



Combined Sewer Overflow - Long Term Control Plan Update

DELCORA

Public Participation Meeting No. 4
LTCPU Development and Evaluation
of Alternatives for CSO Controls

September 26, 2018

Aston Township Administration Building
5021 Pennell Road, Aston, PA 19014



General Information

- DELCORA is the Delaware County Regional Water Quality Control Authority, established in 1971, responsible for collecting, conveying and treating wastewater in the greater Philadelphia Area including 42 Municipalities in Delaware and Chester County.

DELCORA Mission

“Provide environmentally responsible and cost effective wastewater management services to the citizens, businesses, and industries of Southeastern Pennsylvania”



Why Are We Here?

- In April 1999, DELCORA adopted their Long Term Control Plan (LTCP) to comply with the Clean Water Act requirements for the Combined Sewer Overflow (CSO) control policy.
- In 2009, the Department of Environmental Protection (DEP) and Environmental Protection Agency (EPA) determined that DELCORA's LTCP was no longer in compliance with increased regulations of the Clean Water Act. In response, DELCORA began working with DEP and EPA to update the LTCP.
- In 2014, DEP and EPA determined that DELCORA's revised LTCP required further evaluation and development.
- In 2015 DELCORA signed with EPA the Long Term Control Plan Consent Decree.



Public Participation Plan Goals

- DELCORA's Goals and Objectives for the Public Participation Program are to:
 - ◆ Inform and Solicit Input to Updated LTCP from Stakeholders, including Public, Customer Communities and Regulatory Agencies
 - ◆ Educate the Public
 - ◆ Address Public Questions/Comments





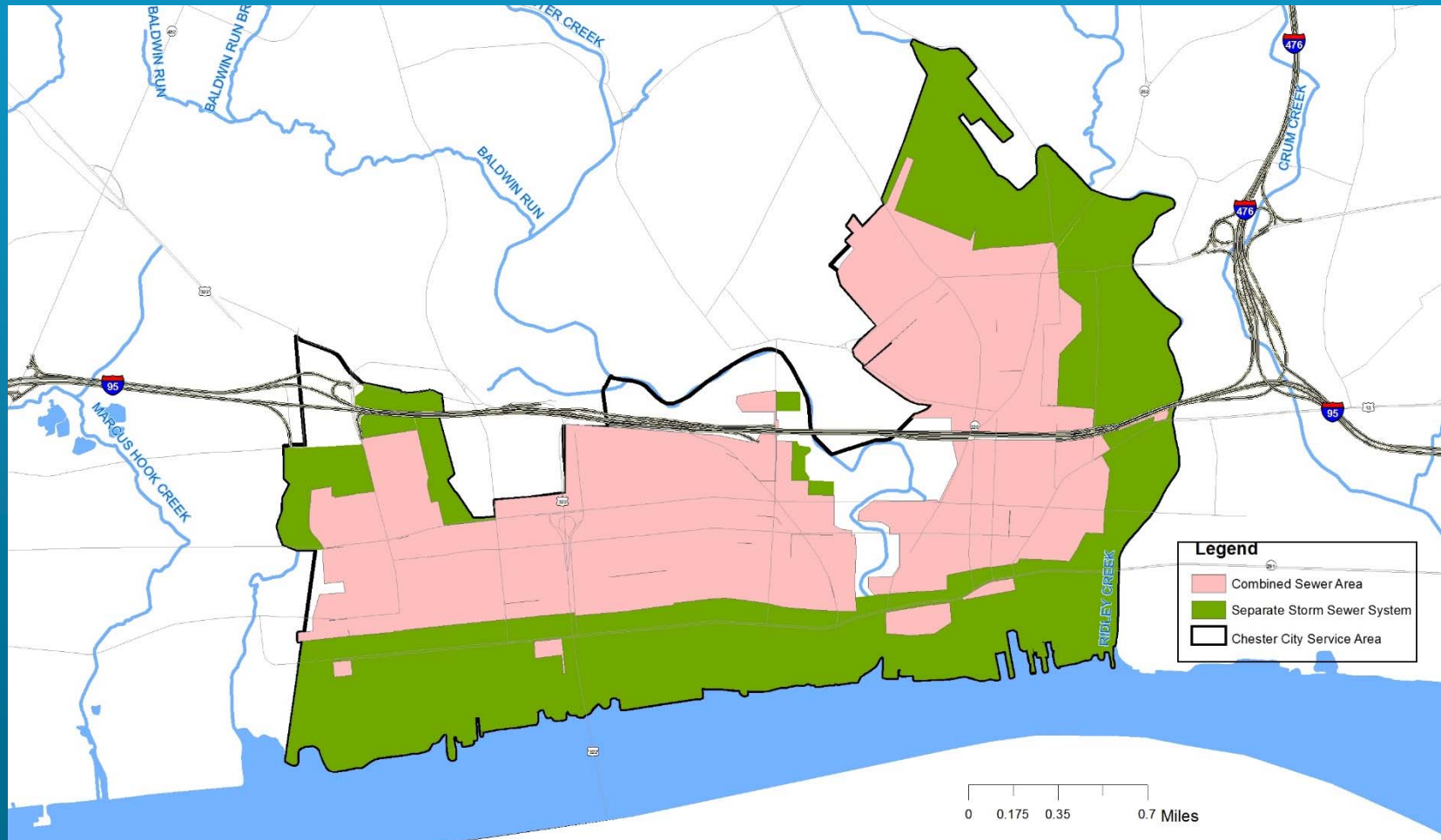
Scope of Meeting

- This Public Meeting (9/26/18) is to:
 - ◆ Overview DELCORA Service Area
 - ◆ Summarize Work of LTCP Addressing Wet Weather Issues Up to this Point
 - ◆ Describe CSO Control Alternatives Evaluation
 - ◆ Describe Next Steps Towards Development of Long Term Control Plan Update (LTCPU)
 - ◆ Questions and Comments



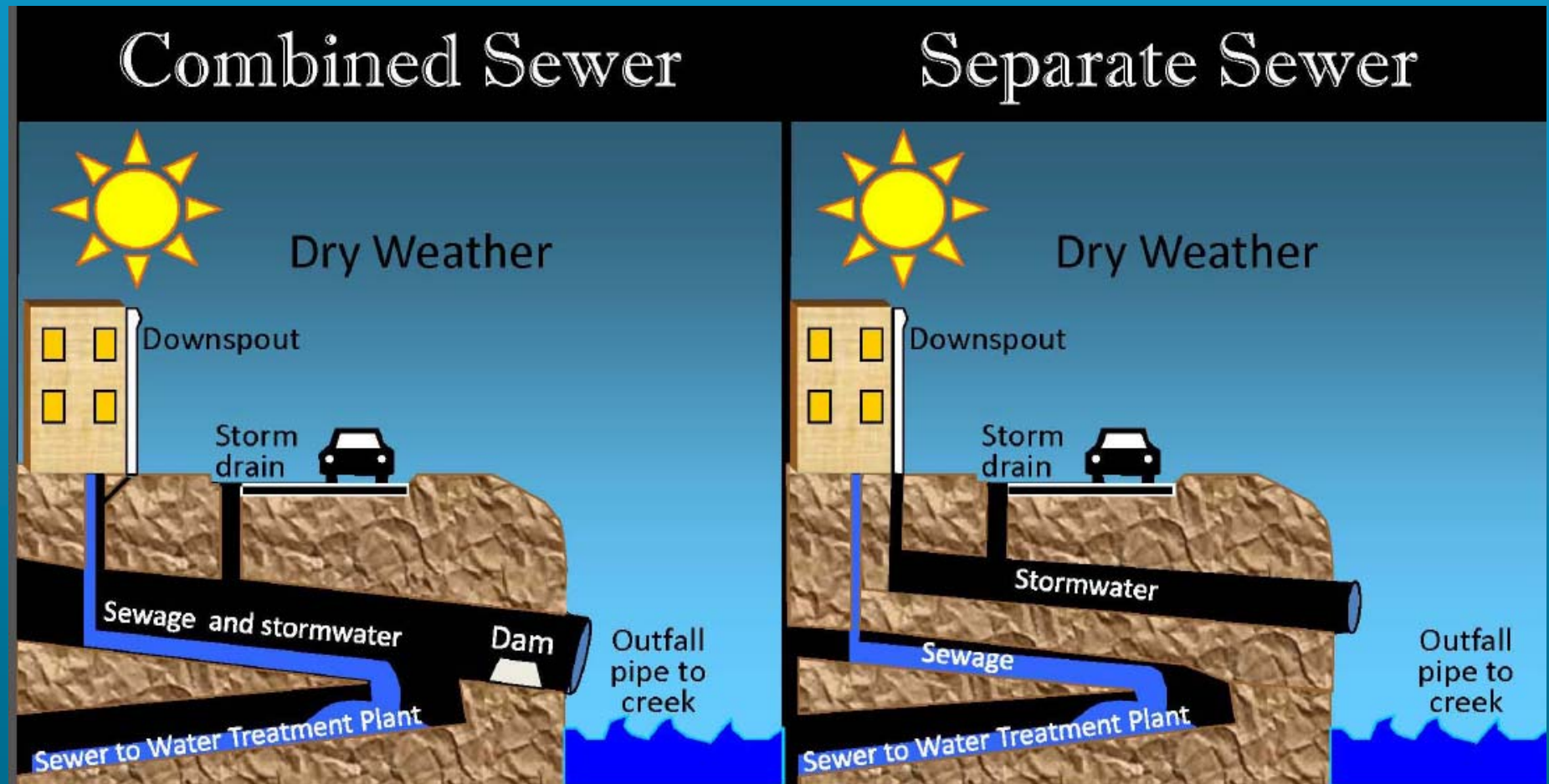


Chester City Service Area





Combined Sewer System vs. Separated Sewer System



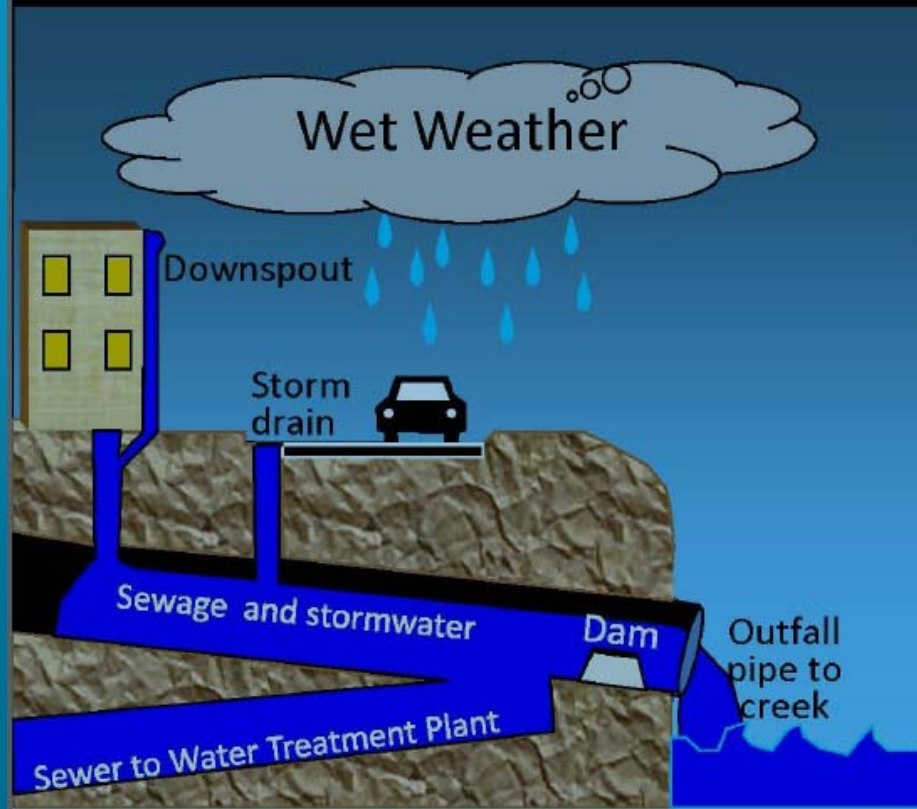
Source: City of Alexandria,

<https://www.alexandriava.gov/uploadedFiles/tes/oeq/CSSPermitInfoMeetingandPublicHearingPresentation08052013.pdf>

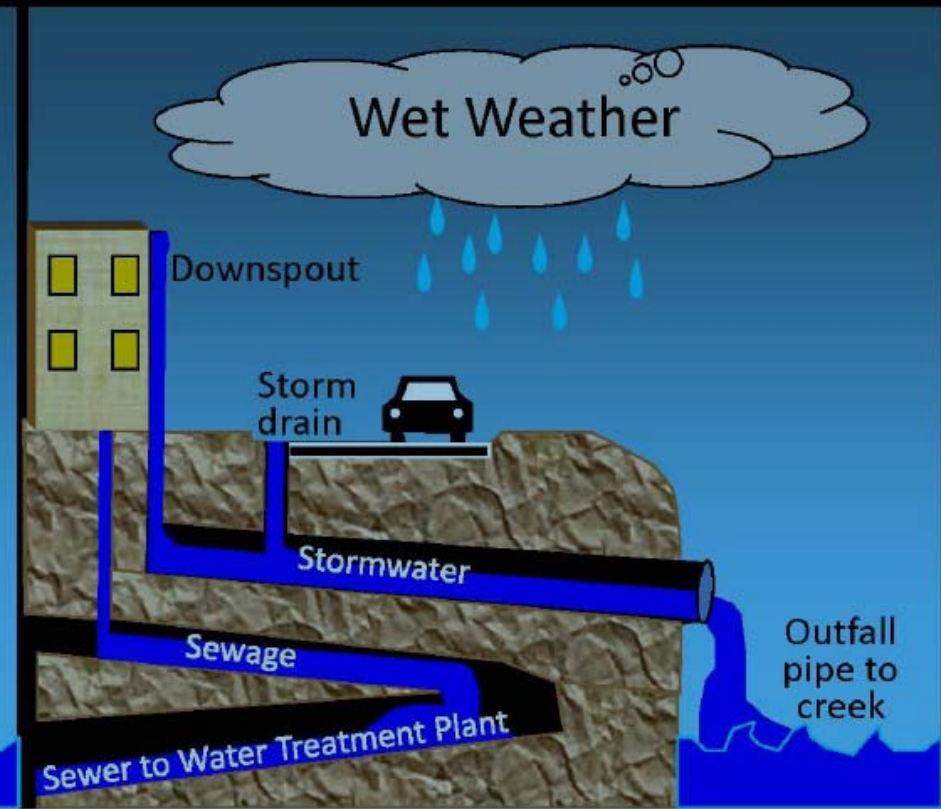


Combined Sewer System vs. Separated Sewer System

Combined Sewer



Separate Sewer



Source: City of Alexandria,

<https://www.alexandriava.gov/uploadedFiles/tes/oeq/CSSPermitInfoMeetingandPublicHearingPresentation08052013.pdf>



LTCPU 42-Month Program Schedule

Consent Decree Date of Lodging
August 17, 2015

Consent Decree LTCP Completion
Feb. 17, 2019



Since the lodging of the Consent Decree in August of 2015, DELCORA has met important milestones in the program:

2016

- Selected a plan to decrease CSOs and evaluated the financial ability of the community to pay for it.
- Identified the bacteria responsible for the pollution, and high-priority areas for CSO reduction.

2017

- An evaluation of historical rainfall on the existing sewer system was conducted. This would help identify the impacts of new technologies.

2018

- Pump Station "PS-6" completed and held last public meeting.

2019

- Submit final reports to the EPA.



Early Action Items

- A new pump station near the DELCORA treatment plant was required to be placed in operation by Dec 2018.
 - ◆ New Pump Station PS-6 was placed in operation on September 5th, 2018



- Over \$150M has been spent on system improvement projects since the original LTCP in 1999.



Improvement Costs to Date

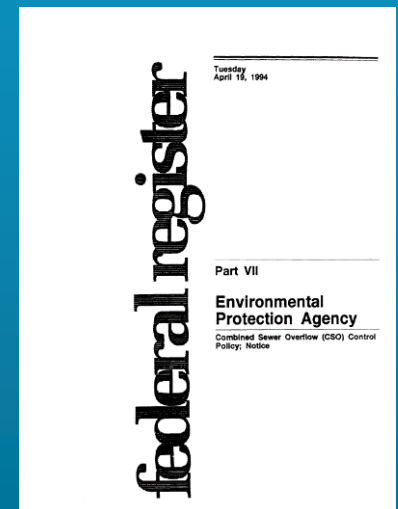
- From 1999-2018 DELCORA spent in excess of \$150 Million on overall system improvements and contributions to the City of Chester that resulted in decreased volume of overflows, reduced debris in overflows, provided remote monitoring of the system, and improved routine maintenance.
 - ◆ Partially separating flow to a CSO regulator
 - ◆ Purchasing property for further plant expansion
 - ◆ Replacement of older CSO regulator models
 - ◆ Research, repair, & replacement for leaking pipes
 - ◆ Annual informational flyers mailed to customers





National CSO Policy Requirements

- National CSO Policy pertaining to the Alternatives Analysis provides guidance to develop the LTCPU:
 - ◆ To meet one of the following (Presumption Approach):
 - No more than an average of 4 overflows a year
 - Elimination or capture for treatment of at least 85% of combined sewage volume during wet weather events
 - Elimination or removal of pollutants identified causing water quality impairment during wet weather events





LTCPU Alternatives Analysis

- Review Regulatory Requirements
- Describe, screen and compare technologies that can be used to achieve the most economically feasible approach to reducing CSOs that meets water quality standards
- Specific technologies must be considered





LTCPU Alternatives Analysis

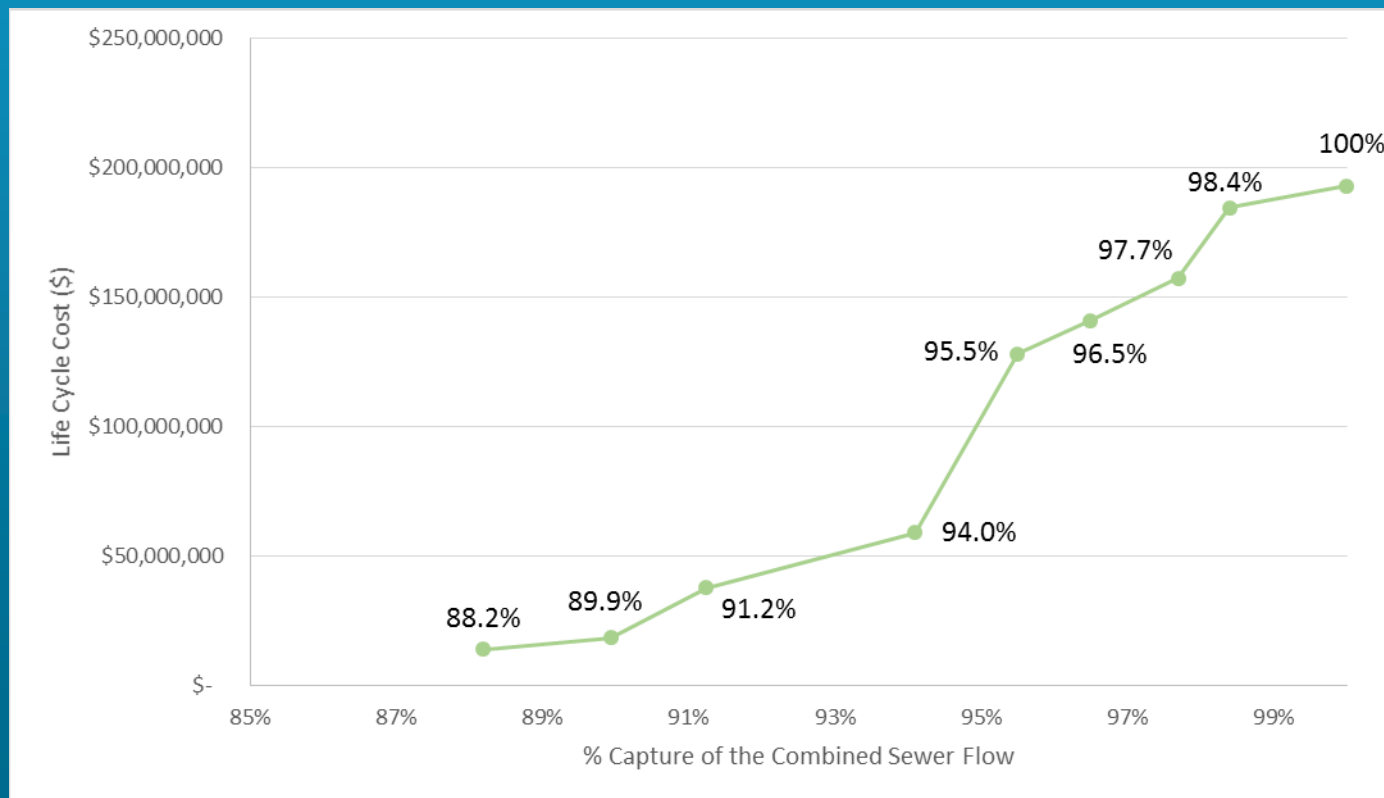
- Elimination or capture of 85% of wet weather flows entering the collection system on a system wide, typical year basis.
 - ◆ This level of control is presumed to meet WQS (subject to verification monitoring post-construction).
- Looked at 15 combinations of technologies to reduce CSOs (includes required technologies as per consent order)
- The costs associated for completing all projects in an alternative, as well as their upkeep and operation for 20 years was estimated – this is called the Life Cycle Cost



"Knee-of-the-Curve" Analysis

Capture % vs Cost

Knee-of-the Curve Graph for Selected Alternatives





Selected CSO Control Technologies

- DELCOA's recommended plan has 3 parts based on the Knee-of-the-Curve Analysis:
 - ◆ **88% - Regulator Control Improvements** - Regulator Modifications alone will provide enough CSO control to meet 85% wet weather capture.
 - ◆ **94% - Targeted Overflow Reduction** - Further CSO control technologies can target the most frequent CSO areas, but is dependent on financing and plant expansion. Address continued minimization of excessive I/I in areas upstream of the CSO system.
 - ◆ **Adaptive Management** - Adapting future projects based on the performance of the completed control technologies.



Components of the Selected Alternative

- The alternative providing over 90% capture costs \$59.3M (\$101M inclusive of 20 year life cycle costs) with:
 - ◆ Regulator Modifications
 - ◆ Rehabilitation & extension of the West End Interceptor
 - ◆ Building a parallel Delaware River Interceptor
 - ◆ Partially separating combined sewers north of Veterans Memorial Park
 - ◆ Green Stormwater Infrastructure in high frequency CSO areas
- This alternative provides the most affordable and cost-effective CSO control benefits.
- The boat ramp along the Delaware River is a public access point and the wet weather discharge from the adjacent outfall is addressed in this alternative.



Selected CSO Control Technologies

| Regulator Control Improvements | Life Cycle Costs (Millions \$) |
|-------------------------------------|--------------------------------|
| Regulator Modifications Estimate | \$ 14.2 |
| Targeted Overflow Reduction | |
| Parallel Delaware River Interceptor | \$ 3.6 |
| WE Interceptor Rehab & Extension | \$ 2.5 |
| CSO-5 Partial Sewer Separation | \$ 4.5 |
| CSO 18 & 19 Green Infrastructure | \$ 11.8 |
| Arboretum Tank | \$ 10.0 |
| Monitoring and Modeling | \$ 5.0 |
| Public Outreach | \$ 3.0 |
| Plant Expansion/Upgrade | \$ 28.8 |
| Real-Time Control | \$ 2.9 |
| Adaptive Management | |
| Adaptive Management Estimate | \$ 10.0 |
| | |
| Program Operation Costs | \$ 5.0 |
| | |
| Total | \$ 101.3 |



Implementation of the LTCPU

- Regulator Control Improvements are ongoing.
- Targeted Overflow Reduction projects can be fully implemented within the next 10 years, but depend on:
 - ◆ If excessive upstream flow into leaking pipes can be affordably addressed.
 - ◆ Eastern Service Area costs do not upset Chester's financial capability.
 - ◆ Recommended DELCORA treatment plant expansion approval by the PADEP and USEPA.

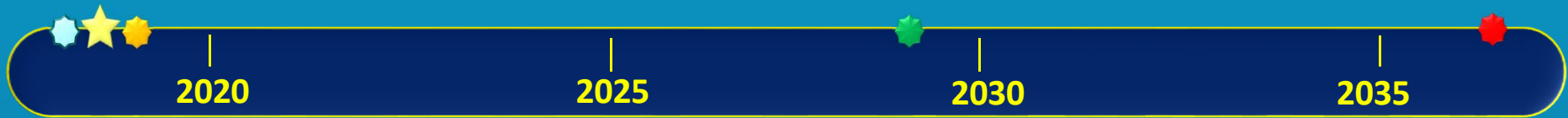




LTCPU 20-Year Implementation Schedule & Milestones

Consent Decree Date of Lodging
August 17, 2015

Consent Decree LTCP Completion
August 17, 2035



Milestones:

- ★ Early Action Item, Completed PS-6 - September 2018
- ★ Public Participation Meeting - September 26, 2018
- ★ Updated LTCP Final Report & Update NMCs Plan - Feb. 17, 2019
- ★ Regulator Control Improvements and Targeted Overflow Reduction Projects Complete – completed within 10 years from regulatory approval
- ★ All projects complete and fully operational; DELCORA is meeting all requirements of the Consent Decree - August 17, 2035



Literature and Documentation

- Literature and Documentation will be Made available by DELCORA at the following public locations and on the DELCORA Website:

- ◆ **DELCORA Administration Building**

100 East Fifth Street; Chester, PA 19013

- ◆ **Lewis Crozer Library**

620 Engle Street; Chester, PA 19013

- ◆ **Marcus Hook Municipal Building**

1015 Green Street; Marcus Hook, PA 19061

- ◆ **Ridley Township Building**

100 MacDade Blvd.; Folsom, PA 19033

- ◆ **Upland Borough Office**

224 Castle Avenue; Brookhaven, PA 19015

- ◆ **Chester Township**

1150 Engle Street; Chester, PA 19013





DELCORA Website

Customer Service: 610-676-5526 Sewer Emergency: 610-676-5523 (Press 2) Search

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DELCORA

Providing environmentally responsible and cost-effective wastewater management services to the citizens, businesses, and industries of Southeastern PA.

Pay Sewer Bill Open Bids Right to Know QA FAQs Combined Sewer System

About DELCORA

Delaware County residents and businesses generate over 100 million gallons of wastewater every day. This wastewater must be collected, conveyed, and treated in a safe, effective way to prevent the contamination of our community's streams, rivers, and groundwater supply. DELCORA has been providing this vital function to our communities for over three decades. As a result, the citizens of our region enjoy clean, healthy water.

News & Events

DELCORA Enters Agreement with EPA

August 18, 2015 Chester, PA - The Delaware County Regional Water Quality Control Authority (DELCORA) announced today that it has entered into a settlement agreement with the Environmental Protection Agency (EPA) to make improvements to the combined sewer and stormwater drainage system in the City of Chester to address issues related to the overflow of the system during [...]

[Read More](#)

Edgmont's public sewer system to be finished in fall

By Susan L. Berlin, Times Correspondent The public sewer system along the West Chester Pike and Providence Road corridors is in the final stages of construction, with activities continuing through the summer months and into the early fall. After years on a wish list, supervisors put into action a comprehensive plan for a build out [...]

[Read More](#)

DELCORA

Combined Sewer System Right to Know Careers Employee Login

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100 East Fifth Street
Chester, PA 19013

Wastewater Treatment Plant
3201 West Front Street
Chester, PA 19013

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Combined Sewer System

Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe. Most of the time, combined sewer systems transport all of their wastewater to a sewage treatment plant, where it is treated and then discharged to a water body. During periods of heavy rainfall or snowmelt, however, the wastewater volume in a combined sewer system can exceed the capacity of the sewer system or treatment plant. For this reason, combined sewer systems are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies.

These overflows, called combined sewer overflows (CSOs), contain not only stormwater but also untreated human and industrial waste, toxic materials, and debris. They are a major water pollution concern for the approximately 772 cities in the U.S. that have combined sewer systems.

[For more information combined sewers](#)

Quick Links

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Open Bids
Right to Know
FAQs
Combined Sewer System

DELCORA

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Administration Building
100 East Fifth Street
Chester, PA 19013

Wastewater Treatment Plant
3201 West Front Street
Chester, PA 19013

www.delcora.org



CONTACT DELCORA

■ Mail Address

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100 East 5th Street
Chester, PA 19013

■ Email: ltcpinfo@delcora.org

■ On the WEB: www.delcora.org

■ General Phone Number: 610-876-5523

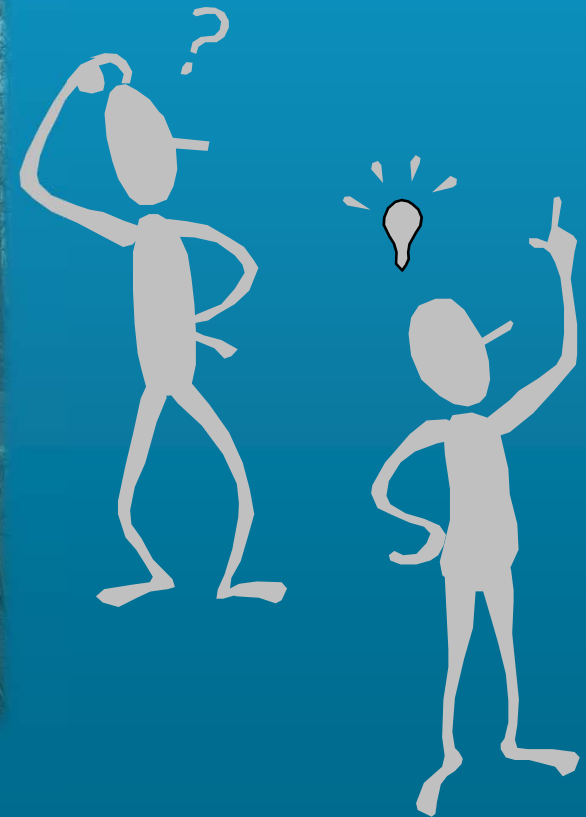
■ Newsletter

■ Sign-Up Sheet

-Thank You-



Discussion - Q&A





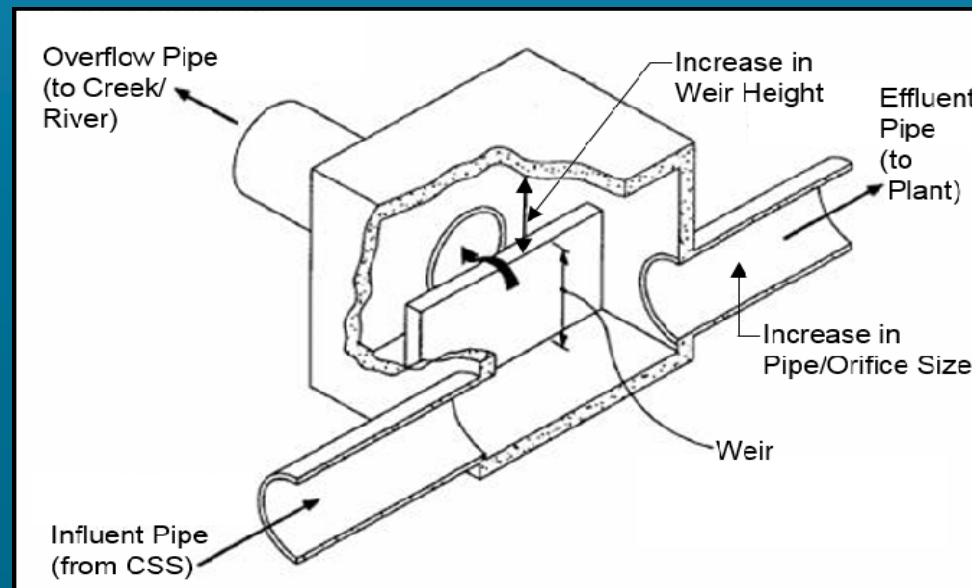
End of Presentation



Selected CSO Control Technologies

■ Regulator Control Improvements

- ◆ Regulator modifications in 19 locations to maximize flow to the treatment plant using existing infrastructure.
- ◆ Can raise weir height or increase the size of outflow pipes, orifices, or gates.
- ◆ Allows more flow to enter the collection system and prevents CSOs during smaller storms.





Selected CSO Control Technologies

■ Targeted Overflow Reduction:

- ◆ A parallel conveyance pipe along Front St. from Hayes St. to Clayton St.
- ◆ Restoration and extension of an existing line at Clayton and Front Streets.
- ◆ Installation of new piping to separate the combined sewer area north of Veterans Memorial Park.





Selected CSO Control Technologies

- Targeted Overflow Reduction (con't):
 - ◆ Potential green infrastructure locations on Widener University's campus, on Edgemont Avenue north of I-95, on Crozier Street, and any other viable areas.
 - ◆ Installing a combined sewer storage tank near the Taylor Arboretum.
 - ◆ Public outreach to inform the general public of the status of the DELCORA system.





Selected CSO Control Technologies

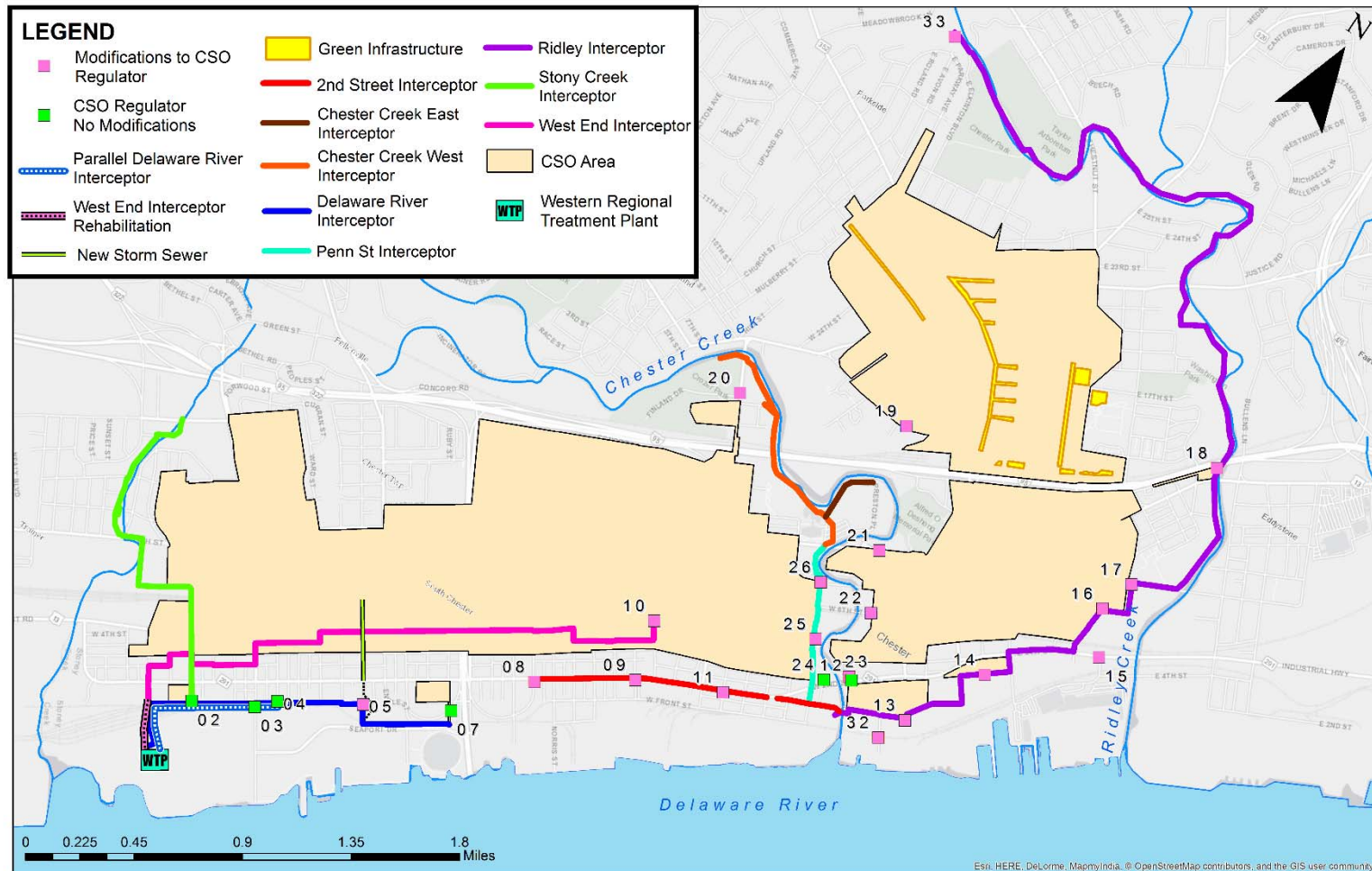
■ Targeted Overflow Reduction (con't):

- ◆ Installation of real-time motor operated valves and controls in the regulators and conveyance system to handle increased flows.
- ◆ Treatment plant modifications to handle excess wet weather flow treatment.





Selected CSO Control Technologies





Selected CSO Control Technologies

■ Adaptive Management

- ◆ Conduct post-construction monitoring after CSO control technologies are implemented to determine if they are operating as intended.
- ◆ Higher frequency overflows will be evaluated during monitoring for additional improvements, if necessary.
- ◆ Financial capabilities for additional improvements will also be considered during the monitoring.

