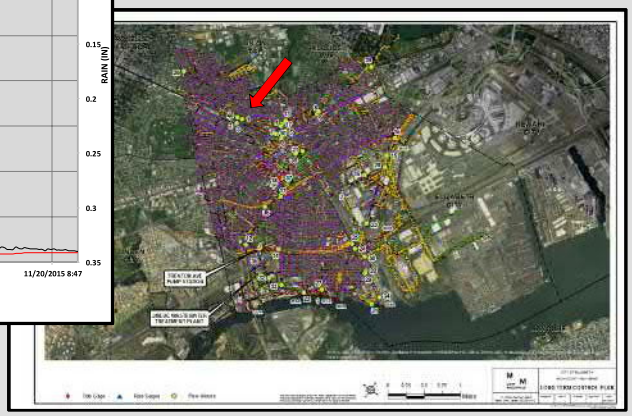


- NJDEP 2012 Land Use/ Land Cover Data (updated in 2015) used to calculate overall % impervious in flow meter sheds.

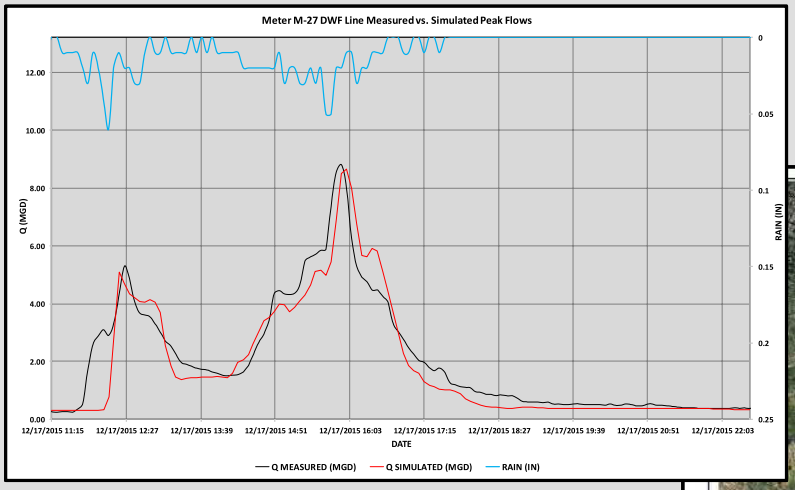
Meter vs. Model (Wet Weather Flows)



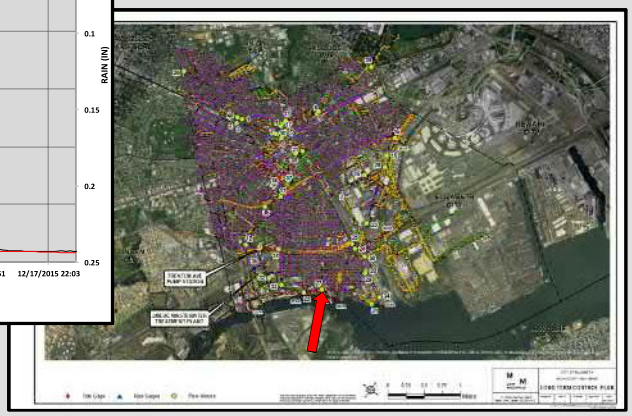
- **Calibration Storms**
  - 10/9/2015 (Low D, I)
  - 10/28/2015-10/29/2015 (High D, I)
  - **11/19/2015-11/20/2015 (High D, Low I)**
  - 12/17/2015 (High D, I)



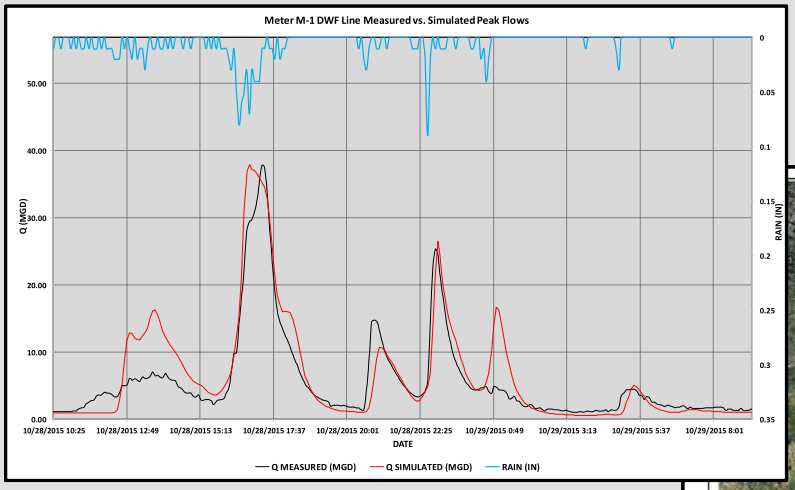
WWF Calibration Results – Easterly Interceptor



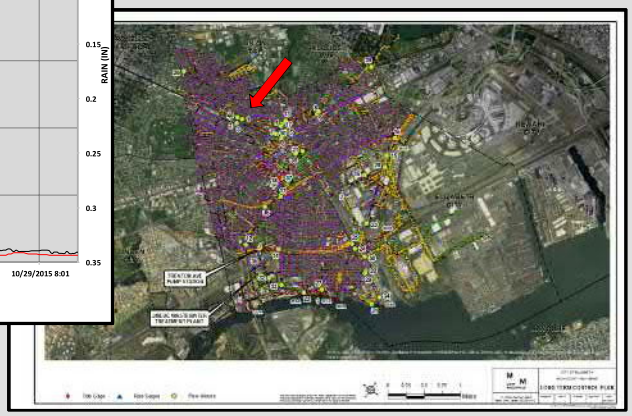
- **Calibration Storms**
  - 10/9/2015 (Low D, I)
  - 10/28/2015-10/29/2015 (High D, I)
  - 11/19/2015-11/20/2015 (High D, Low I)
  - **12/17/2015 (High D, I)**



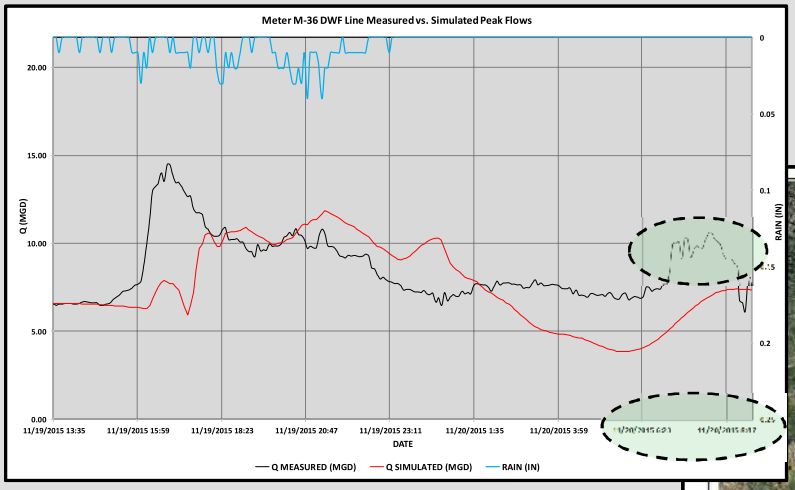
Meter vs. Model (Wet Weather Flows)



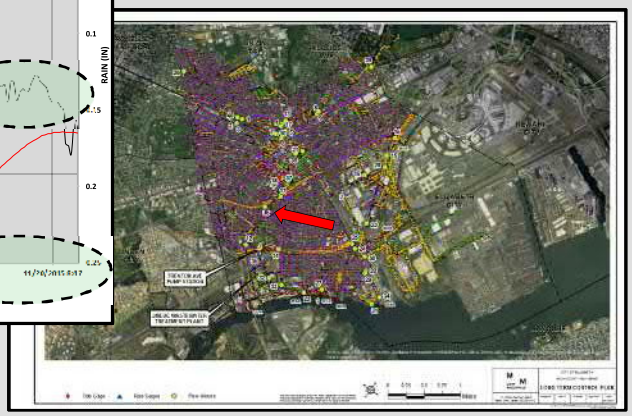
- **Calibration Storms**
  - 10/9/2015 (Low D, I)
  - **10/28/2015-10/29/2015 (High D, I)**
  - 11/19/2015-11/20/2015 (High D, Low I)
  - 12/17/2015 (High D, I)



Meter vs. Model (Wet Weather Flows)

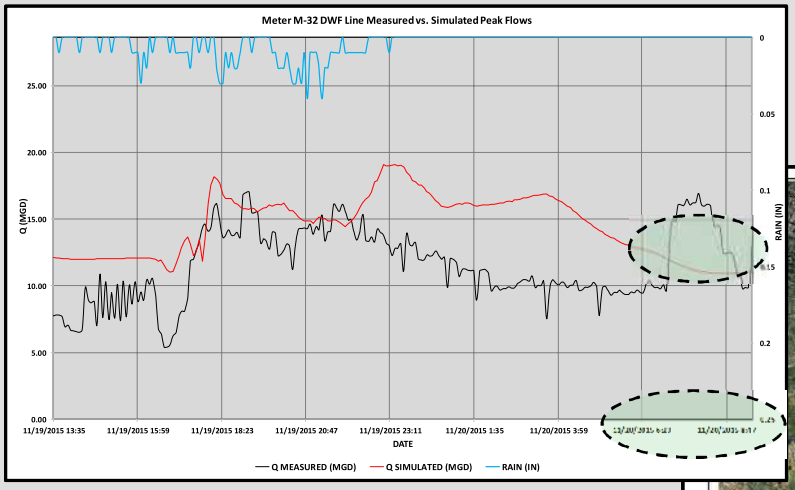


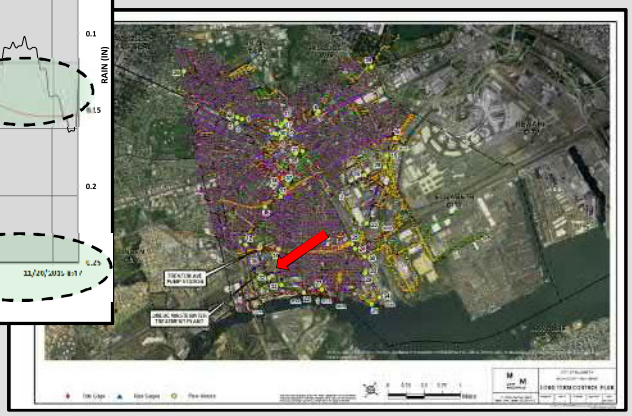
- **Calibration Storms**
  - 10/9/2015 (Low D, I)
  - 10/28/2015-10/29/2015 (High D, I)
  - **11/19/2015-11/20/2015 (High D, Low I)**
  - 12/17/2015 (High D, I)



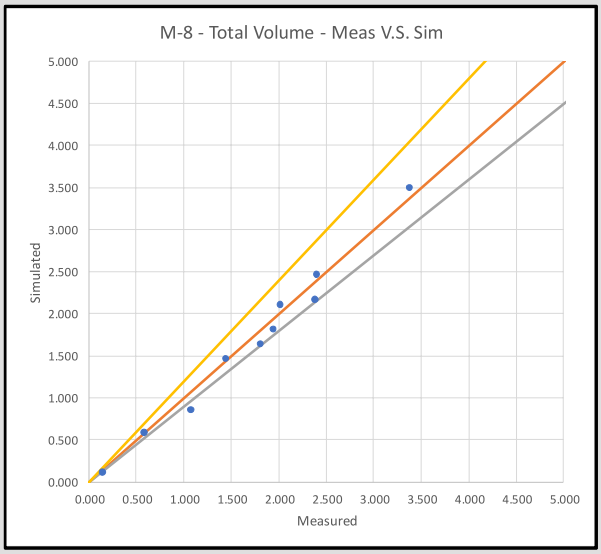
WWF Calibration Results – Easterly Interceptor

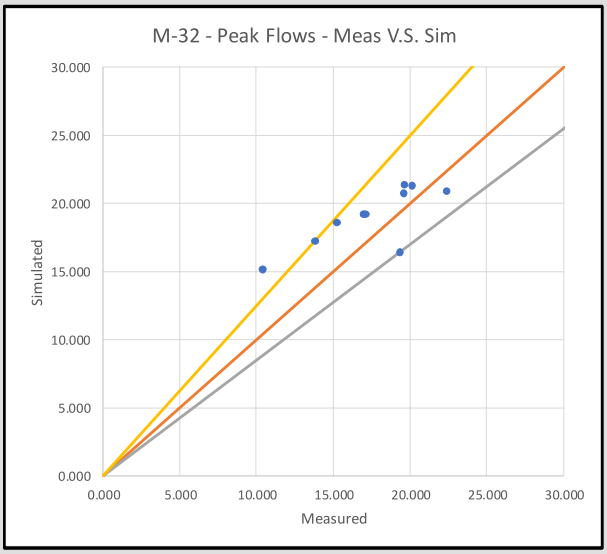
- **Calibration Storms**
  - 10/9/2015 (Low D, I)
  - 10/28/2015-10/29/2015 (High D, I)
  - **11/19/2015-11/20/2015 (High D, Low I)**
  - 12/17/2015 (High D, I)





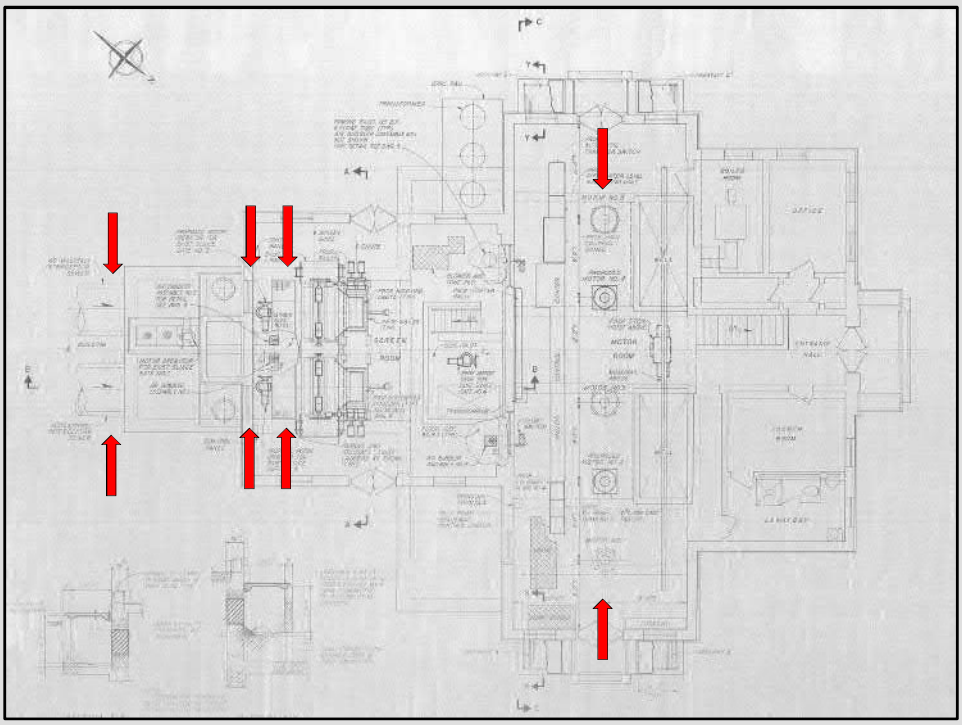
WWF Calibration Results – Overall Performance





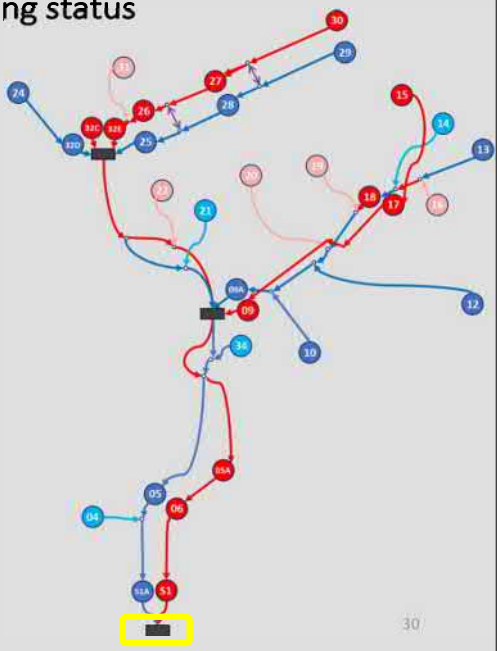
Trenton Ave PS

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

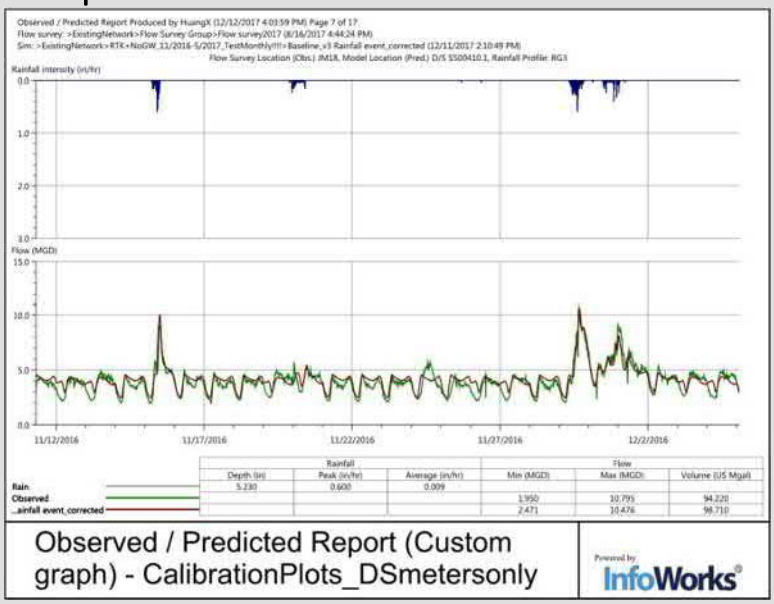


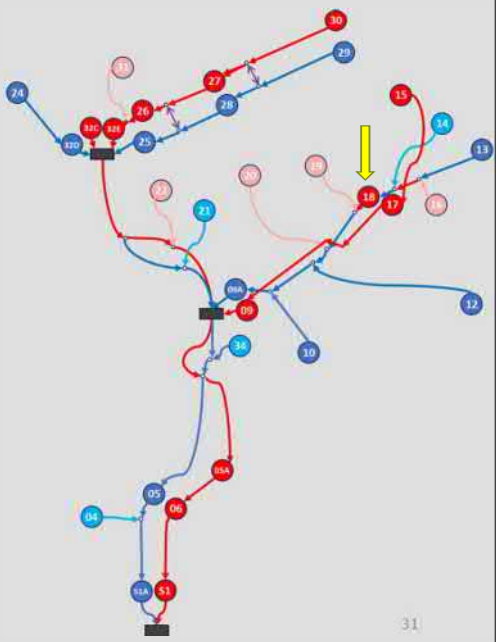
Project Status Updates
System Characterizations / Modeling – JMEUC modeling status

- 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

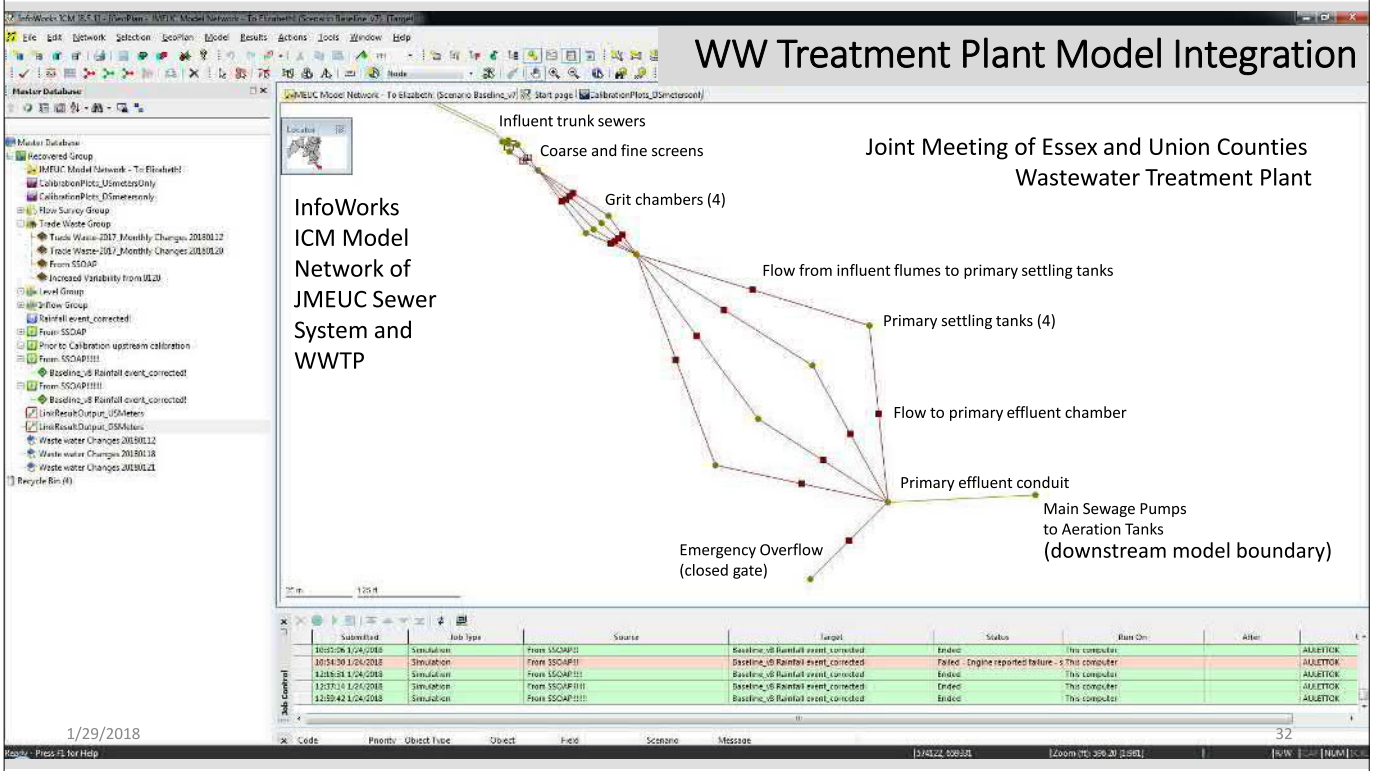


Example Model Calibration Plot – JMEUC Model





WW Treatment Plant Model Integration



InfoWorks ICM Model Network of JMEUC Sewer System and WWTP

Joint Meeting of Essex and Union Counties Wastewater Treatment Plant

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

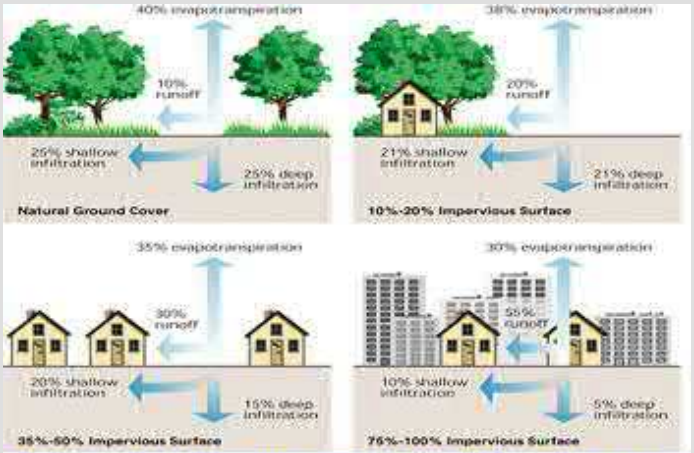
Description

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



Development increases the volume and rate of runoff from a site, and reduces groundwater recharge and evapotranspiration.

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.

Green Infrastructure Basics
Description

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.

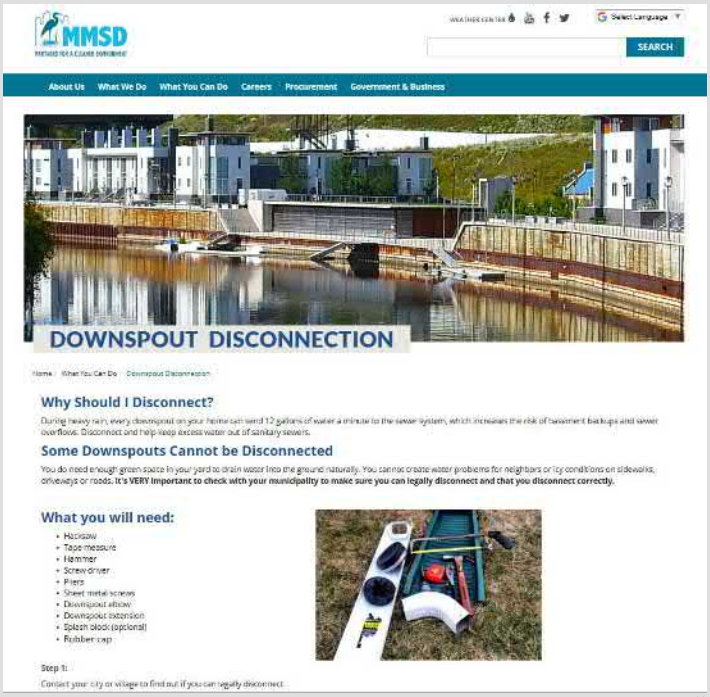
Caution:

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



Green Infrastructure Basics

Description

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.

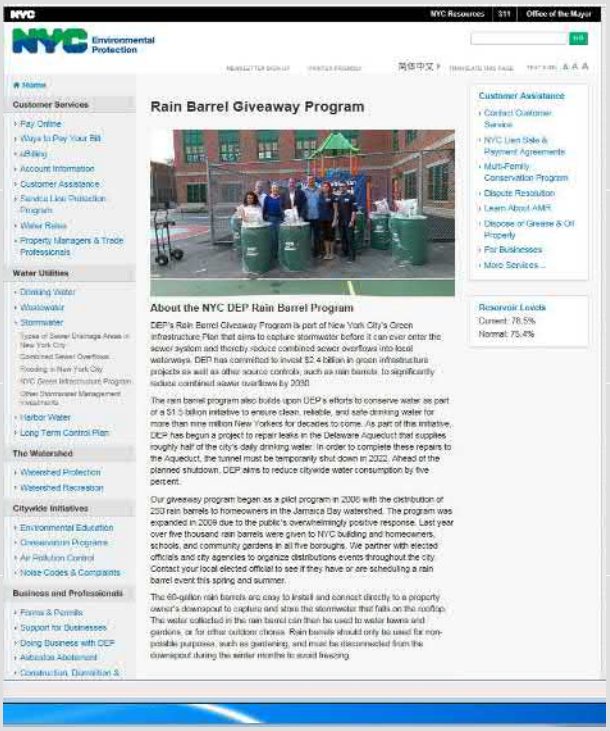
Green Infrastructure Basics
Description

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.

Green Infrastructure Basics

Description

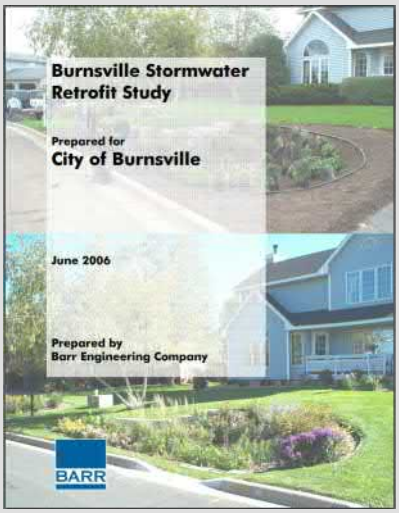
Rain Gardens

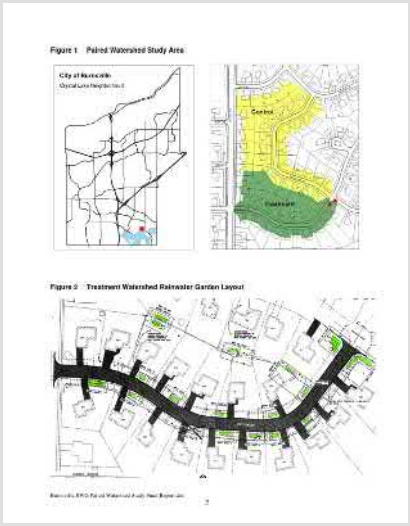
Limitation:
Needs permeable non-paved areas

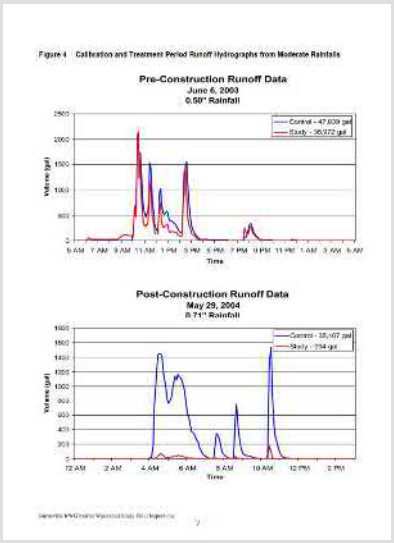
Advantage:
Mimics natural hydrology of infiltration, evaporation, and transpiration.

Green Infrastructure Basics

Rain Gardens - Minnesota







Green Infrastructure Basics

Description

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
Example

Philadelphia

Green Infrastructure Program

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.

Green Infrastructure Basics

Description

Bioswales

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.

Green Infrastructure Basics

Description

Permeable Pavements

Limitation:

Needs permeable subsoils or high void volume subbase.

Require higher maintenance to limit plugging.

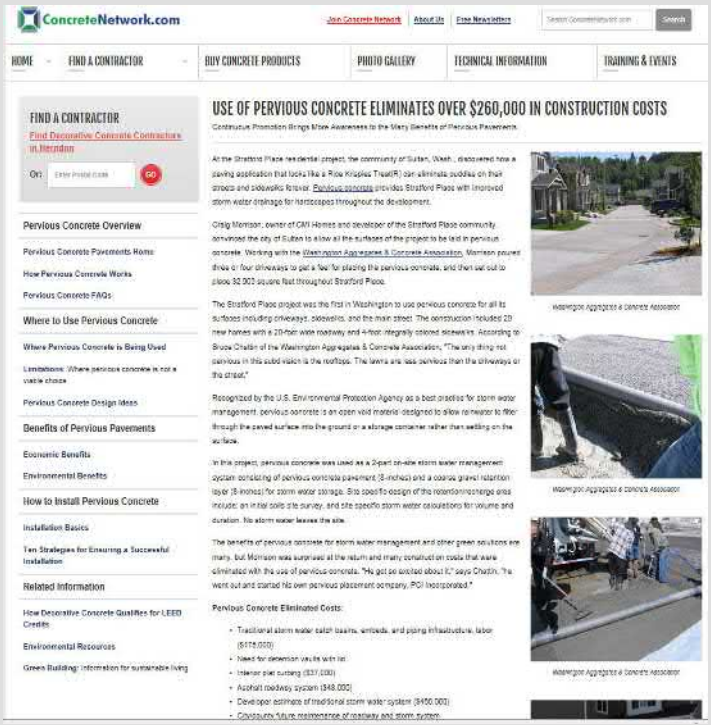
Advantage: Could be cost effective in areas with high land values and flooding or icing problems.

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

Green Infrastructure Basics

Example

Green Streets and Alleys

Syracuse, NY Green Street Project

Save The Rain Clean The Lake

Project:	Concord Place
GI Technology:	Infiltration Bed
Project Location:	Concord Place from Westcott St to Allen St
Project Owner:	City of Syracuse
Sewershed:	Erie
Capture Area:	35,000 square ft
Run-off Reduction:	955,800 gallons/yr
Year Completed:	2011
Construction Cost:	$78,900
Prime Contractor:	Cornerstone Paving

FACT SHEET

Green Street: Concord Place

Project Description: Concord Place is the first "green street" project in Syracuse. This project demonstrates a subtle approach to managing stormwater with the installation of infiltration trenches along the street corridor. Stormwater enters the system through the existing storm drain connections in the street. Instead of the collected water flowing to the sewer system, as was previously the case, the water is directed to an underground trench filled with a stone base. As the water enters the trench, it slowly filters through the compacted stone and soil, eventually releasing into the ground water. In addition to the underground infiltration system, Concord Place also received a new mill and pave application to the street surface, which was paid for by the City of Syracuse.

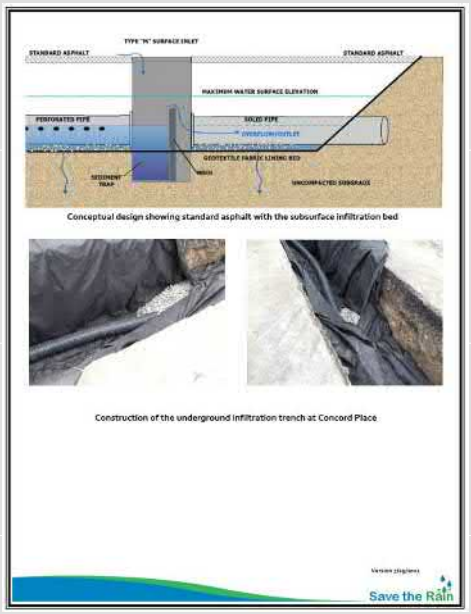
This type of project is unique among green infrastructure projects – although above the surface it appeared to be a traditional street paving process, below the street green infrastructure was installed to more effectively manage stormwater and protect our water resources.

The completion of the renovation of Concord Place is the first of several planned "green street" projects within the "Save the Rain" program.

Concord Place (looking south)

Concord Place (looking at center island)

Save the Rain



Conceptual design showing standard asphalt with the subsurface infiltration bed

Construction of the underground infiltration trench at Concord Place

Save the Rain

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 Parking

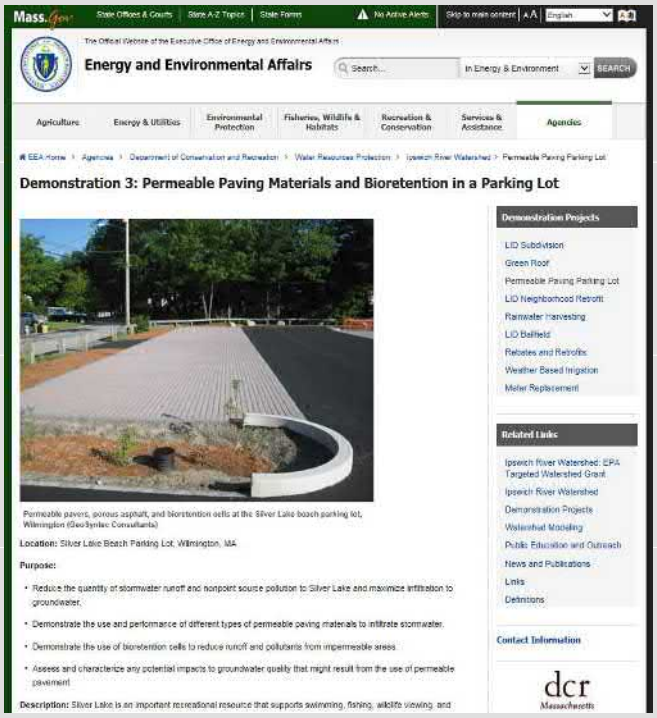
Wilmington, MA
Silver Lake Beach Parking Lot

Key Results and Conclusions:

- Infiltration tests of the permeable paving materials, conducted after construction, indicated that infiltration rates met or exceeded specifications. The average observed infiltration rates were:

Porous Asphalt	Permeable Pavers	Flexi-Pave	Gravelpave
69 in./hr.	45 in./hr.	1,452 in./hr.	exceeds 5,000 in./hr

- Results of USGS monitoring show no indication of groundwater impairment beneath the areas with pervious paving.
- Reports from the town board of Health show no closures of the swimming beach as a result of *E. coli* bacteria in the four years following installation of the LID features. For eight years prior to installation, beach closures due to *E. coli* occurred one or more times each summer.
- Since the installation of the LID features, the beach had one closure due to cyanobacteria, an algal bloom often associated with an influx of nutrients.



Green Infrastructure Basics

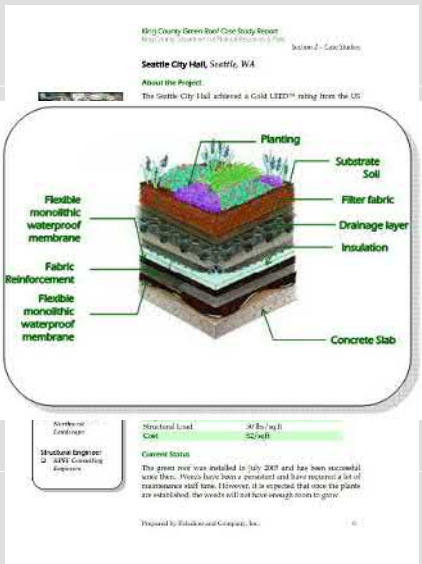
Description

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

Example Washington State



Green Infrastructure Basics

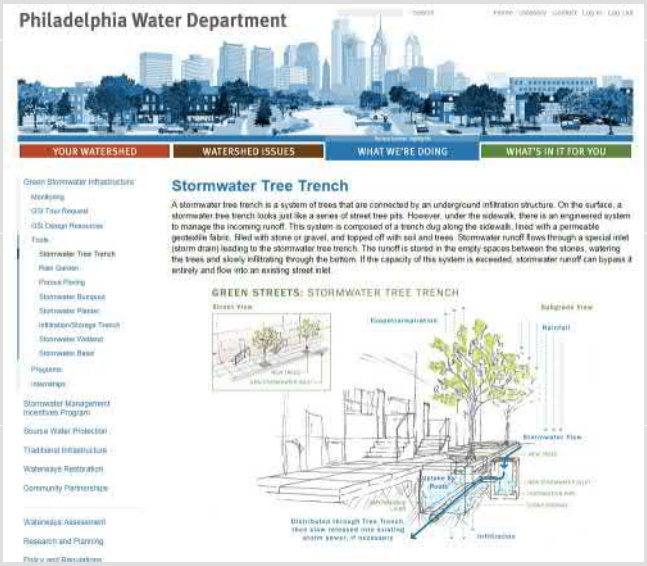
Description

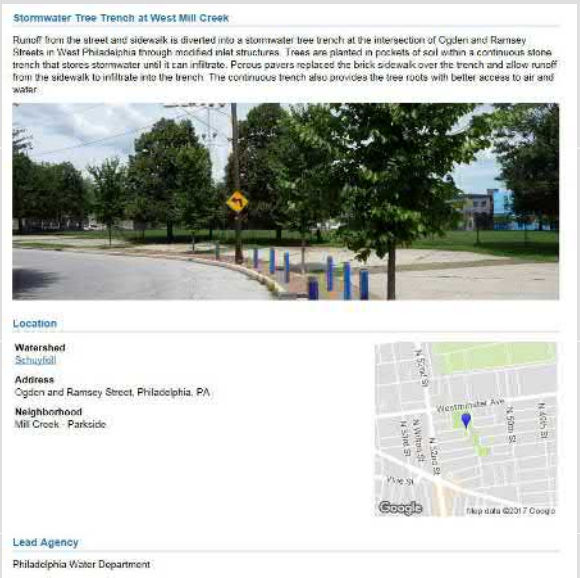
Urban Tree Canopy

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

Example – Tree Canopy





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.

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)

Supplemental CSO Team

Meeting No. 3
Long-Term Control Plan Permit Compliance

B. Supplemental CSO Team Meeting Presentations

B.4 Meeting No. 4 – June 5, 2018

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City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting No. 4
Sign-In Sheet
June 5, 2018 at 1 pm

Name	Organization	Title	Phone	Email
DAN LEE	NEGLIA / ROSELLE PARK	CONSULTING ENGINEER	201-939-8805	DLEE@NEGLIAENGINEERING.COM
PAUL LESO	UNION COUNTY	SUPERVISING ENGR'	908-789-9075	PLESO@UCNJ.ORG
Michele Langa	NY/NJ BAYKEEPER	Staff Attorney	(732) 888-9870	michele@nynjbaykeeper.org
JOE BONACCORSO	CME / JMEUC	PROJ. MGR	908 208 6685	JosephB227@VERIZON.NET
Ted Burgess	CDM Smith	Project Mgr.	513-460-0255	burgessel@cdmsmith.com
STEVE DONHAN	JMEUC	SUPT	908-353-1313	SDONHAN@JMEUC.COM
FRANCIS BONACCORSO	JMEUC	ASST. SUPT.	908-353-1313	FBONACCORSO@JMEUC.COM
STEVE BERNHAUT	HUB MANAGEMENT	MEMBER	973-731-6654	stevelwarhouse@aol.com
DAN LOOMIS	CITY OF ELIZABETH	CITY ENGINEER	908-820-4269	DLOOMIS@ELIZABETHNJ.ORG
JOHN F. PAPPETTI, JR	CITY of ELIZABETH	DIRECTOR DPW	908-820-4101	JPAPPETTI@ELIZABETHNJ.ORG
STEVEN P. RINALDI	CITY of ELIZABETH	PRINCIPAL ENG.	908-820-4278	SRINALDI@ELIZABETHNJ.ORG
Dayana Sayritupac	Future City Inc	Intern	—	ds01@futurecity.org
Elisvellie Turbi	Future City Inc	Intern	—	Turbi.Elis@gmail.com

City of Elizabeth and Joint Meeting of Essex and Union Counties (JMEUC)
Combined Sewer Overflow Long-Term Control Plan

Supplemental CSO Team - Meeting No. 4
Sign-In Sheet
June 5, 2018 at 1 pm

Name	Organization	Title	Phone	Email
Sebastian Prado	Future City Inc	Intern	—	sp01@futurecityinc.org
Sheyla Mitchell	Future City Inc.	Intern	—	mitchels@kean.edu
Glenn Lautenbach	Future City Inc.	—	—	glenn@futurecityinc.org
Rachael Pepe	NJ DEP	Env. Specialist		Rachael.Pepe@dep.nj.gov
Nancy Kempel	"	Section Chief		Nancy.Kempel@dep.nj.us
Jennifer Costa	EDMO/GECC	Director	908-220-9643	JCosta@goElizabethnj.com
Jonathan Phillips	Groundwork Elizabeth	Exec. Dir.	908-282-0262	jonathan@groundworkelizabeth.org
Jessica Frago	Groundwork Eliz.	AmeriCorps VISTA	201 966 6414	jessica@groundworkelizabeth.org
J Park Albaum	Groundwork Elizabeth	Dir. of Urban Agr	9176555638	Jackie@groundworkelizabeth.org

Supplemental CSO Team

Meeting No. 4
Long-Term Control Plan Permit Compliance

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

June 5, 2018 – 1:00 pm
Peterstown Community Center
408 Palmer Street, Elizabeth, NJ 07202

Meeting Agenda

- Prior meeting recap
- Upcoming submittal schedule
- Group survey – water quality concerns and responsibilities
- System Characterization Report
- Baseline Compliance Monitoring Program Report
- Consideration of Sensitive Areas Information
- Group survey – CSO control approaches and financial burdens
- Public Participation Process
- Alternatives Evaluation – Quick Look Ahead
- Next meeting

Meeting No. 3 Refresher

Material covered in prior meeting (1/29/2018):

- Public involvement activities
- Sensitive areas consideration
- Characterization and modeling updates
- NJ CSO Group coordination
- Green Infrastructure Basics

Upcoming Submissions

Reports with July 1, 2018 deadline:

1

System Characterization Reports

- Separate reports for Elizabeth and Joint Meeting
- Coordinated and joint certifications

2

Baseline Compliance Monitoring Program Report

- NJ CSO Group joint effort, draft results under review

3

Consideration of Sensitive Areas Information

- NJ CSO Group joint effort, draft results under review

4

Public Participation Process Report

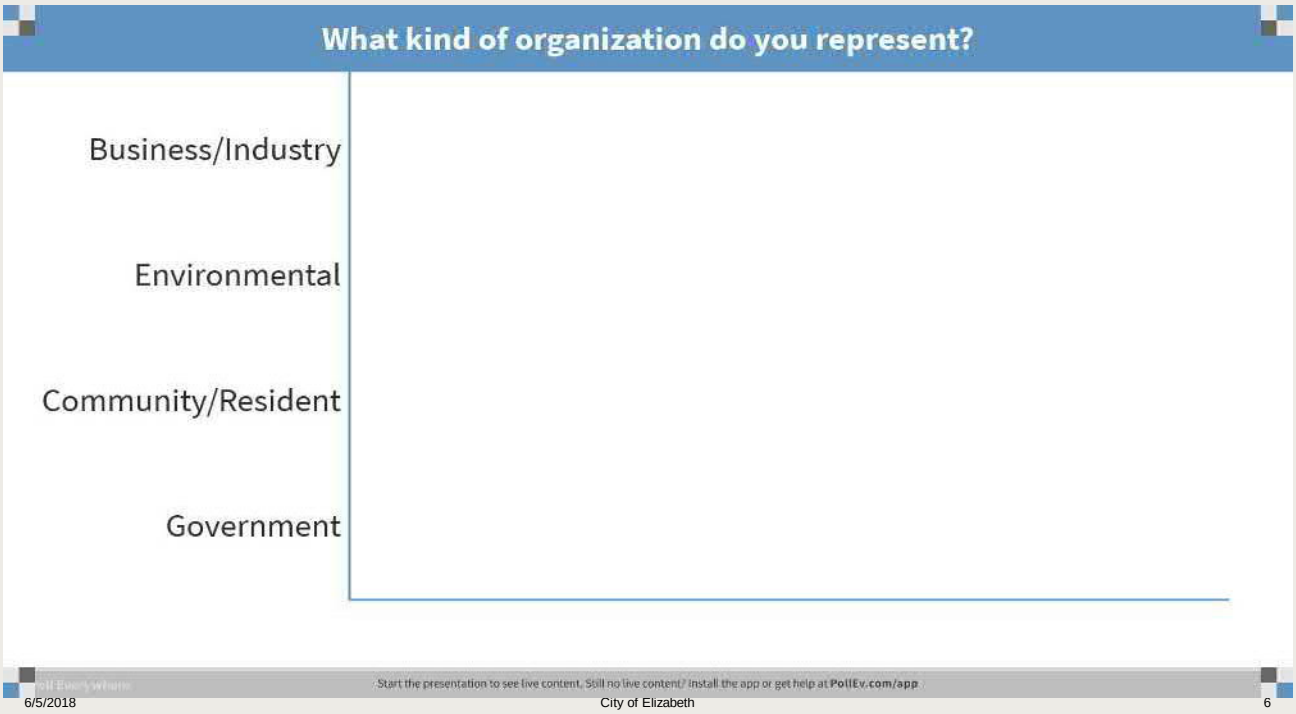
- Joint effort of Elizabeth and Joint Meeting

Interactive Surveys

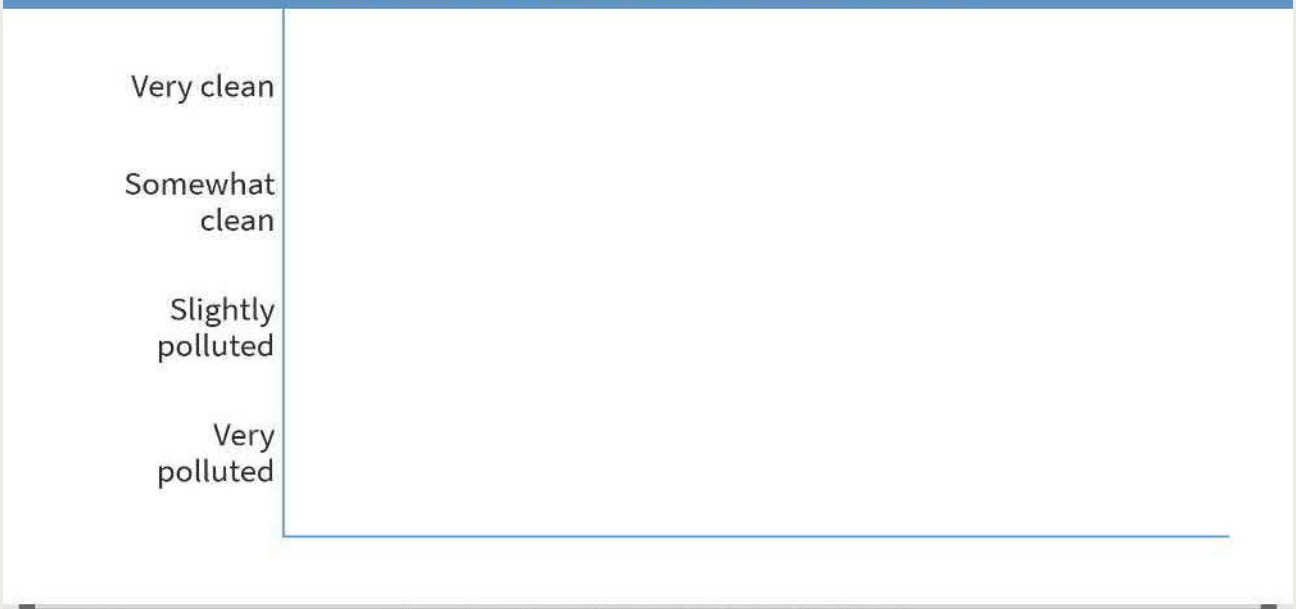
We would like to obtain your feedback on items such as:

- Who you are / who you are representing
- Water pollution sources, issues, and concerns
- Public engagement methods
- Priorities for CSO alternatives
- Financing CSO controls

Please go to www.pollev.com/mottmac355 on your smartphone

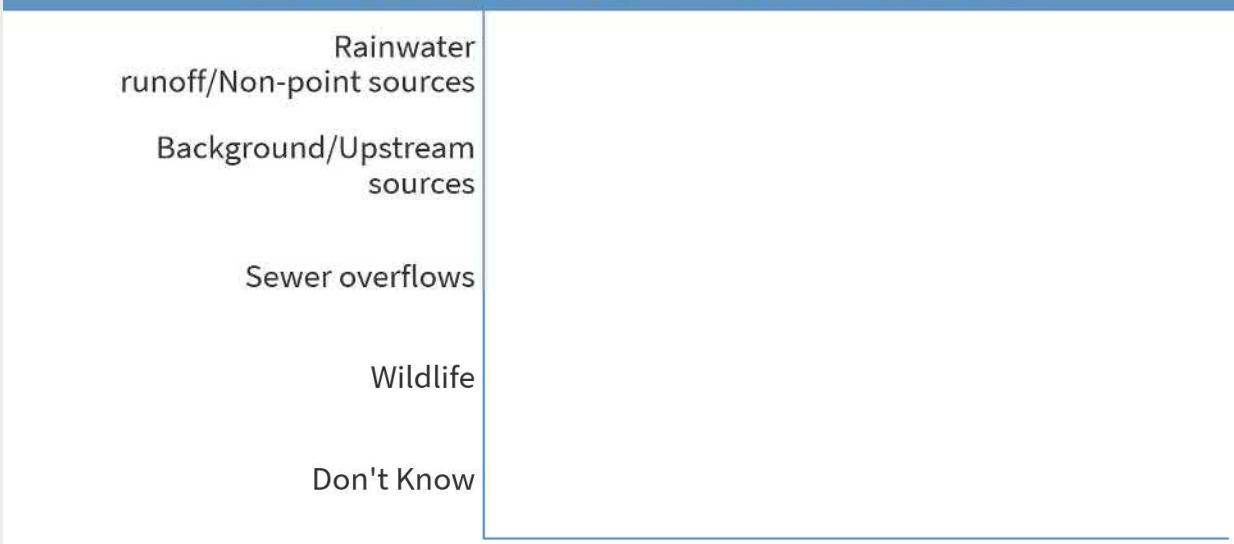


How clean do you think the Elizabeth River is?



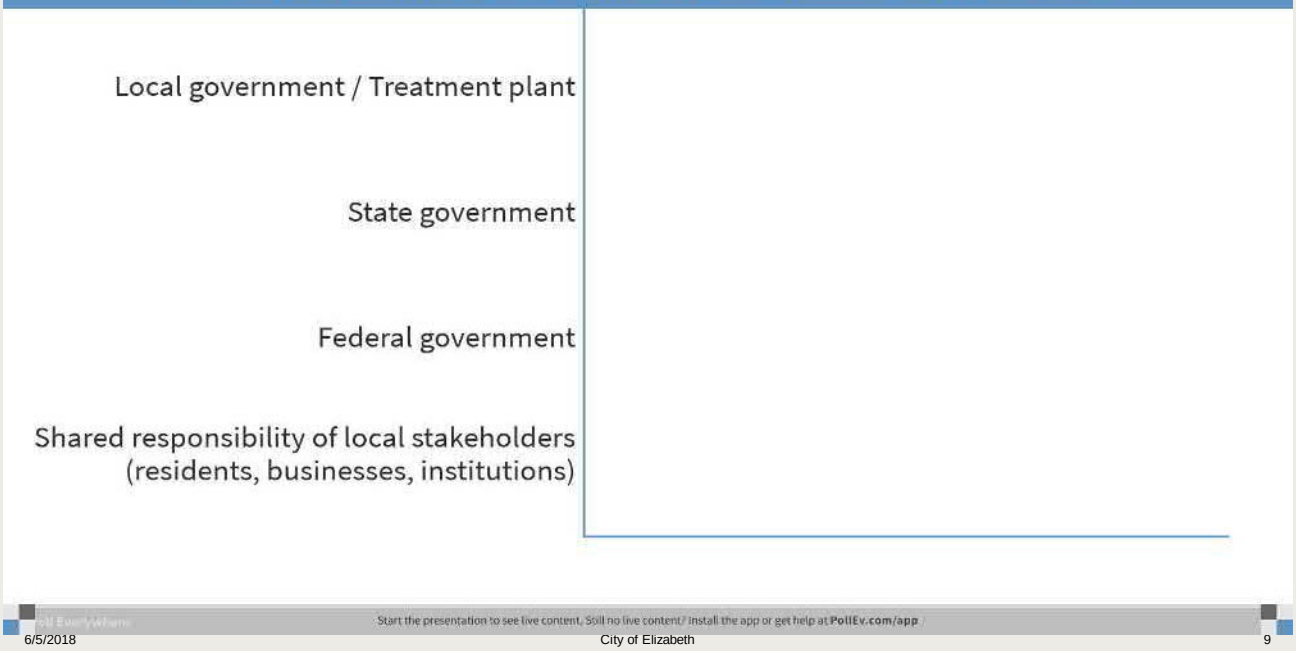
Poll Everywhere — Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

What is the main cause of pollution in local waterways?



Poll Everywhere — Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

Whose responsibility is it to protect local waters from pollution?



System Characterization Update – Report Organization

1. Introduction
2. Sewer system description
3. Hydraulic monitoring
4. Wastewater quality monitoring
5. Collection system model
6. Receiving water quality monitoring
7. Consideration of sensitive areas
8. Characterization of system performance – typical year simulation

Sewer System Description

Combined Sewer System

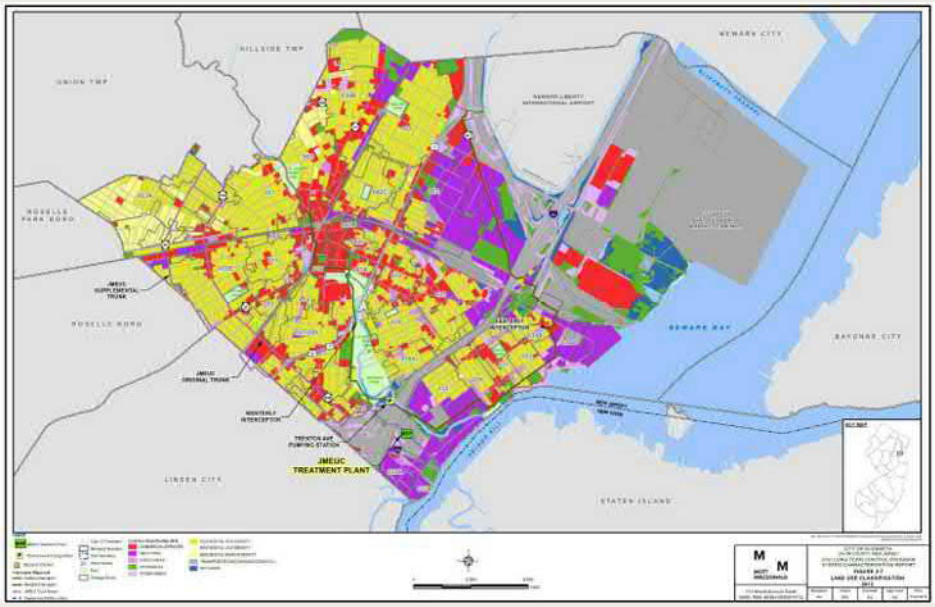
- Combined and separate sewer areas
- Hydraulically connected system
- Receiving waters
- Facilities inventory and descriptions
- Outfall and regulator control structure details
- Significant Indirect Users
- CSO drainage basins
- Facility assessments

Sewer System Description

Combined Sewer System

- 29 CSO Outfalls
- 36 CSO Sub-basins, varying from 3 to 439 acres each
- 38 regulators and diversion chambers
- 166 miles of combined sewers, with 6,400 manholes & 3,300 inlets
- Complex network of interconnections
- 14.7 Mgal/day average flow, Trenton Ave PS
- Roselle Park storm sewer connection

Updated Land Use Analysis – 2012 NJDEP GIS Data



Land use overall CSO area – 3,832 acres

- 52.2% high-density resid.
- 8.2% med-density resid.
- 17.3% commercial
- 11.6% industrial
- 3.5% open areas
- 3.3% transportation
- 3.9% other uses

61.8% impervious cover

Little change from 2007

Hydraulic Monitoring

Continuous monitoring: 8/22/15 – 12/21/15 (4 months)

- 40 flow meters
  - 14 dry weather lines
  - 10 overflow lines
  - 6 along E. Interceptor
  - 5 along W. Interceptor
  - 4 storm sewers
- 2 tide gauges
- 14 tide gate monitors
- 2 groundwater level monitors
- 3 rain gauges

Hydraulic Monitoring – Rainfall Events

Storm	Start Date	End Date	Start Time	End Time	Depth (In)	Duration (Hrs)	Max Intensity (In/Hr)
1	9/9/2015	9/9/2015	15:40	18:30	0.11	2.83	0.22
2	9/10/2015	9/10/2015	3:05	23:45	0.99	20.67	0.26
3	9/29/2015	9/30/2015	23:00	8:45	1.39	9.75	0.76
4	10/2/2015	10/3/2015	4:30	10:00	1.91	29.50	0.31
5	10/9/2015	10/9/2015	17:25	22:50	0.32	5.42	0.25
6	10/28/2015	10/29/2015	10:25	9:15	1.65	22.83	0.55
7	11/10/2015	11/11/2015	8:30	7:15	0.57	22.75	0.12
8	11/19/2015	11/20/2015	13:35	9:30	1.00	19.92	0.29
9	12/1/2015	12/2/2015	1:35	23:30	0.60	45.92	0.07
10	12/17/2015	12/17/2015	11:15	22:30	1.15	11.25	0.35

Total 10 storms

- Durations varying from 2.8 to 46 hours
- Intensities varying from 0.07 to 0.76 inches/hour

Categorized as:

- Low duration, low intensity (2)
- Low duration, high intensity (2)
- High duration, low intensity (5, some close to the cutoff line)
- High duration, high intensity (1)

Various periods of dry weather flow data

Wastewater Quality Monitoring

- 7 sampling locations
- 3 event sampling surveys
  - Rainfall events > 0.5”
  - Dry weather samples day before
  - Wet weather sampling intervals: 30 mins, 1 hr, 2 hr, 4 hr and 8 hr
- 3 pathogen parameters
  - E. coli at 2 sites
  - Fecal coliform and enterococcus at 7 sites

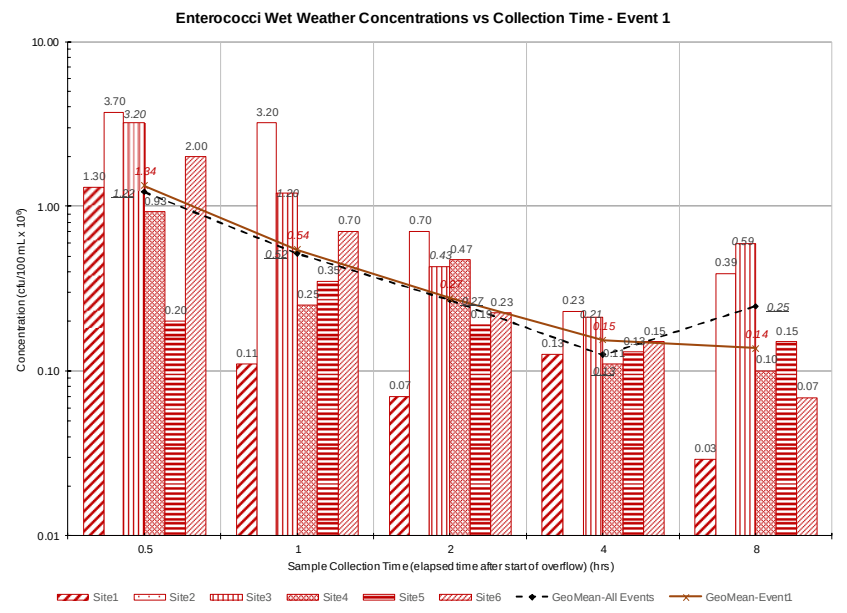
Dry Weather Pathogen Concentration Averages and Ranges by Sample Site, All Events

Parameter / Statistic	Concentrations in cfu/100 mL x 10^6							
Site No.	1	2	3	4	5	6	7	
Drainage Area	003A	022A	026A	028A	029A	034A	042A	All Sites
E. Coli								
Geometric Mean	2.08	3.34	NA	NA	NA	NA	NA	2.64
Minimum	1.40	1.70	NA	NA	NA	NA	NA	1.40
Maximum	3.20	5.00	NA	NA	NA	NA	NA	5.00
Fecal Coliform								
Geometric Mean	2.52	3.08	5.65	3.56	3.90	4.67	4.13	3.82
Minimum	2.20	2.40	4.20	3.40	3.00	1.10	3.20	1.10
Maximum	2.90	4.20	7.80	3.70	6.20	32.00	5.80	32.0
Enterococci								
Geometric Mean	1.41	1.23	2.22	2.25	1.40	1.92	0.86	0.89
Minimum	0.70	0.57	1.00	1.50	1.07	0.64	0.54	0.54
Maximum	2.00	2.20	5.00	3.60	1.70	5.50	1.30	5.5

Wet Weather Pathogen Concentration Averages and Ranges by Sample Site, All Events and Sample Times

Site No.	1	2	3	4	5	6	7	
Drainage Area	003A	022A	026A	028A	029A	034A	042A	All Sites
All Events								
E. Coli								
Geometric Mean	0.29	0.88	NA	NA	NA	NA	NA	0.50
Minimum	0.07	0.17	NA	NA	NA	NA	NA	0.07
Maximum	2.30	11.00	NA	NA	NA	NA	NA	11.00
Fecal Coliform								
Geometric Mean	0.46	1.57	2.45	0.65	0.36	0.47	1.98	0.87
Minimum	0.04	0.20	0.22	0.08	0.05	0.09	0.26	0.04
Maximum	9.30	66.00	108.00	4.10	1.80	2.40	38.00	108.00
Enterococci								
Geometric Mean	0.18	0.70	0.76	0.30	0.23	0.29	0.39	0.36
Minimum	0.03	0.06	0.07	0.03	0.04	0.02	0.03	0.02
Maximum	1.30	6.20	4.20	2.40	1.30	0.90	2.00	6.20

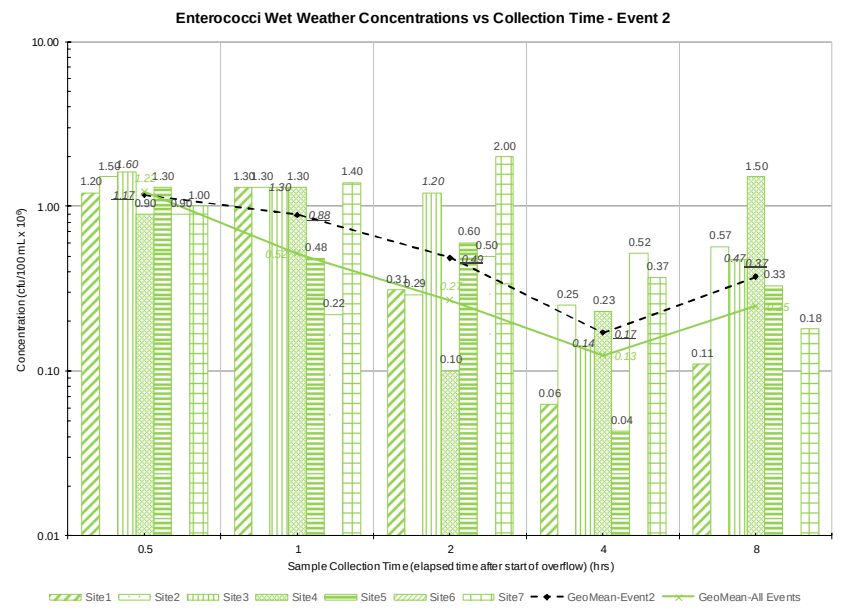
Wastewater Quality Monitoring



Pathogen Data

- Highly variable, but consistent with typical ranges.
- Average overflow content lower than dry weather.
- During storm, pathogens may stay high or increase during initial overflow period (first flush)
- Decreases during course of storm, with dilution
- Increases at end of overflow event.

Wastewater Quality Monitoring



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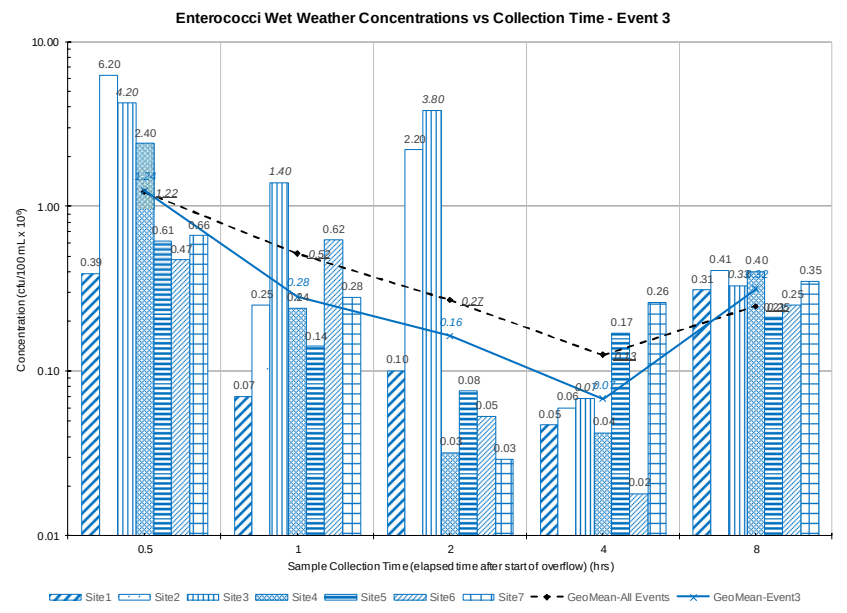

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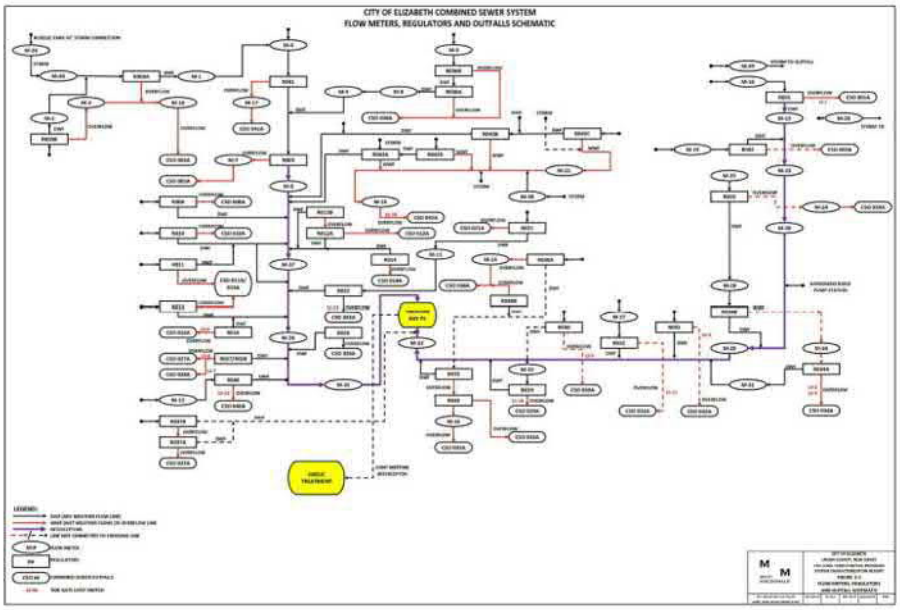
- Increases at end of overflow event.

Collection System Modeling

- Computer model with extensive coverage of physical system
- Model geometry and representation based on existing system
- Complex network of interconnections represented



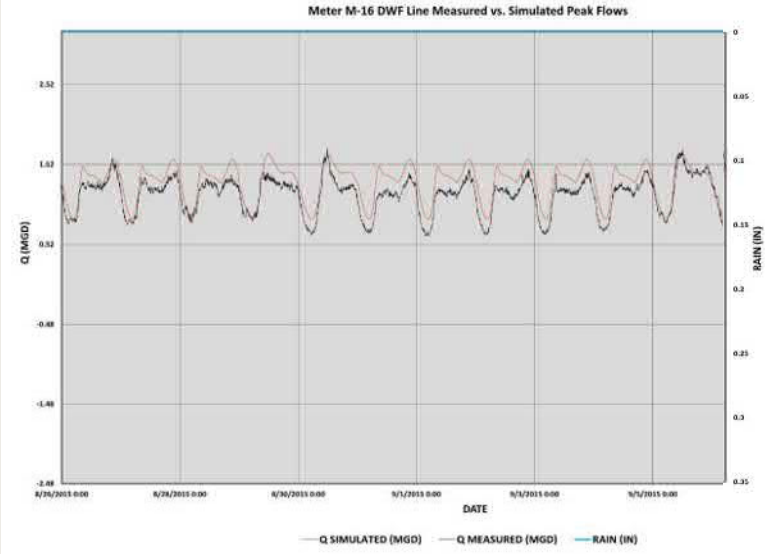
Collection System Modeling

Calibration and validation storm selection

- 4 calibration storms (#5, 6, 8 & 10)
- 2 validation storms (#3 & 4)

Dry weather flow (DWF) analysis

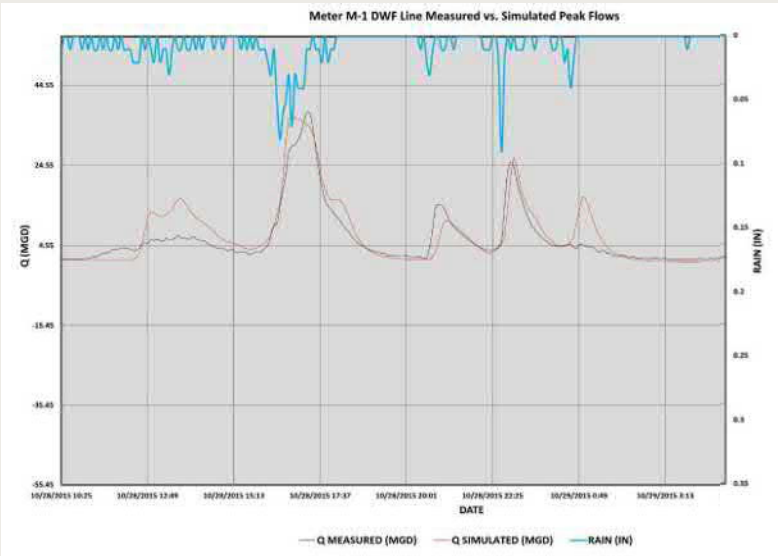
- Flow component estimation for each meter with DWF
  - Segregate dry weather weekday and weekend flows and diurnal peak factors
  - Population analysis for flow generation
  - Groundwater infiltration analysis
  - Correlate model calculations with monitoring data



Collection System Modeling

Wet weather flow (WWF) analysis

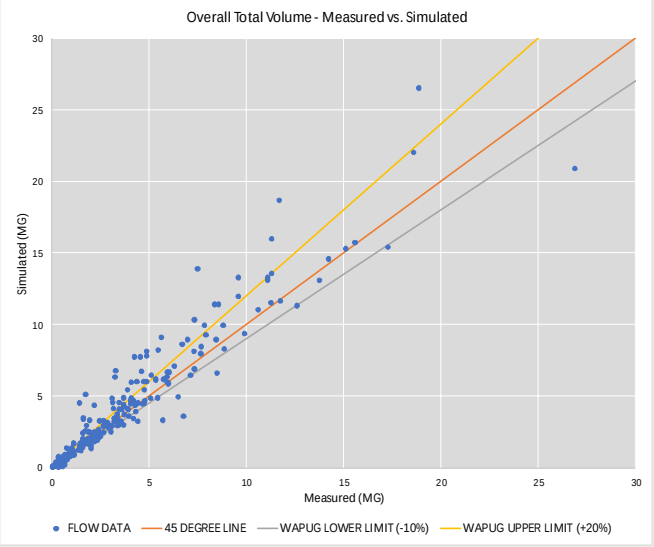
- For tributary area to each meter,
  - Estimated runoff generation characteristics, i.e., impervious area, initial abstraction and runoff coefficients
  - Generated peak flows and used coefficients as calibration parameters
- WWF calibration to accurately reflect system wet weather response relative to timing and hydrograph shape
- Similar analysis for validation storms to confirm fit

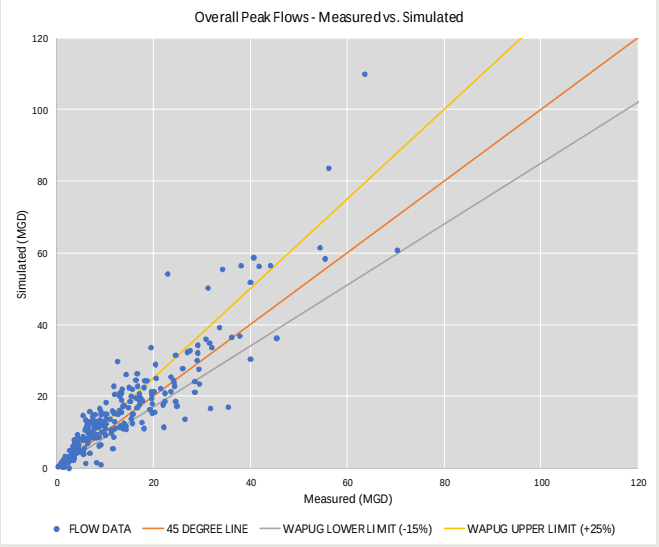


Collection System Modeling

Goodness-of-fit plots for WWF calibration results

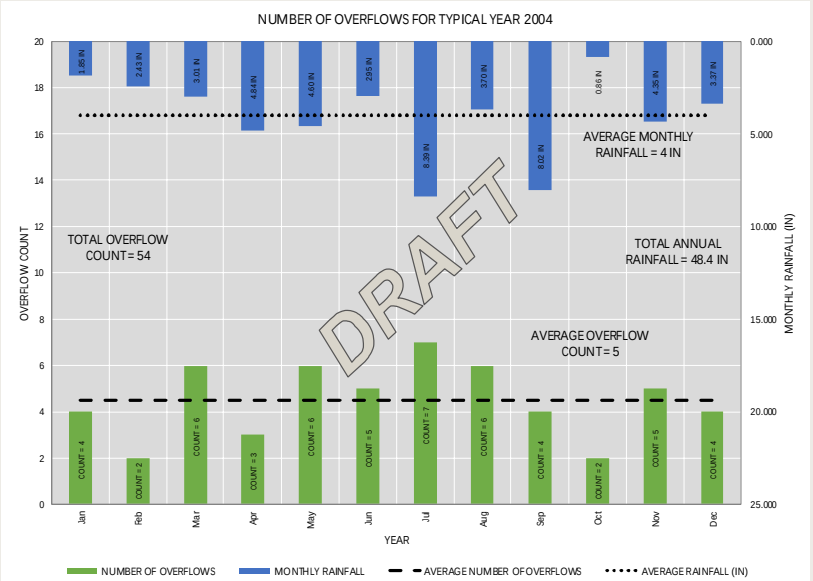
All storms and meters for monitoring period (400 data points)





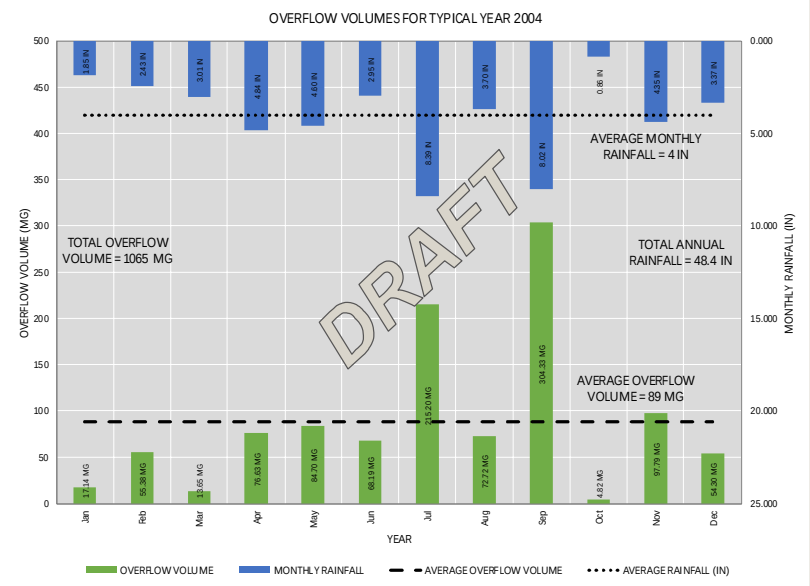
System Performance for Typical Year Rainfall Record

- Typical year to represent expected rainfall conditions to assess CSO controls on “system-wide, annual average basis”
- NJ CSO Group collaboration **2004** was selected & NJDEP accepted.
- Draft results from model simulations with 2004 rainfall record for CSO frequency, volume, and duration



System Performance for Typical Year Rainfall Record

- Draft results from existing system conditions model with 2004 rainfall record
  - Total annual rainfall = 48.4”
  - Total CSO frequency = 54/yr (preliminary)
  - Total CSO volume = 1,065 Mgal/yr (preliminary)
  - Average CSO Duration = 7 hours/overflow

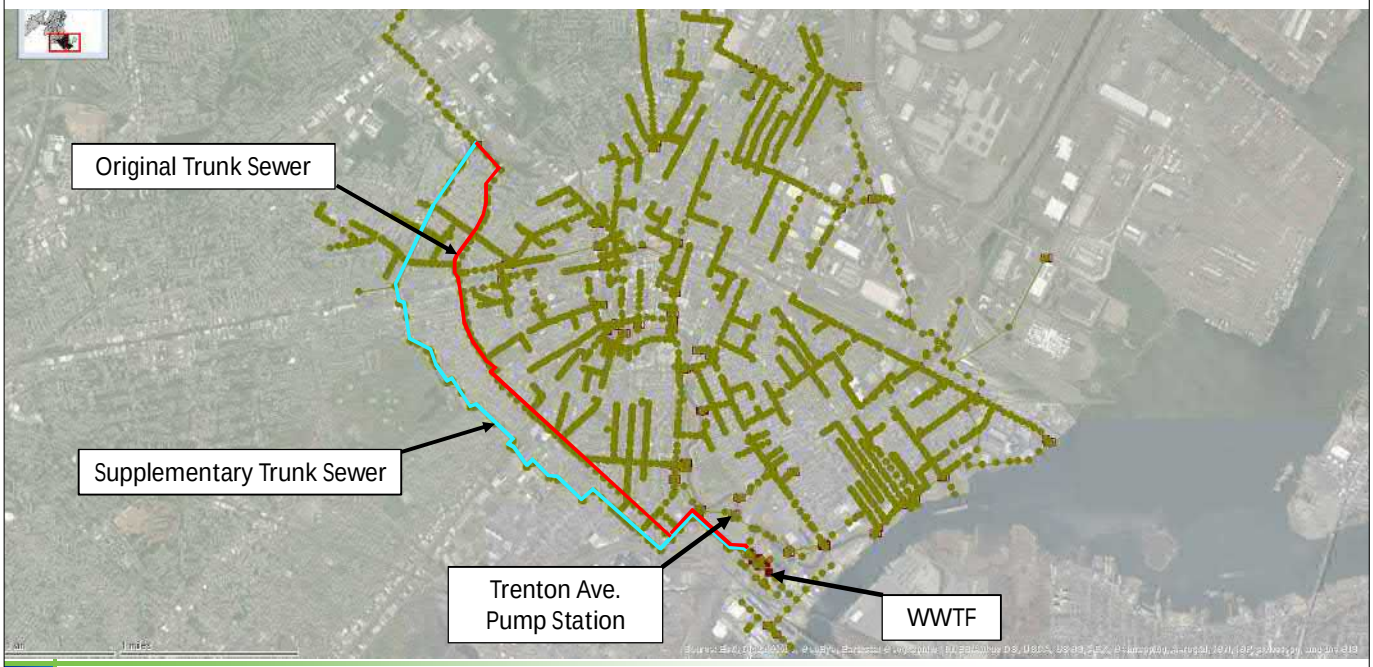


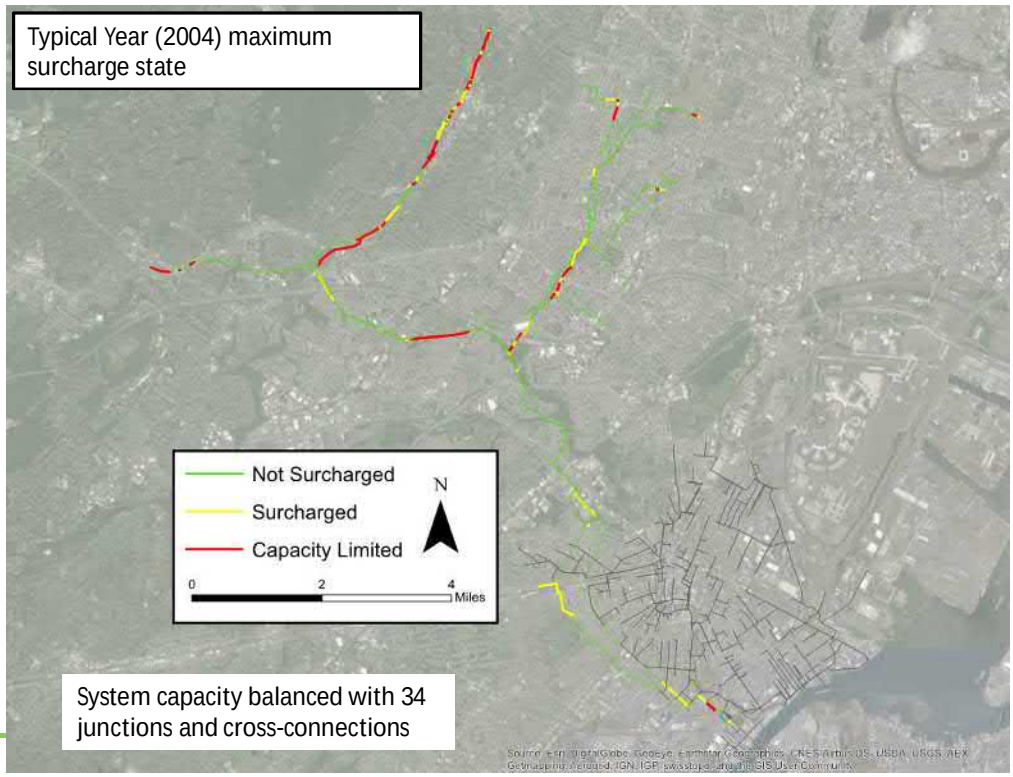
System Characterization Report Outline – JMEUC

Section	
1 Introduction	
2 Description of Combined and Separate Sewer Systems and Treatment Facilities	
3 Receiving Waterbodies	
4 Sewer System Monitoring and Modeling	
5 Receiving Waterbody Monitoring and Modeling	
6 Rainfall Analysis and Typical Hydrologic Record	
7 Characterization of System Performance – JMEUC Sewer System	
8 Characterization of System Performance – Wastewater Treatment Plant	
9 Institutional Arrangements	
10 Conclusions	

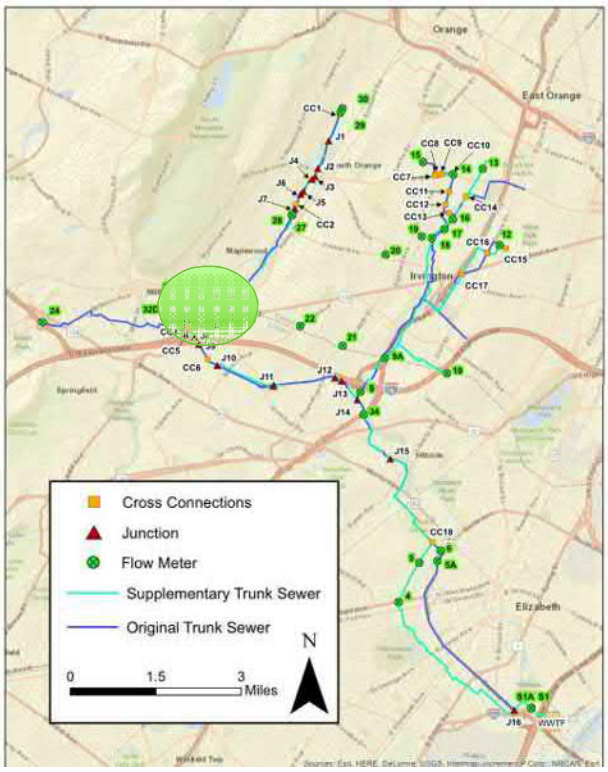
Merged Model Network

Merged Model Network

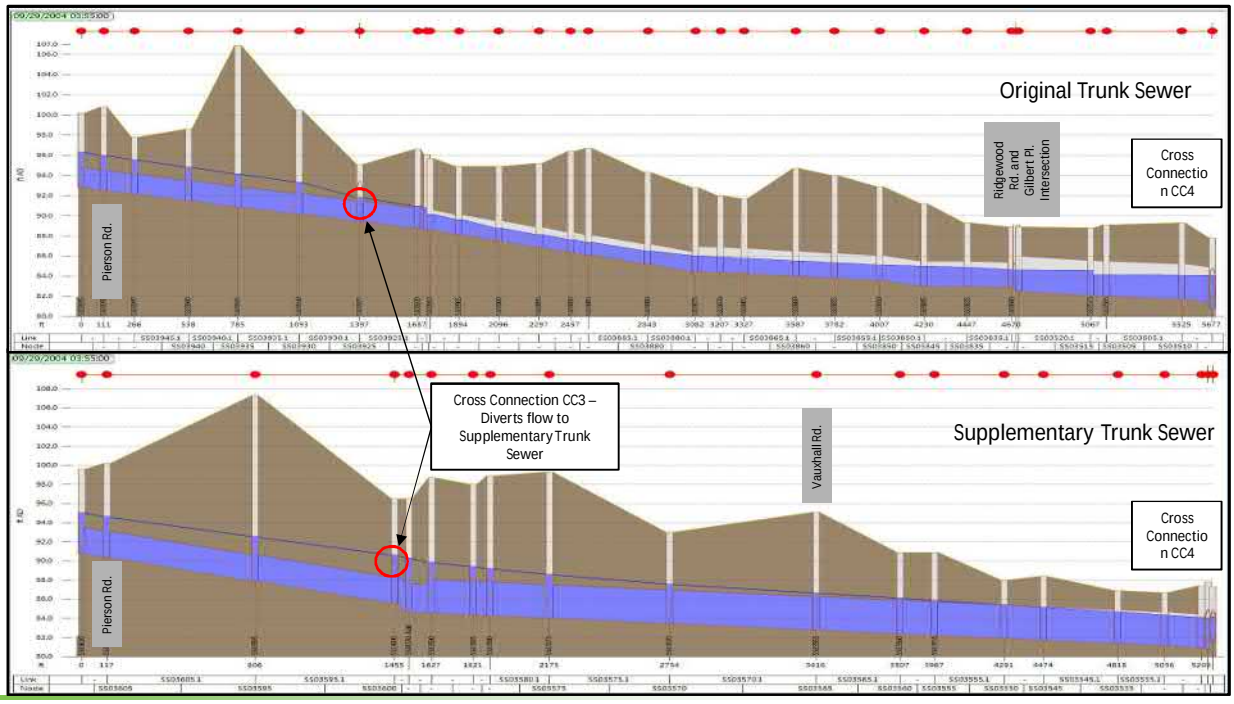




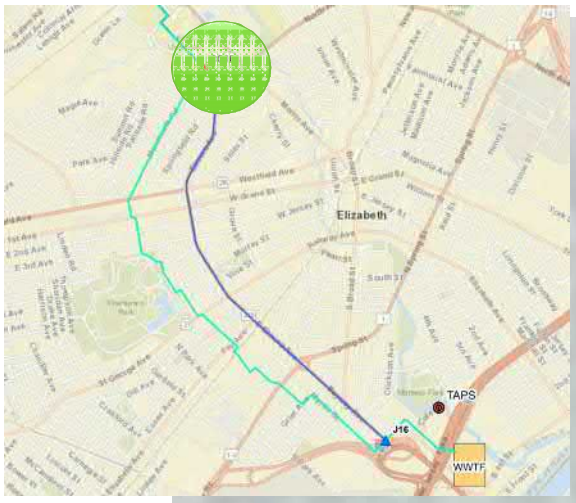
Junctions and Cross-Connections in JMEUC System

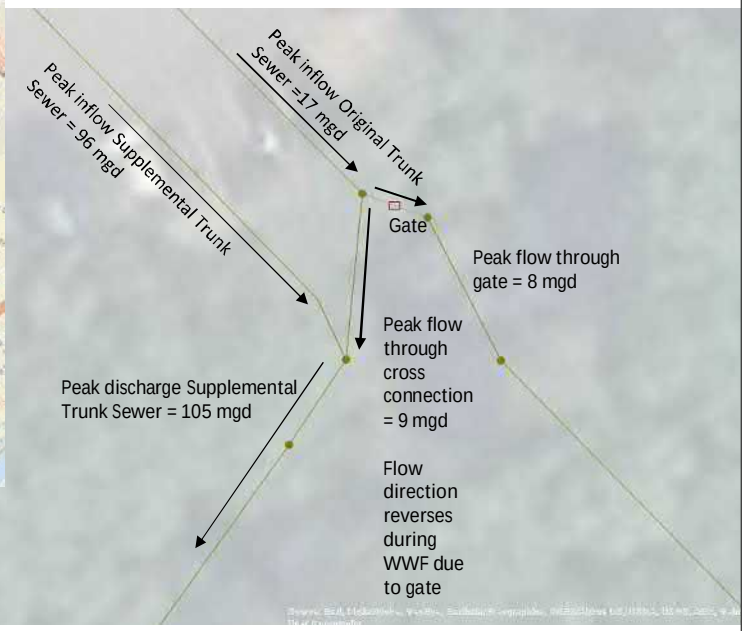


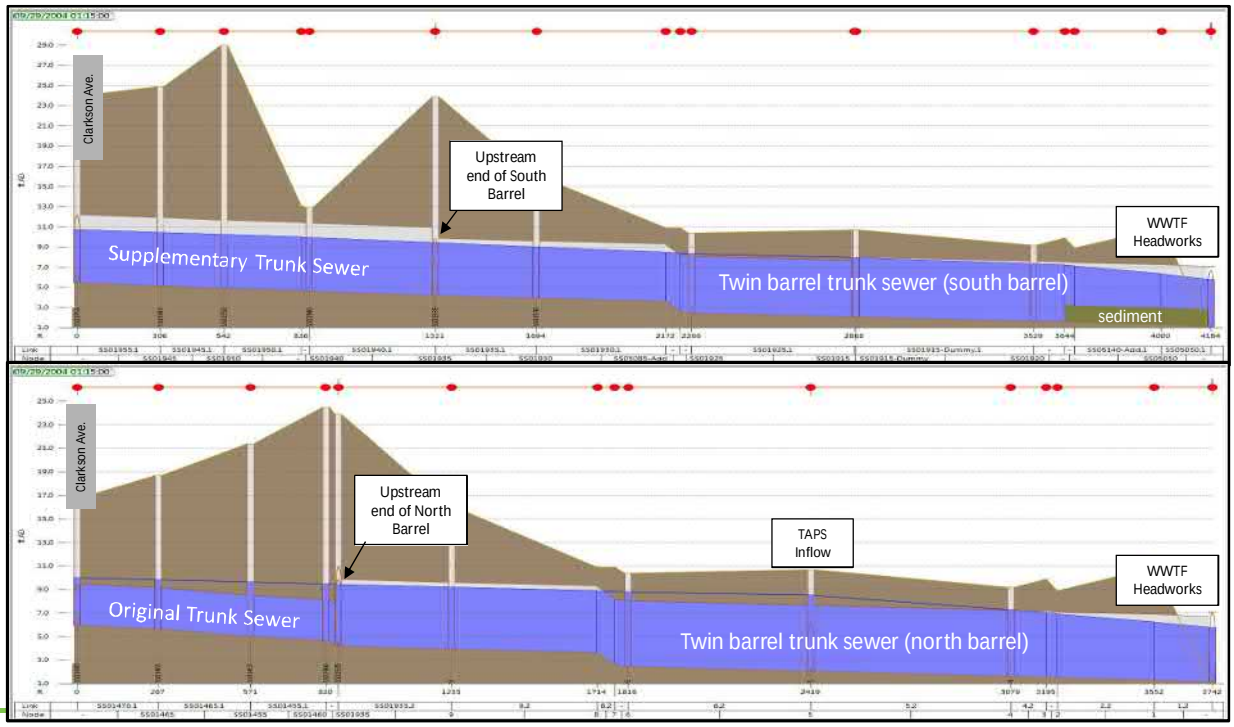
Profile 5



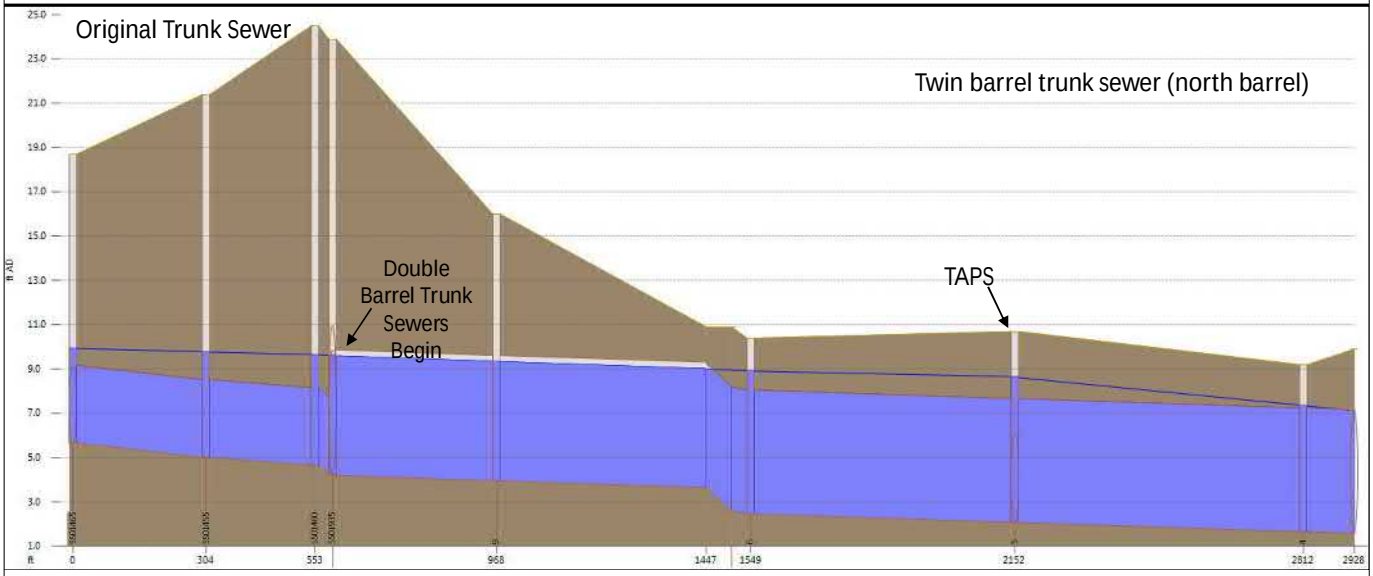
Kean University Cross Connection – 2/6/2004 Event



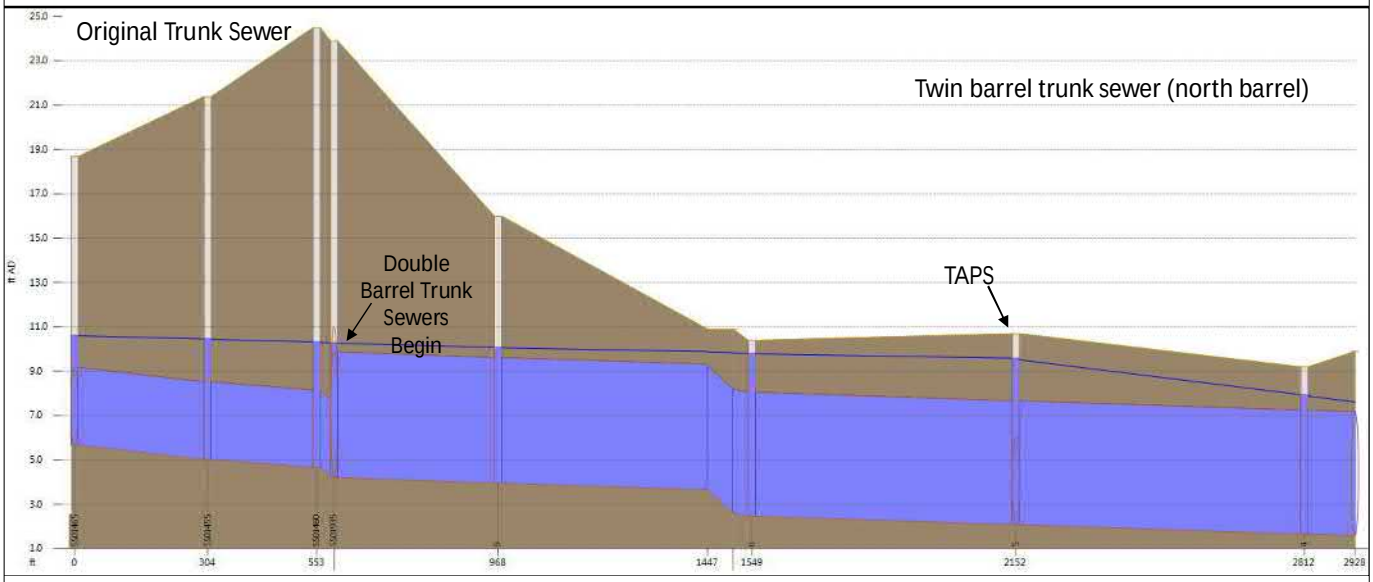




36 mgd Peak Inflow From TAPS – 2/6/2004 Event



55 mgd Peak Inflow From TAPS – 2/6/2004 Event



Baseline Compliance Monitoring Program (CMP) Report

- NJ CSO Group collaboration
- Field sampling and testing for existing ambient pathogen water quality conditions
- Data input for pathogen water quality model for the receiving waters

Baseline Sampling

Twice a month in May and June; weekly in July, August, and September; and monthly from October through April

Source Sampling

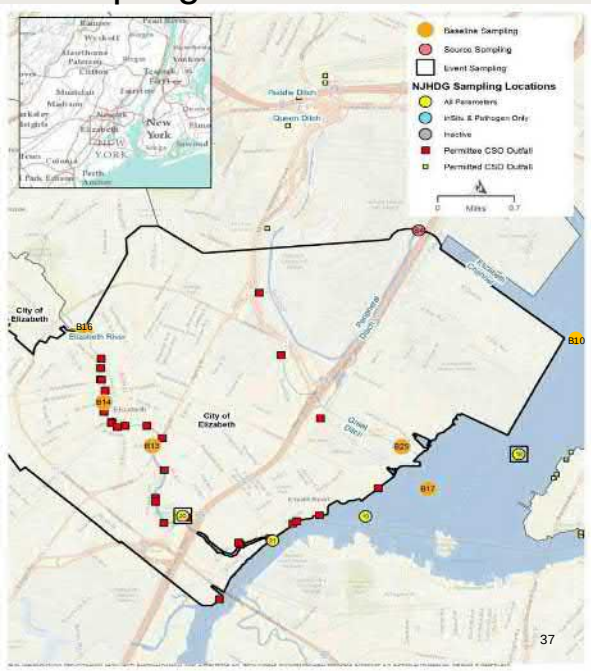
Establish non-CSO loadings at major influent streams, coincided with Baseline Sampling

Event Sampling

Coincided with rainfall to capture three discrete wet-weather events (>0.5")

Baseline CMP Report - Elizabeth Area Sampling Locations

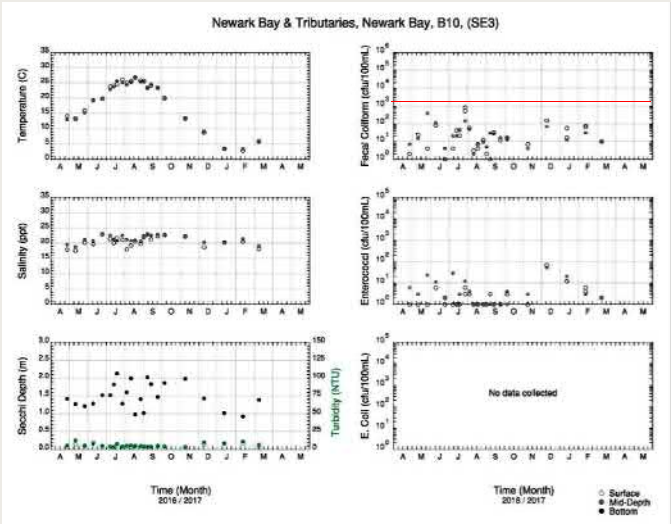
Station No.	Waterbody	Sampling Category	Surface WQS Class
B10	Newark Bay	Baseline	SE3
18	Newark Bay	NJHDG & Event	SE3
B17	Newark Bay	Baseline	SE3
19	Newark Bay	NJHDG	SE3
21	Arthur Kill	NJHDG	SE3
B16	Elizabeth River	Baseline	FW2-NT
B14	Elizabeth River	Baseline	FW2-NT
B13	Elizabeth River	Baseline	SE3
20	Elizabeth River	NJHDG & Event	SE3
S4	Peripheral Ditch	Source	SE3
B25	Great Ditch Outlet	Baseline	SE3



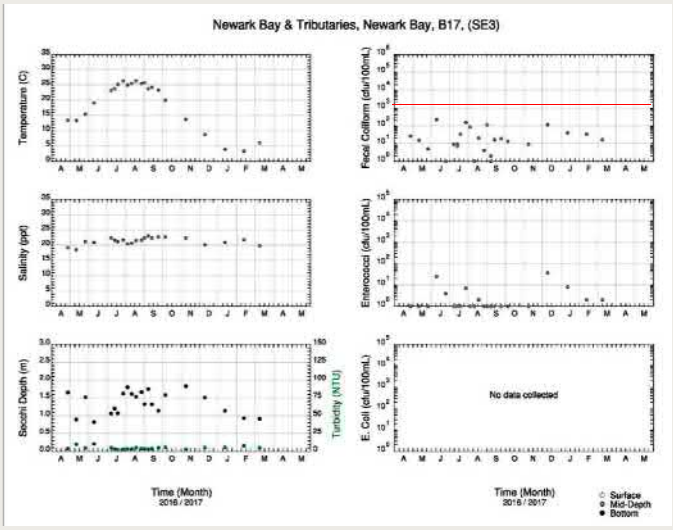
Baseline CMP Report – Data Results, Newark Bay (SE3)

WQS: Geo. Mean, coliform < 1,500 cfu/100 mL for SE3 (shown with red line)

Station B10 (upstream)



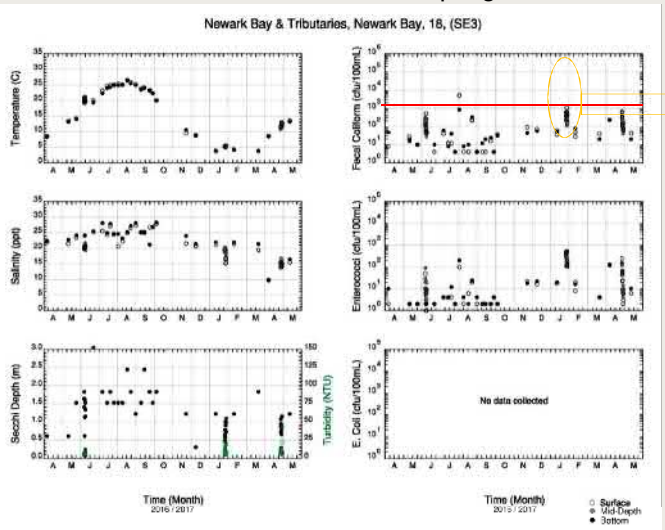
Station B17 (downstream)



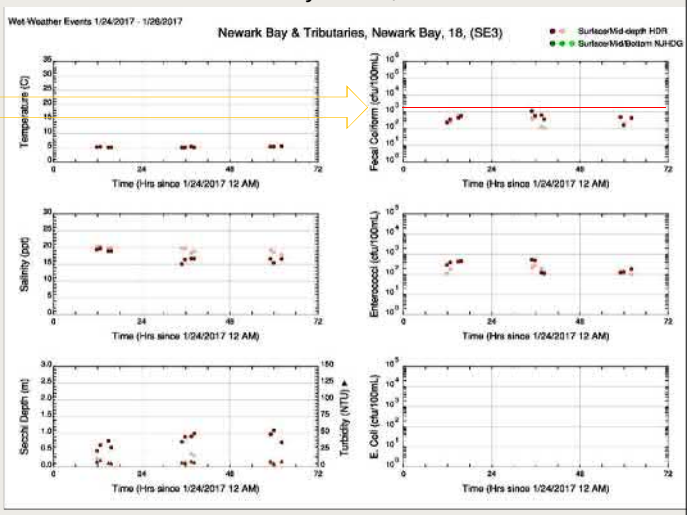
Baseline CMP Report – Newark Bay, Station 18 (SE3) (b/w B10 & B17)

WQS: Geo. Mean, coliform < 1,500 cfu/100 mL for SE3 (shown with red line)

Routine and Event Sampling



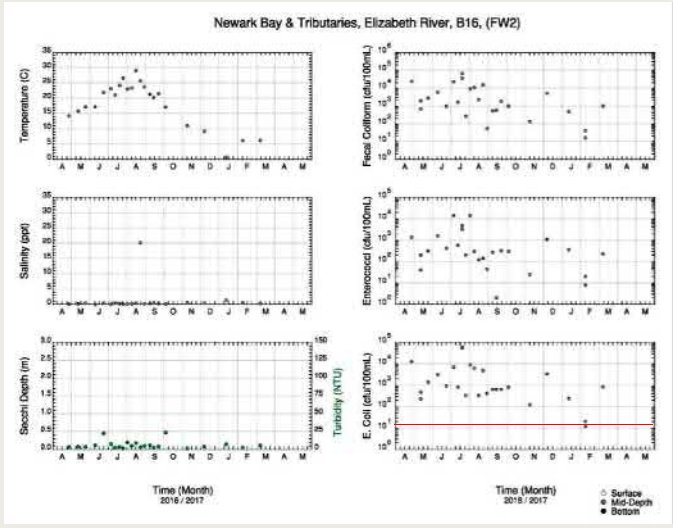
Wet Weather Sampling
January 24-26, 2017



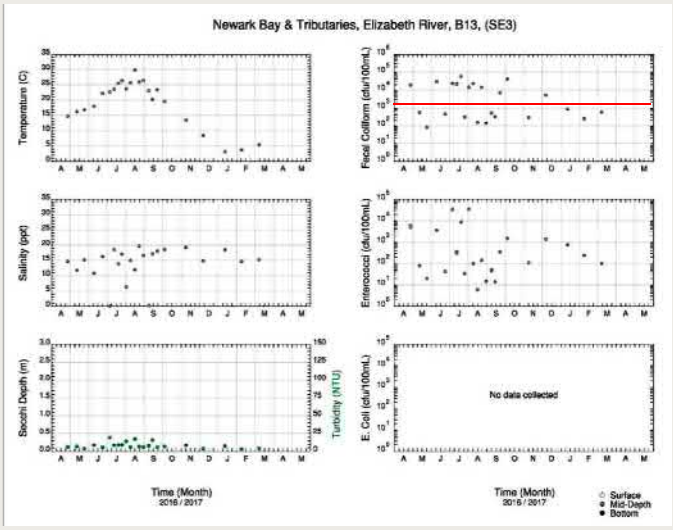
Baseline CMP Report – Data Results, Elizabeth River

WQS: Geo. Mean, E. coli < 126 cfu/100 mL for FW2, coliform < 1,500 cfu/100 mL for SE3

Station B16 (FW2, u/s near city limits)



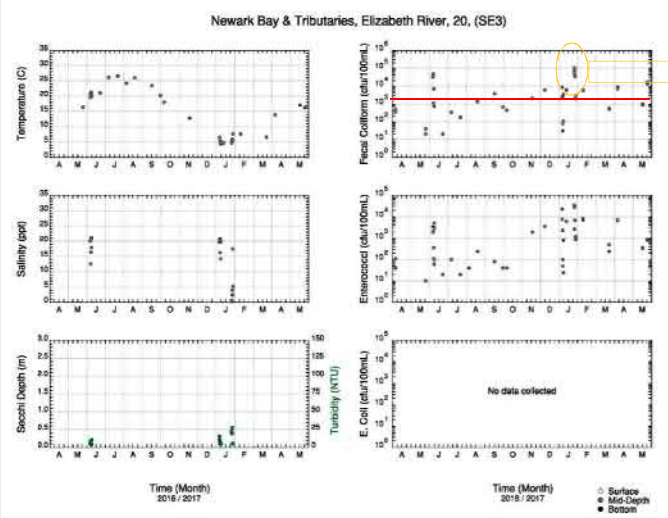
Station B13 (SE3, d/s of B16)



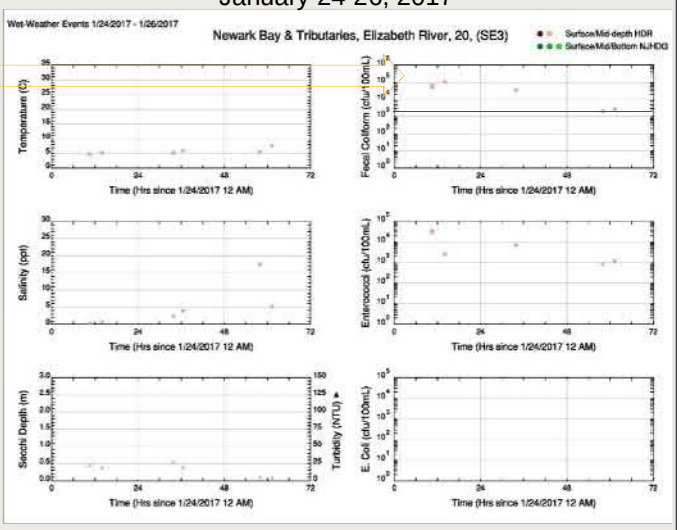
Baseline CMP Report –Elizabeth River (SE3) Station 20 (d/s B13)

WQS: Geo. Mean, coliform < 1,500 cfu/100 mL for SE3

Routine and Event Sampling



Wet Weather Sampling
January 24-26, 2017



Baseline CMP Report –Findings

- Data sufficient for calibrating and validating Pathogen Water Quality Model
- Program not intended for assessing attainment of pathogen WQS (insufficient data points per month)

General observations:

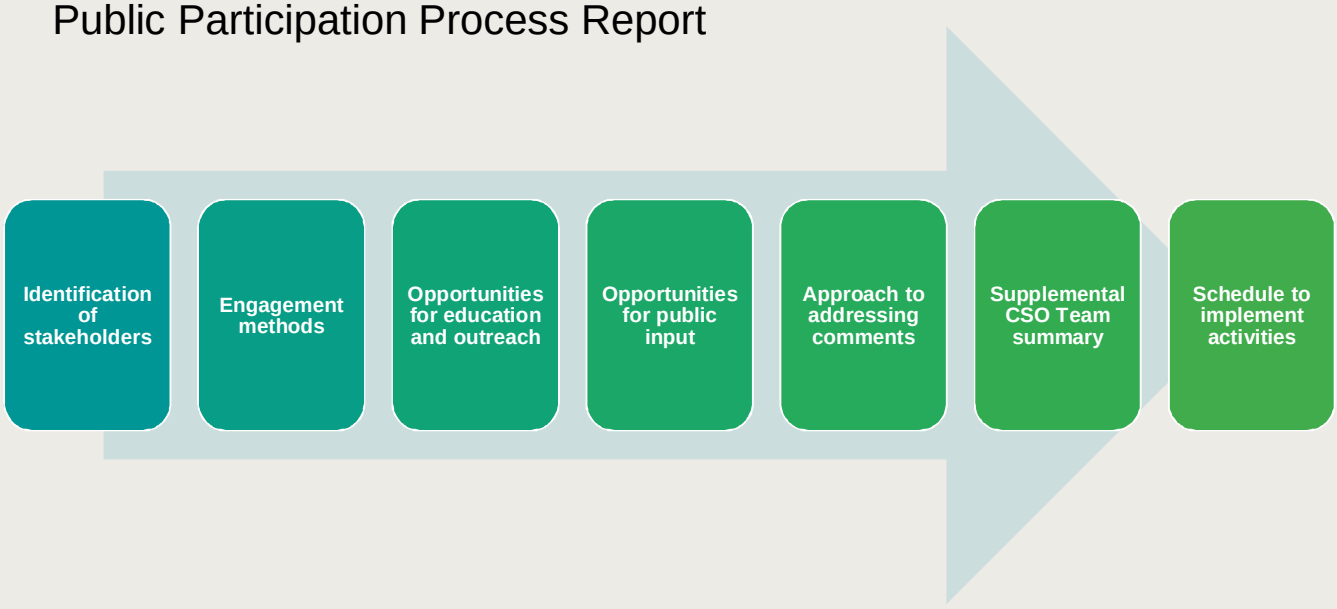
- Newark Bay, Arthur Kill & Kill Van Kull may meet existing pathogen WQS for SE3 waters
- Smaller waterbodies, like Elizabeth, Rahway, Saddle, and Second River, unlikely to meet attainment
- Source sampling of tributary streams without CSOs have high bacteria loads. High background and other pathogen load sources.
- Elizabeth R. bacteria values entering city are very high, not meeting WQS and non CSO impacted
- Elizabeth R. bacteria values u/s and d/s of CSO outfalls are similar
- Wet weather event data fall at upper end of observed values. Influence of general wet weather bacteria sources.

Consideration of Sensitive Areas Information

- Are sensitive areas present and require highest priority for CSO control?
- Draft report under review

Criteria	Present?
Outstanding National Resource Waters	**None**
National Marine Sanctuaries	**None**
Waters with threatened or endangered species and their habitat	Sturgeon (federally listed endangered and state endangered) identified but not critically dependent on the water. Impact from CSO discharge likely insignificant given life cycle, migration behavior, waterway use, and impacts from other pollution sources and environmental threats. **No sensitivity for higher priority.**
Waters with primary contact recreation	Fishing at Slater Park and Waterfront Memorial Park, and jet skiing through Arthur Kill have been observed but occasional and unusual use. No bathing beaches or access to channelized parts of river. **No sensitivity for higher priority.**
Public drinking water intakes or their designated protection areas	**None**
Shellfish beds	**None**

Public Participation Process Report



Public Involvement Activities

Public outreach and education event – Future City Environmental Day 4/27/2018

Opportunities for public engagement on CSO Long-Term Control Plan

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

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

What is the most effective way to engage with the public for CSO awareness?

- Mail / bill stuffers
- Community events
- Displays at public buildings
- Website / social media
- News media
- Facility tours

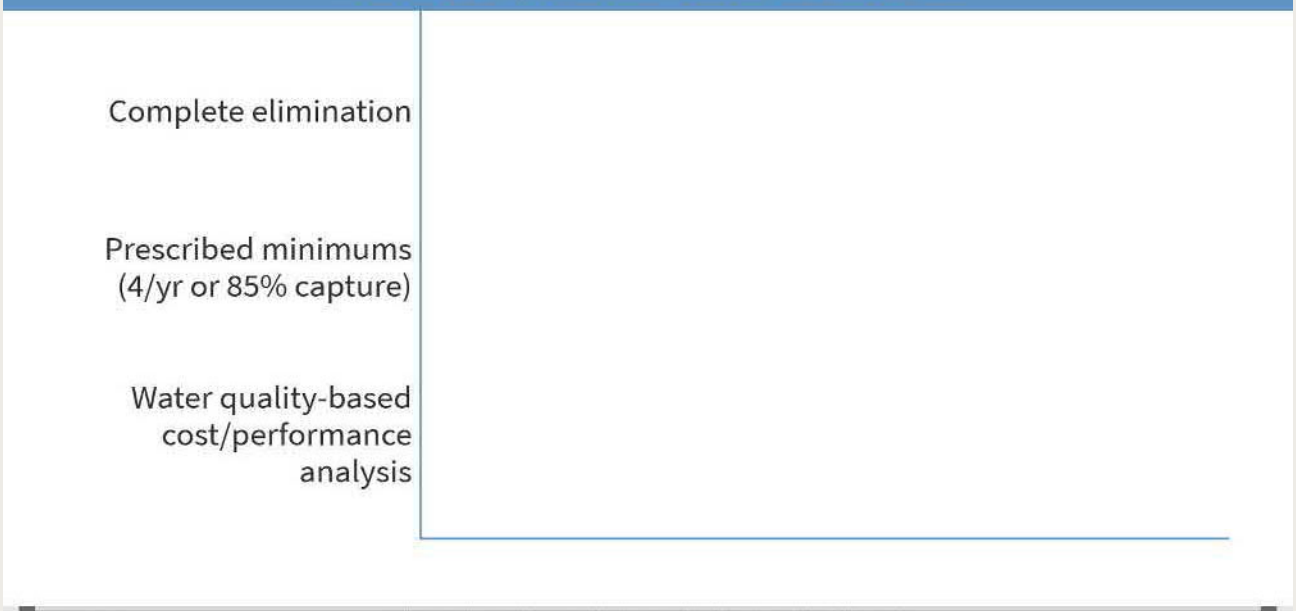
Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

What is the most important criteria in developing CSO controls?

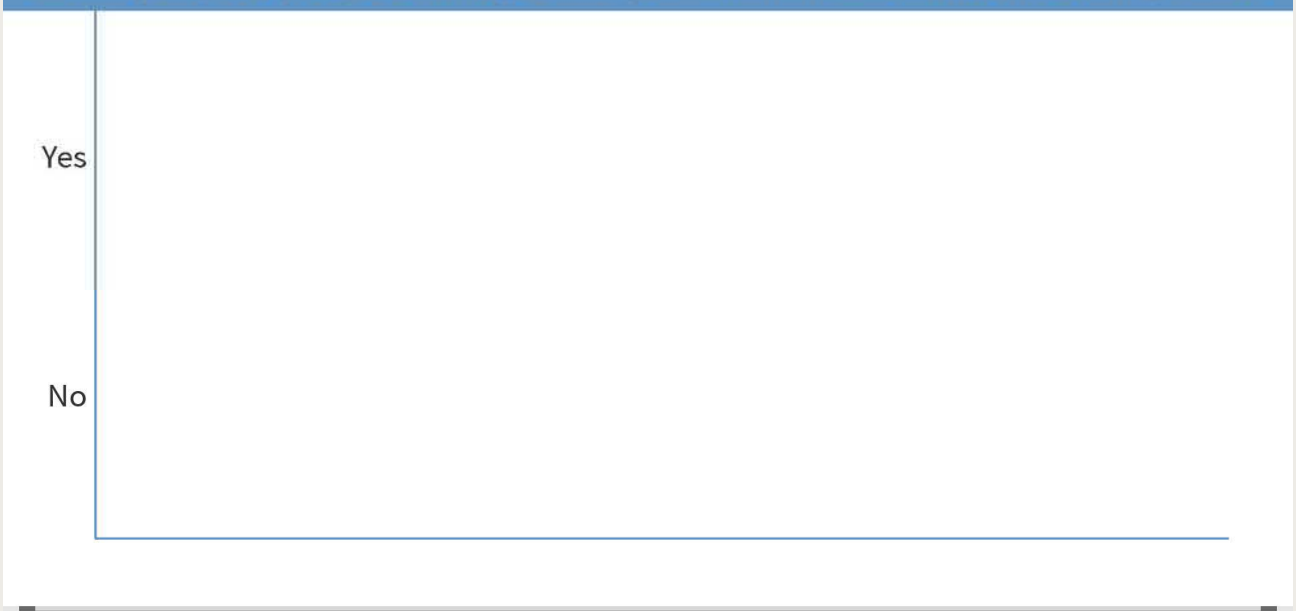
- Make waterway healthier for fish/wildlife
- Make waterway more usable by people
- Reduce overflows
- Keep rates as low as possible
- Green infrastructure / community spaces

Start the presentation to see live content. Still no live content? Install the app or get help at PollEv.com/app

What is your preferred level of CSO control?



Would you/your group be willing to add green elements at home, like a rain garden?

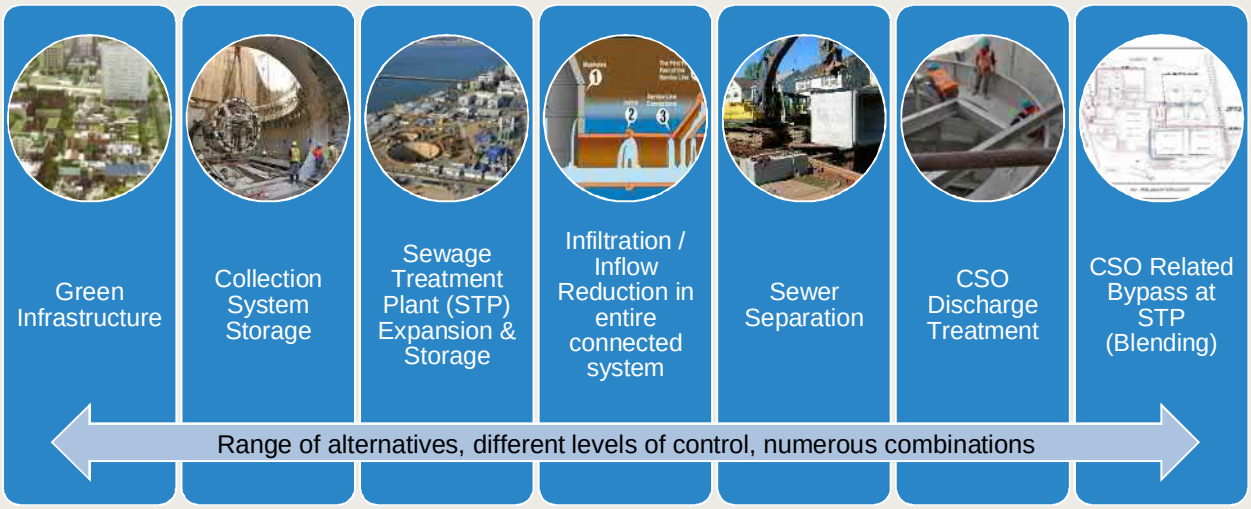


Alternatives Evaluation – Quick Look Ahead

National CSO Situation

- LTCPs for other CSO areas have largely been completed already – especially for larger systems, often under federal consent decrees
- LTCPs have produced huge (multi-billion $) CSO programs in many large, older cities – affordability is a major element of these LTCPs
- CSO programs are typically 4-5 year planning efforts (LTCP), followed by 20+ year implementation schedules
- CSO discharges are being reduced, eliminated or controlled by:
  - Separating combined sewers into storm and sanitary lines
  - Capturing CSOs in large storage tanks or tunnels for later treatment at the WWTP
  - Treating CSOs at or near the point of discharge with special high-rate treatment processes
  - Reducing the rate of stormwater runoff using green infrastructure facilities to capture stormwater before it enters the sewer
  - Control structures and adjustments to improve capture in existing sewers

Alternatives Evaluation – Quick Look Ahead



Alternatives Evaluation – Quick Look Ahead

Examples from other communities, green infrastructure

New York City

Philadelphia

Omaha, NE

Various Others

Alternatives Evaluation – Quick Look Ahead

Examples from other communities, conveyance and storage tunnels

Alternatives Evaluation – Quick Look Ahead

Examples from other communities, CSO storage basins

Alternatives Evaluation – Quick Look Ahead

Examples from other communities, High-Rate CSO Treatment Facility

Next Meeting

- Early September (?)
- Agenda:
  - Results of member survey
  - Evaluation of Alternatives Analysis
    - Alternative categories for Elizabeth-JMEUC LTCP
    - Modeling the performance of different alternatives
    - Preliminary cost analyses

Questions?

Thank you

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

Supplemental CSO Team

Meeting No. 4
Long-Term Control Plan Permit Compliance

C. Representative Press Releases, Public Announcements, and Flyers

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What's Going On Under Your Streets?

Follow Your Flush!

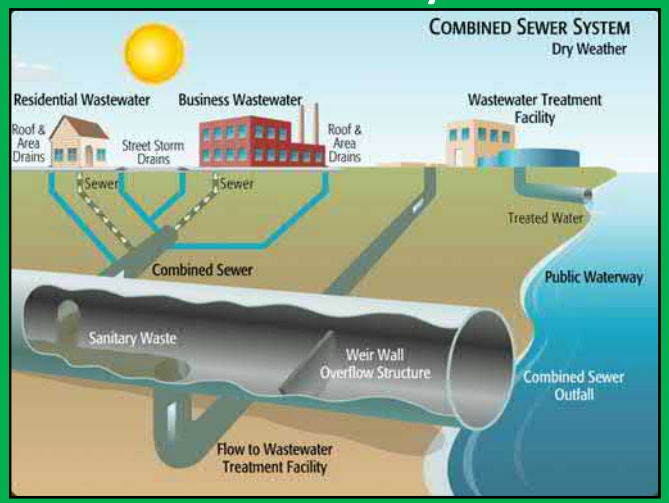
Source: SD1

1. Wet Weather Event (Rainfall)
2. Wastewater from your home (toilets, sinks, shower drains)
3. Combined Sewer Network = Sanitary + Storm Water
4. JMEUC Wastewater Treatment Plant
5. Combined Sewer Overflow (CSO) to Arthur Kill

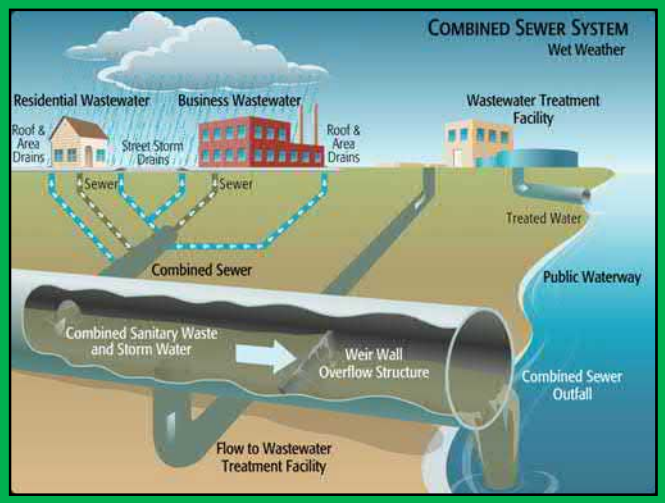
What is a Combined Sewer?

Most of Elizabeth's sewers are **combined sewers**, which means that they carry both sanitary sewage and stormwater in one piping system. When it rains, to prevent flooding at storm drains and in basements, the sewers fill up and release excess flow to nearby water bodies, called **Combined Sewer Overflows (CSOs)**. Elizabeth has **29 locations** where CSOs discharge, called **CSO outfalls**. During wet weather, untreated wastewater can be discharged to receiving streams including contaminants such as pathogens, oxygen-demanding pollutants, suspended solids, nutrients, toxics and floatable matter. **Nets** along the outfalls catch floatables as a control measure. The City of Elizabeth is working with the New Jersey Department of Environmental Protection (NJDEP) and the US Environmental Protection Agency (EPA) to reduce the number of CSO events that take place every year to improve **water quality** in Elizabeth's receiving streams.

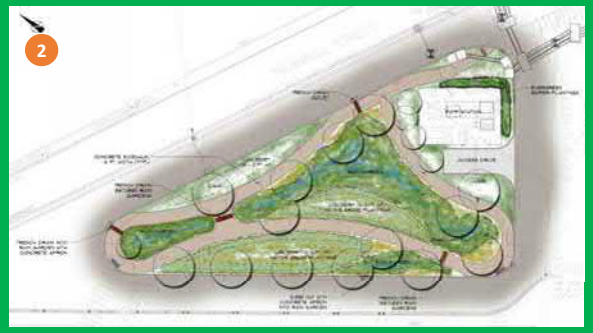
When it's dry…



When it's wet…

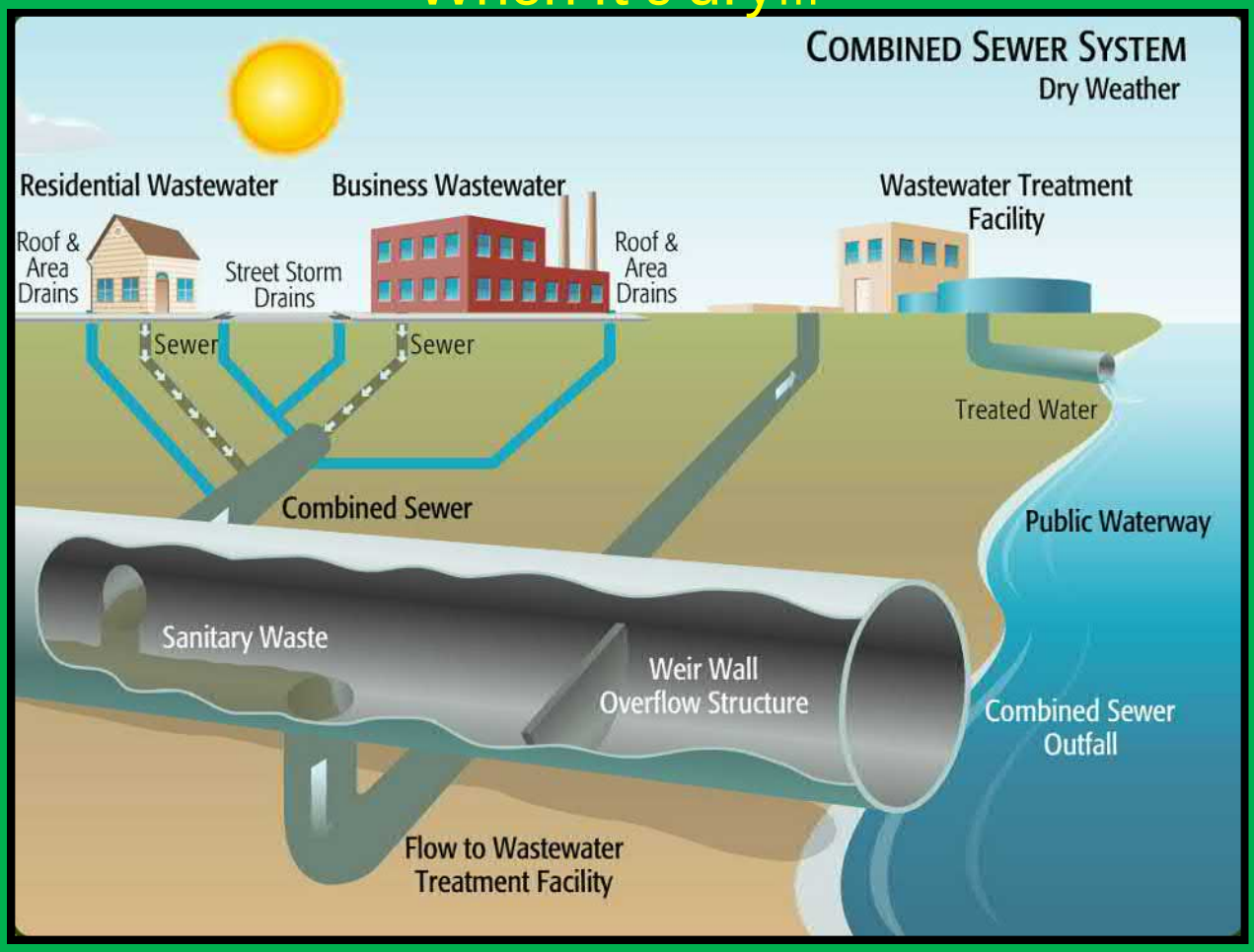


The City of Elizabeth,
Keeping Your Community Green & Clean

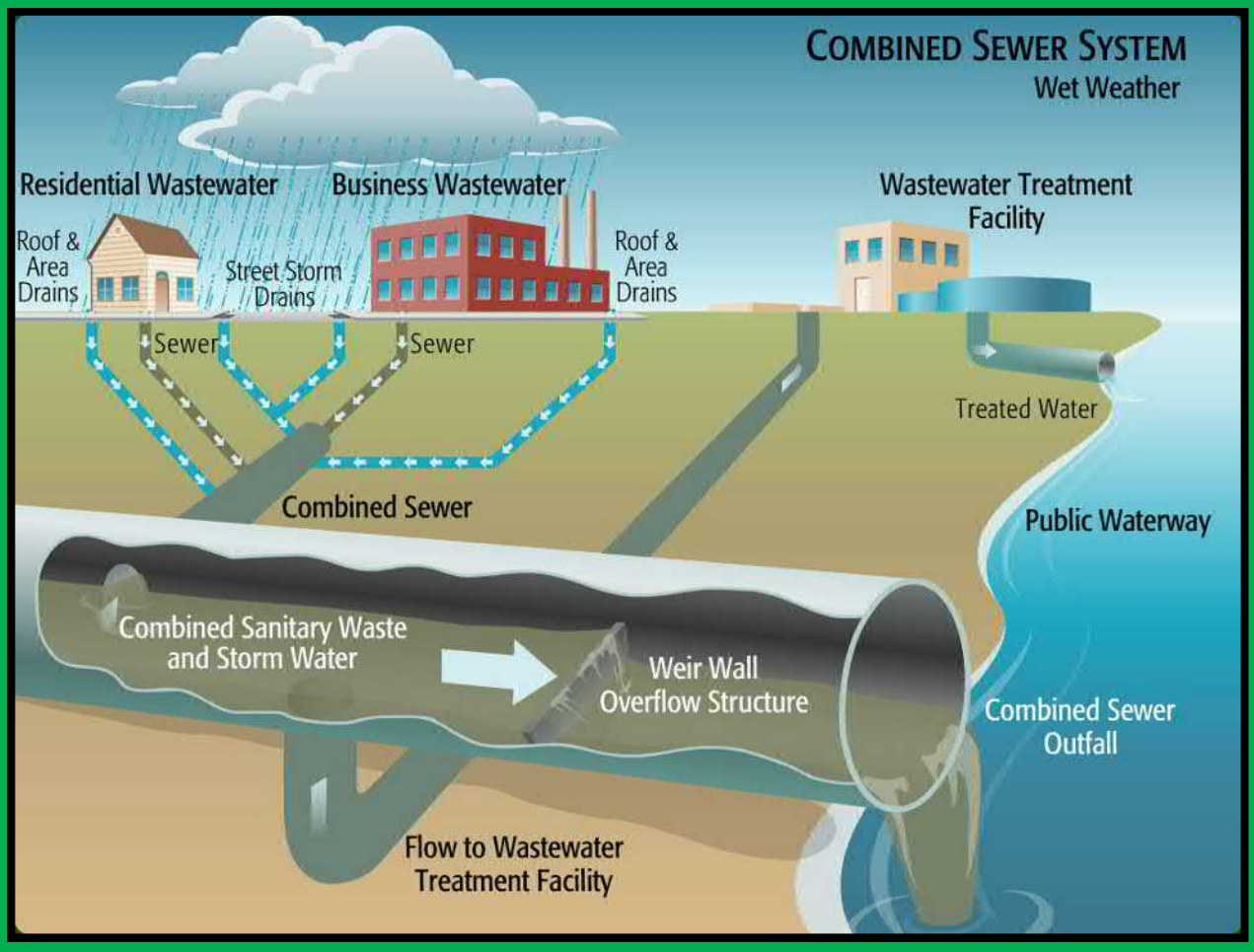


1. Trumbull Street Green Infrastructure (under construction)
2. Trumbull Street Green Infrastructure (architectural rendering)
3. Solids/Floatables Control Facilities – netting frame being lowered
4. Verona Gebhardt Pumping Station – box culvert
5. Levee along Elizabeth River
6. Headwall for Elizabeth River Levee
7. Verona Gebhardt Pumping Station – precast concrete structure

When it's dry...



When it's wet...



Soak Up the Rain with Green Infrastructure

www.epa.gov/soakuptherain

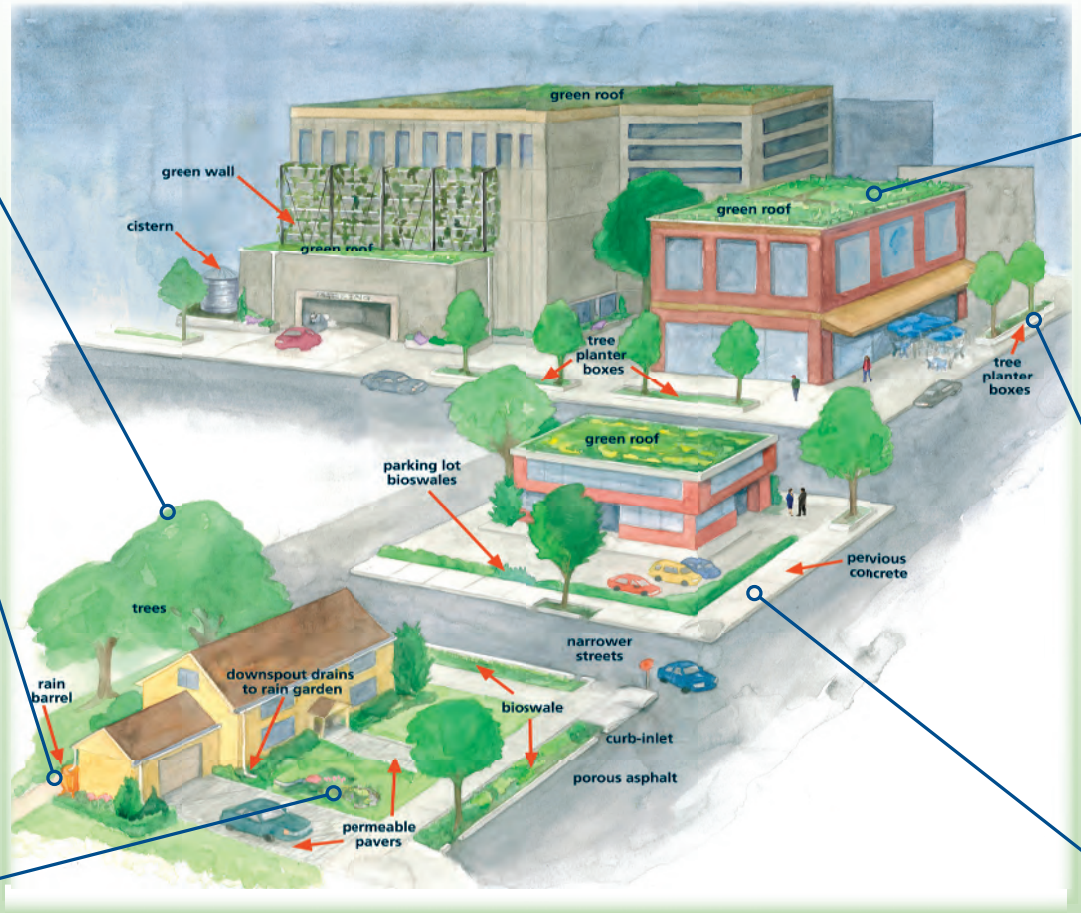
EPA United States Environmental Protection Agency

soak up the rain
created by U.S. EPA

Tree Canopy

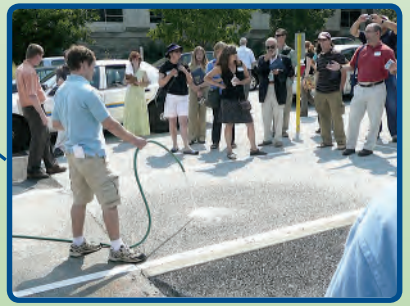
Rain Barrel

Rain Garden



Green Roof

Tree Planter Box



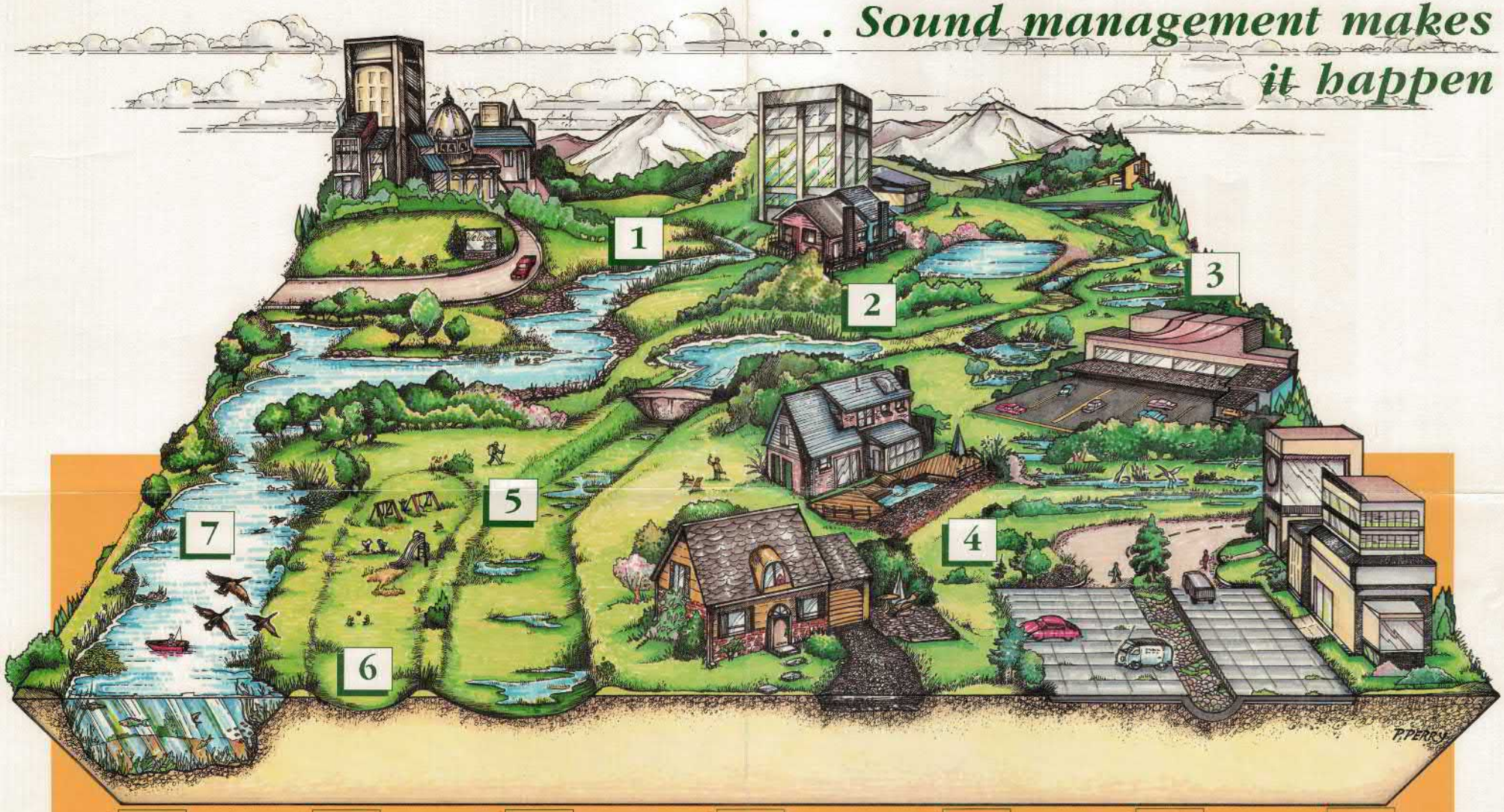
Pervious Concrete

Learn more. Take Action.

Poster created by U.S. EPA Office of Wetlands, Oceans and Watersheds.

URBAN WATER QUALITY

. . . Sound management makes it happen



1

Stabilizing stream banks — by planting vegetation and/or placing large stones along banks — helps control erosion and prevent downstream problems with water quality, aquatic habitat, and sedimentation.

2

Carefully designed stormwater retention ponds remove urban pollutants. Some pollutants can settle to the bottom of the ponds; others can be filtered through aquatic plants.

3

Urban pollutants — such as those that collect on paved areas — can be removed by establishing wetlands between the receiving water and the source of the runoff. Wetlands also provide habitat for waterfowl, marsh birds, and other wildlife.

4

Porous materials (pervious surfaces) — patio blocks, wood decking, porous pavement, and gravel — are better for the environment than non-porous materials (impervious surfaces). They allow some of the water to filter into the ground rather than all of the water to flow over the surface(s), washing pollutants into nearby waterbodies.

5

Grassed swales are useful in combination with other management measures for filtering out pollutants. They only have a limited effect when used alone.

6

Low areas can be used to temporarily store stormwater slow water velocity and help remove pollutants through settling and infiltration. These areas can be used for recreation during dry periods.

7

Urban runoff management measures all work together to prevent contaminants from entering waterbodies and thereby protect water quality and aquatic ecology.

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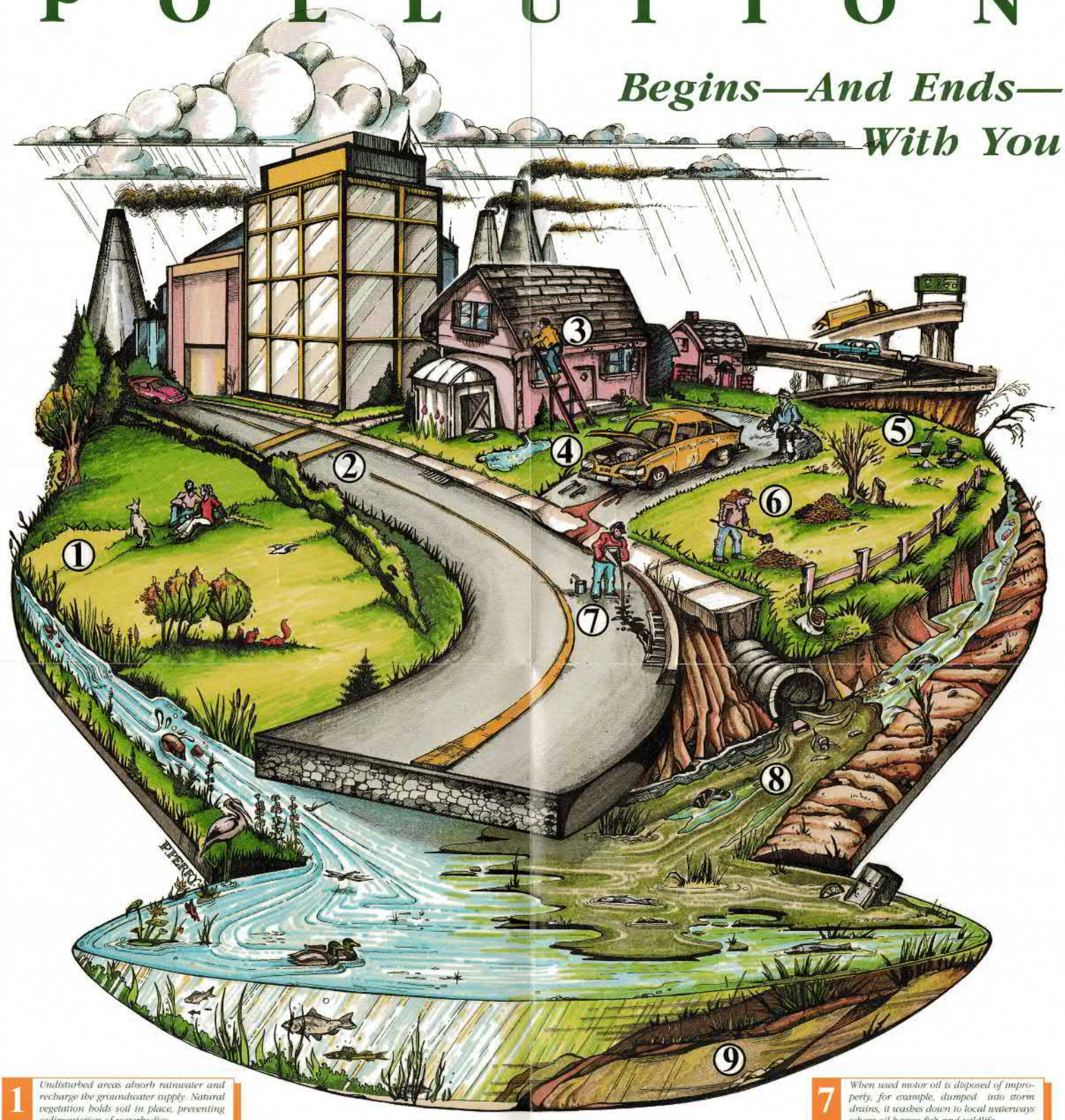
EPA TERRENE INSTITUTE

POLLUTION

Begins—And Ends—With You



Everyday Water Quality Problems

1 *Undisturbed areas absorb rainwater and recharge the groundwater supply. Natural vegetation holds soil in place, preventing sedimentation of waterbodies.*

2 *Paving an area prevents absorption of rainwater, increasing the potential for flooding and erosion of soil into waterbodies.*

3 *Zinc from aging pipes, gutters, and metal roofs leaches into rainwater and enters the environment, where it may harm aquatic life.*

4 *Asbestos and copper—both potential pollutants—leach into runoff from car and truck brake linings and worn pipes and fittings.*

5 *Lawn and garden fertilizers enter runoff and increase nutrient levels (nitrogen and phosphorus) in waterbodies. Excessive nutrients stimulate algae and aquatic weed growth, choking waterways and robbing fish of oxygen.*

6 *Waste from leaf and grass clippings, garbage, animal droppings, and other organic debris pollutes runoff. The decaying organics deplete oxygen levels in water and affect fish.*

7 *When used motor oil is disposed of improperly, for example, dumped into storm drains, it washes down to local waterways where oil harms fish and wildlife.*

8 *Trash thrown directly into lakes, streams, and wetlands is unsightly, may hurt aquatic life and may pollute the water as it decays.*

9 *Sediment accumulates in waterbodies from soil erosion and destroys feeding grounds for aquatic life, clogs fish gills, blocks light transmission, and increases water temperatures.*

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US Army Corps of Engineers®
New York District

MEDIA ADVISORY

Media Invited to Join School Students as they celebrate Estuary Day
Great opportunity to showcase Students and Agencies committed to a greener future

CONTACTS:

Elizabeth River/Arthur Kill Watershed Association
Michelle Doran-McBean
(908) 230-9126

U.S. Army Corps of Engineers
New York District
Public Affairs Office
(917) 790-8007

City of Elizabeth, N.J.
Mayor's Office
(908) 820-4170

ELIZABETH, N.J. (October 6, 2017) - Estuary Day is an annual daylong event that involves hundreds of science students from area schools and the mentorship from various participants from the City of Elizabeth, Federal and State agencies, and environmental organization.

The event's focus about the importance of the estuary, environment, and science education.

In its' 17th year, the event is sponsored by the Elizabeth River/ Arthur Kill Watershed Association.

Details follows:

When: October 6, 2017
Time: 9 a.m. to 2 p.m.
Welcoming Ceremony: 11:30 a.m. in the Blueway Room
Where: Peterstown Community Center
Address: 418 Palmer Street, Elizabeth, N.J. (Map attached)

Students will be grouped by their respective schools and join participants, partners and supporters as they interact in a classroom environment. Event participants include the City of Elizabeth mayor's office, U.S. Army Corps of Engineers, U.S. Coast Guard, Kean University, New York/New Jersey Baykeeper, Office of U.S. Sen. Robert Menendez, Office of Rep. Albio Sires (NJ-13), Infineum, Phillips 66, and Veolia.

[MORE]

2-2-2 Estuary Day

"From the beginning, Elizabeth Estuary Day has been a significant ongoing partnership of federal, regional, state and city leadership to collaborate and develop ongoing estuarian education for our local science students. This unique educational process required constant cooperation and thinking long term. Through a sustaining partnership, collaboration and respectful cooperation we are proactively impacting on our future estuarian stewards", said Michelle Doran McBean, Future City Inc. CEO and event sponsor. "*The Partners provide new knowledge and exposure for our students to then realize how special our city's location within the NY/NJ Harbor. Given the present and pending challenges of climate change impacting locally- the knowledge gained at Elizabeth Estuary. E-Day is very important to our students and city."*

"Our City of Elizabeth is situated within a world class estuary- The New York/New Jersey Harbor Estuary.," said Mayor J. Christian Bollwage. *"For the past 17 years, we have worked cooperatively to expose, inform, and educate our students to what our estuary is and why our estuary is so important to our city and region. We hope their educational commitment will encourage our students to become leaders in the Science Technology Engineering Mathematic fields."*

"The Army Corps is excited to participate in Estuary Day and to once again work with our partners to make this event a great success," said Joseph Seebode, the Army Corps' New York District Deputy District Engineer. *"We are looking forward to educating our future leaders, the students and to highlight the importance of our estuaries and environmental education."*

- School officials and the event sponsor have signed student waiver-releases authorizing the news media to record, photograph and interview students.
- Please park your vehicle in the lot adjacent to the Peterstown Center, and sign in at the check in table in the auditorium.

In addition to the media contacts, the following personnel are available to speak about this event:

- Tim Hillmann, Office of U.S. Sen. Robert Menendez, Phone: (973) 645-3030
- Erica Daughtry Office of U.S. Rep. Albio Sires, Phone: (201) 222-2828
- Debbie Mans NY/NJ Baykeeper, Phone (973) 641-4565
- For questions about the venue please contact the sponsor at (908) 230-9126.

www.futurecityinc.org

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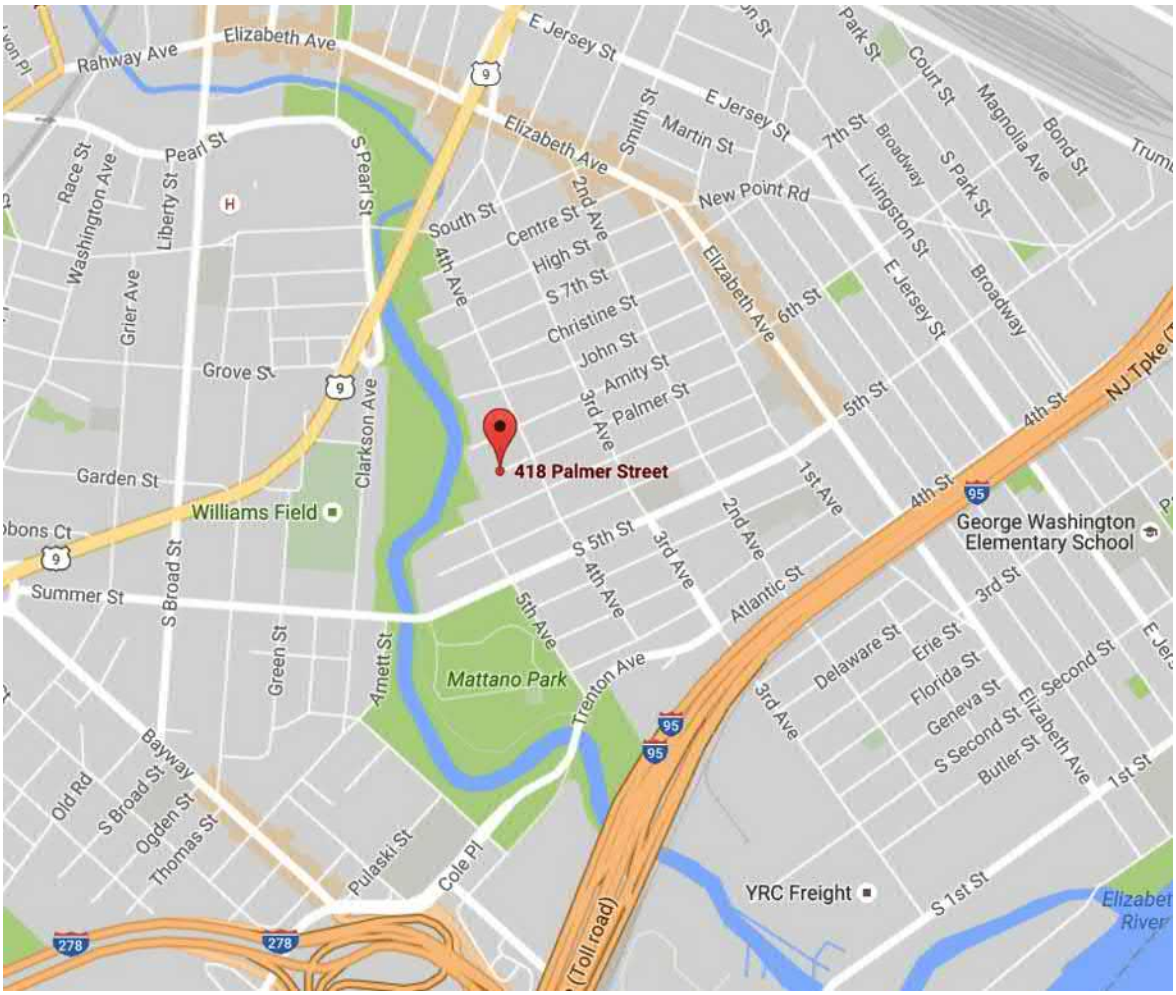

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City Council

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Our Mayor
Press Releases
Council Members
Council Meeting Dates & Minutes
Council Agenda
Planning Board Agenda
Zoning Board of Adjustment
Licenses & Forms
Ward Maps
Vital Statistics
Departments
Notices
Partnerships
Ordinances
2016 Master Plan

Useful Links

Board of Education
City Codes

MAYOR BOLLWAGE ANNOUNCES FLOOD REDUCTION AND GREEN IMPROVEMENTS FOR TRUMBULL STREET

FOR IMMEDIATE RELEASE
Contact: Kelly Martins
908-820-4124
Public Information Office

MAYOR BOLLWAGE ANNOUNCES FLOOD REDUCTION AND GREEN IMPROVEMENTS FOR TRUMBULL STREET

ELIZABETH, NJ - May 31, 2017 – Mayor J. Christian Bollwage, along with the support of Fifth Ward Councilman William Gallman, Jr., announced today that on or about Monday, June 5, 2017, the City of Elizabeth will begin construction on a new stormwater control system and an improved streetscape at Trumbull Street and Sixth Street.

"This project will remove an abandoned, deteriorating building; help reduce flooding in the area as well as provide the community with a new rain garden and green space," said Mayor J. Christian Bollwage. "We appreciate our residents' patience during the construction and look forward to the social and economic benefits this initiative will bring to the Fifth Ward neighborhoods."

Throughout the years, area residents, businesses and motorists have been impacted by chronic street flooding, which has caused traffic disruptions and access restrictions at this intersection. Like other urban areas in the United States, the City has a combined sewer system, which means that the municipal wastewater and rain water share the same pipe. In dry weather, sewage is conveyed to the wastewater treatment plant. In heavy rainfall, however, these pipes can become full and it is necessary to divert the excess flow directly to the waterway.

Therefore, as part of its continuing efforts to reduce these combined sewer overflows (CSOs), the City will be tearing down the existing, abandoned building and will be installing a 1-million-gallon tank under the triangular land parcel formed by Trumbull Street, Sixth Street and Bond Street. This effort will capture and temporarily store storm runoff from the surrounding drainage area. The system will include a pumping station and an above-ground control building to monitor and release the water at a controlled rate when levels in the combined sewer have subsided.

The land above the storage tank has been designed to incorporate green infrastructure elements, with rain garden plantings and walking paths that will absorb and infiltrate excess rain water at the site. Attractive landscape features will also be created to beautify the neighborhood.

The project is being funded in part through a green infrastructure principal forgiveness loan and other financial assistance from the NJ Department of Environmental Protection and Environmental Infrastructure Trust. It is expected to be completed by Summer 2018.

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WHEN IT RAINS IT DRAINS

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

EPA United States Environmental Protection Agency

EPA 833-B-03-002

January 2003

THE YEAR OF CLEAN WATER
Celebrating a Recommitment

After the Storm

A Citizen's Guide to Understanding Stormwater

WHEN IT RAINS IT DRAINS

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.

- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

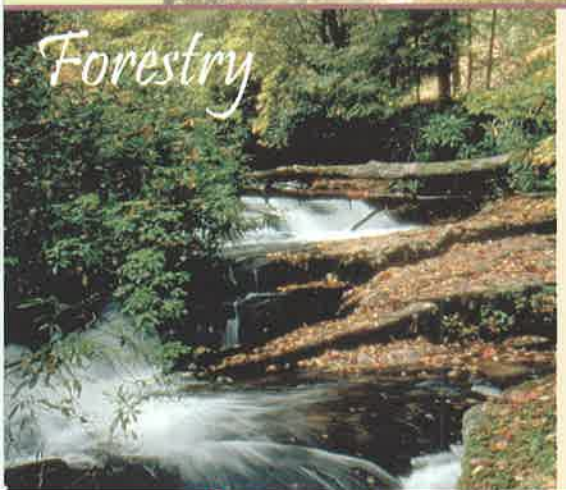
- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

Construction

Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

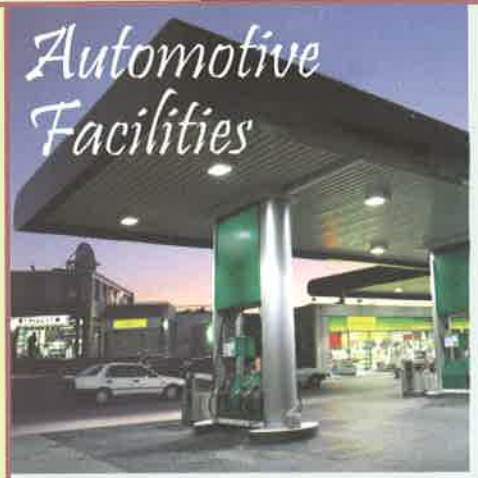
- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



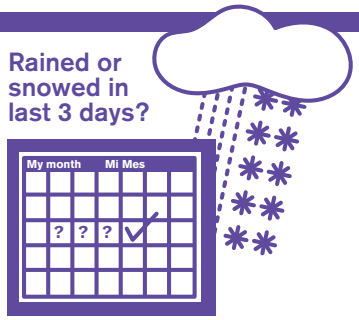
Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

Rained or snowed in last 3 days?

¿Ha llovido o nevado en los últimos 3 días?

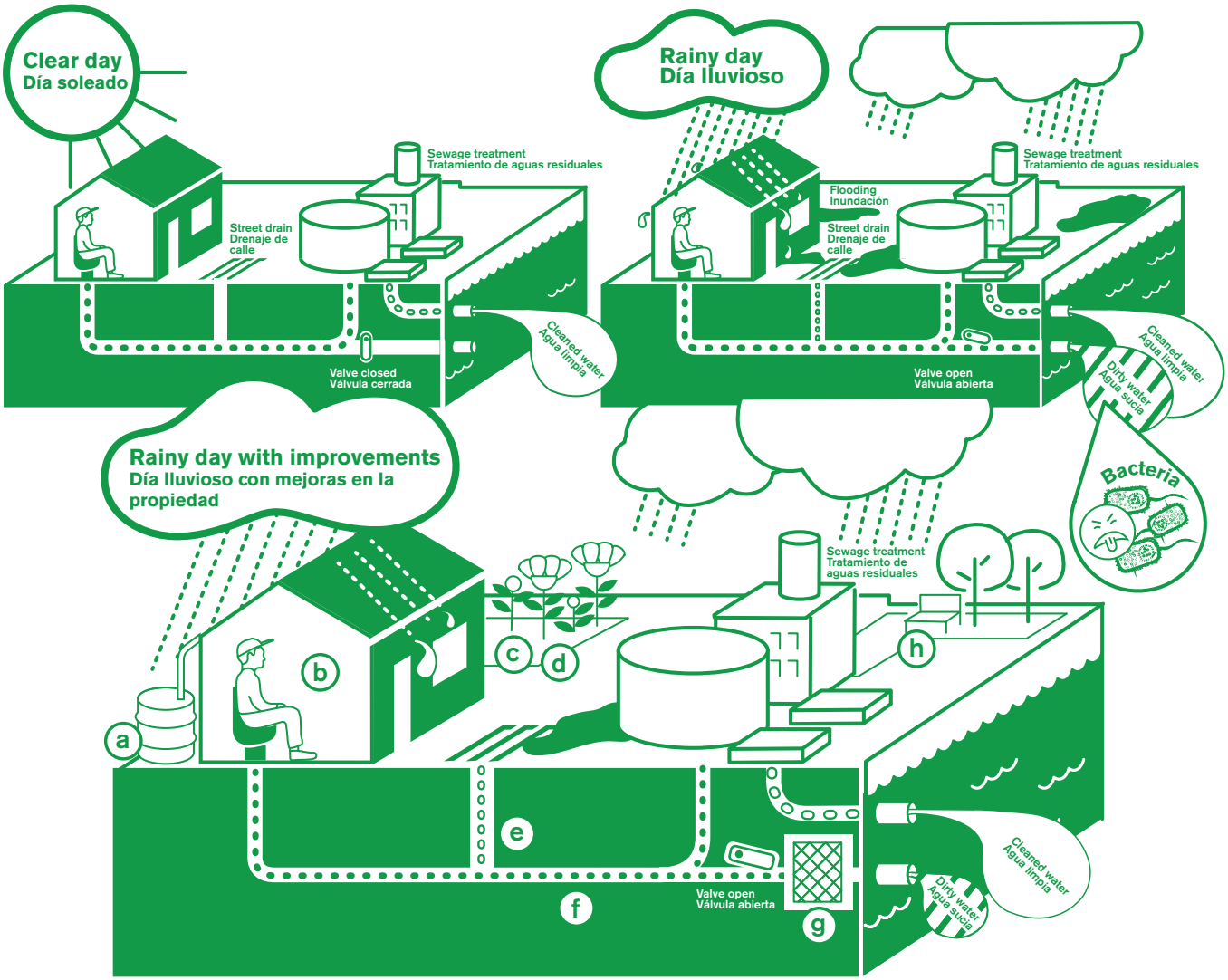


If yes, sewers overflow nearby!

¡En caso afirmativo, hay desabordamientos de alcantarillas en el area!

Do not swim, fish, or kayak!

¡No nadar, pescar, o hacer kayak!



To control sewer overflows, you can do things like:
Para controlar los desbordamientos de alcantarillado, puede hacer cosas como:

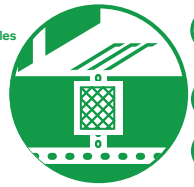
a Rain barrel
Contenedores de aguas pluviales

b Use less water
Usa menos agua

c Rain garden
Jardines sustentables

d Pavement removal
Eliminación del pavimento

Cities & utilities can & are doing things like:
Las ciudades, companias de utilidades, y servicios públicos pueden y están haciendo cosas como:

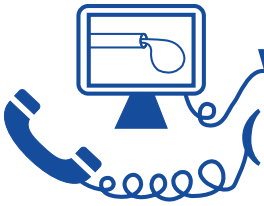


e Separate storm & sanitary sewage
Separar los alcantarillados pluviales de los alcantarillados sanitarios

f Replace old pipes
Reemplazar tuberias viejas

g Install screening chamber
Instalar un tamiz o cribado para la eliminación de sólidos

h Build parks
Construir parques



www.nj.gov/dep/dwq/cso.htm
(MUA/Township (xxx)-xxx-xxxx)

CLEAN WATERWAYS
Healthy Neighborhoods

Controlling CSO's with Sewer Seperation

Like many other cities, the older portions of the sewer system carries both sewage and stormwater in a combined sewer system. During storms, a combined sewer system can be overwhelmed,and sewage and stormwater can overflow into our local waterways. This overflow is called combined sewer overflow (CSO). CSOs release pollutants and can be harmful to the environment.

Sewer separation is the conversion of a combined sewer system into two independent systems, sanitary and stormwater.

Sewer separation can be a disruptive, costly, and difficult undertaking. This process typically involves the disconnection of all sources of sanitary sewage flow from the existing sewer lateral leaving buildings, and the construction of a new sanitary-only sewer.

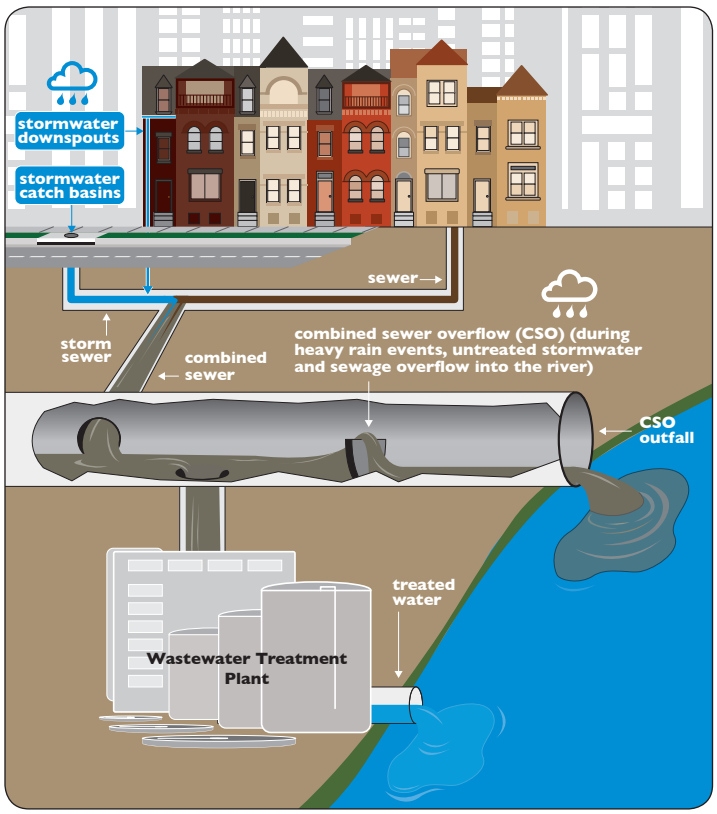
The new sanitary sewers convey sanitary sewage only to the sewage treatment plant. Complete sewer separation results in the elimination of all CSO events.

Although sewage is no longer discharged to the waterways with the new separated sewage system, polluted urban stormwater discharging into waterways may increase. This can be significant during early parts of a storm event, which may contain the highest pollutant concentrations.

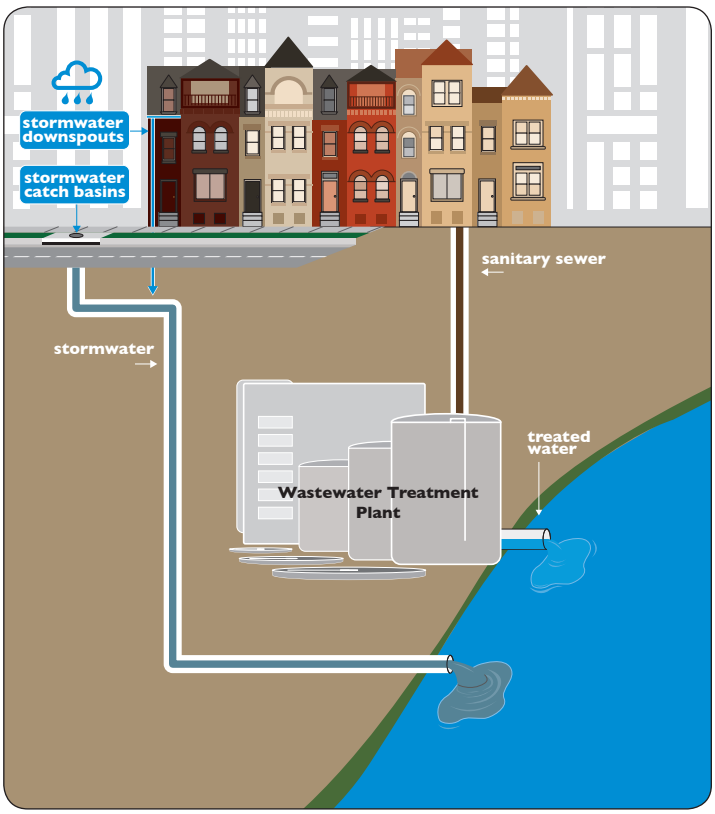
Alternately, green infrastructure practices can slow down, clean, and, in some cases reduce, stormwater runoff.

For more information, on combined sewer overflow management and its impacts, visit:
www3.epa.gov/npdes/pubs/sepa.pdf

combined sewer overflow (CSO) system



separated sewer system



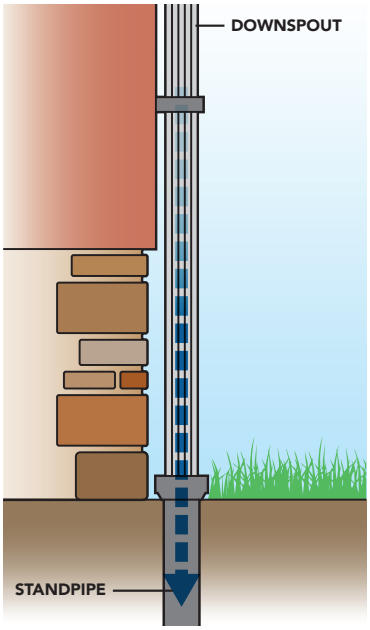
For more information contact: cleanwaters@cleanwaters.com / 555-555-5555

CLEAN WATERWAYS
Healthy Neighborhoods

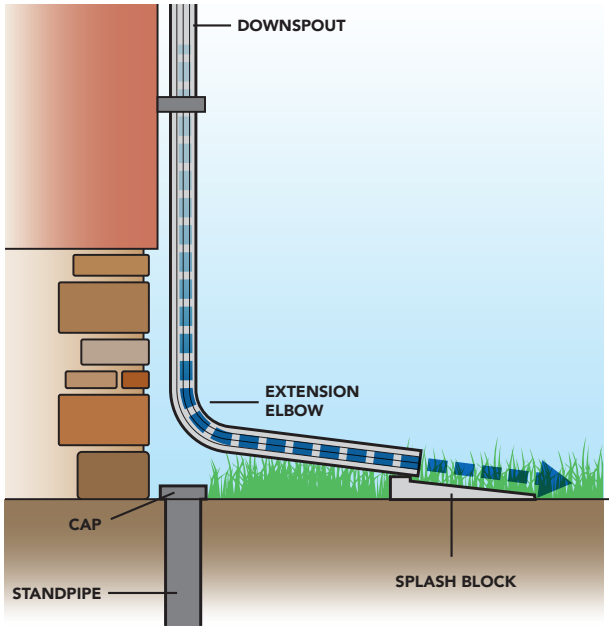
Downspout Disconnection

You can reduce combined sewer overflow (CSO) and help clean the waterways by disconnecting your downspout!

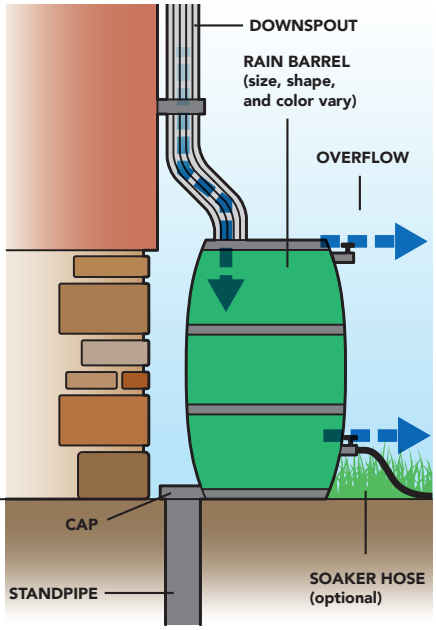
Like many other cities, the older portions of the sewer system carries both sewage and stormwater in a combined sewer system. During storms, a combined sewer system can be overwhelmed,and sewage and stormwater can overflow into our local waterways. This overflow is called combined sewer overflow (CSO). CSOs release pollutants and can be harmful to the environment. **Downspouts connected to the combined sewer system add to the CSO problem.**



Downspout Connected to the Sewer System – Downspouts connected directly to the combined sewer system contribute to CSOs.

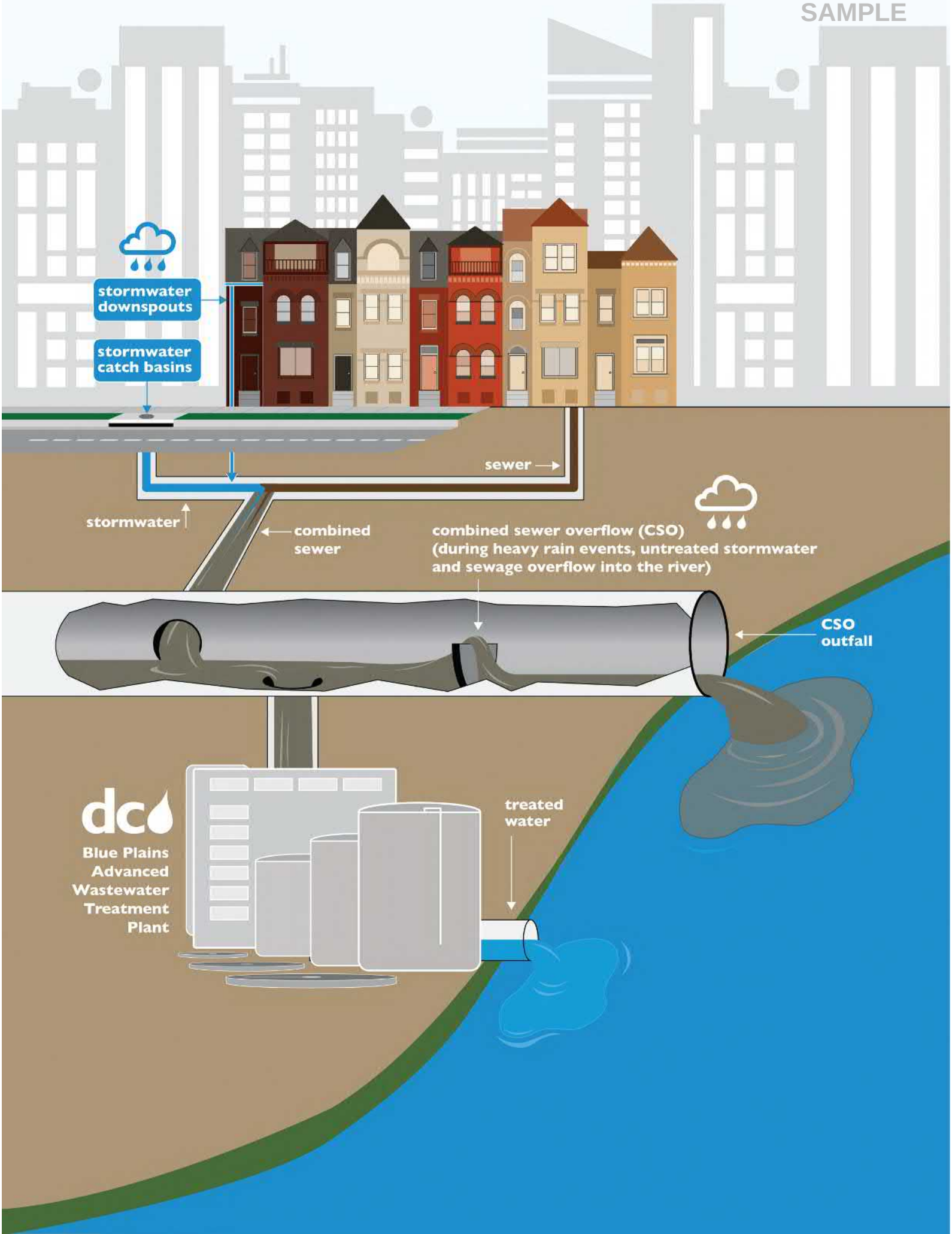


Downspout Disconnected from the Sewer System – Downspout disconnection reduces CSOs. The process involves cutting the downspout, attaching an elbow and extension to direct the water to an adjacent pervious area, and capping the standpipe.



Downspout Connected to the Rain Barrel – Downspouts can be connected to a rain barrel so that stormwater is collected and stored for non-potable uses (i.e., exterior washing, gardening).

For more information contact: cleanwaters@cleanwaters.com / 555-555-5555


stormwater downspouts
stormwater catch basins
sewer
stormwater
combined sewer
combined sewer overflow (CSO)
(during heavy rain events, untreated stormwater and sewage overflow into the river)
CSO outfall
dc
Blue Plains Advanced Wastewater Treatment Plant
treated water

TIPS TO RELIEVE THE SEWER SYSTEM WHEN IT'S RAINING

WHAT CAN YOU DO?

IN YOUR HOME & COMMUNITY

When it's raining you should avoid releasing more water into your drains because there's already a lot of rainwater flowing into the sewer system.

GREEN INFRASTRUCTURE (GI)

HAVE YOU HEARD OF GREEN INFRASTRUCTURE?

GI is a common alternative to absorb storm water instead of having it running to underground sewage. Here are some examples:

BIOSWALE

This oversized tree pit is filled with plants, sand, gravel, and engineered soil, which are specifically designed to absorb water. Inlets divert rainwater from the street into the bioswale instead of the storm drain.

RAIN GARDEN

A garden specially designed to absorb stormwater run-off from roads, parking lots, and sidewalks

RAIN BARREL

This container captures up to 50 gallons of stormwater runoff which would otherwise flow into the sewer. This water is not drinkable, but can be used for watering or washing outdoors.

POROUS PAVEMENT

This permeable surface allows stormwater to pass back into the ground instead of running off into storm drains. Surfaces like this also protect trees by accommodating root growth.