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
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”
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.
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
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
Combined Sewer System vs. Separated Sewer System

**Combined Sewer**
- When it rains, stormwater and sewage are released through a downspout into the combined system.
- During wet weather, both stormwater and sewage flow into the same pipes, which then lead to the sewer to water treatment plant.
- Cross connected pipes can result in sewage entering the stormwater system.
- This can lead to contamination of the stormwater system and potential harm to the environment.

**Separated Sewer**
- During wet weather, storm drain water is released through a downspout into separate stormwater pipes.
- Sewage is released through a downspout into separate sewage pipes.
- The two systems do not intersect, preventing cross connections.
- Stormwater is directed to creeks or other natural receiving bodies, while sewage is processed at the treatment plant.

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.
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 pertaining to the Alternatives Analysis provides guidance to develop the LTCPUs:

- 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
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

Life Cycle Cost ($) vs % Capture of the Combined Sewer Flow
DELCORA’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

<table>
<thead>
<tr>
<th>Regulator Control Improvements</th>
<th>Life Cycle Costs (Millions $)</th>
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</thead>
<tbody>
<tr>
<td>Regulator Modifications Estimate</td>
<td>$ 14.2</td>
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<tr>
<td><strong>Targeted Overflow Reduction</strong></td>
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<td>Parallel Delaware River Interceptor</td>
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<td>WE Interceptor Rehab &amp; Extension</td>
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<td>CSO-5 Partial Sewer Separation</td>
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<td>CSO 18 &amp; 19 Green Infrastructure</td>
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<td>Arboretum Tank</td>
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<td>Monitoring and Modeling</td>
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<td>Public Outreach</td>
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<td>Plant Expansion/Upgrade</td>
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<td><strong>Adaptive Management</strong></td>
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<td>Adaptive Management Estimate</td>
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<tr>
<td>Program Operation Costs</td>
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<tr>
<td><strong>Total</strong></td>
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</table>
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.
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 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
CONTACT DELCORA

- Mail Address
  - DELCORA
    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
Regulator Control Improvements

- Regulator modifications in 19 locations to maximize flow to the treatment plan 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.
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.
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.
Targeted Overflow Reduction (con’t):

- Installation of real-time motor operated values 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

LEGEND
- Green Infrastructure
- Ridley Interceptor
- 2nd Street Interceptor
- Stony Creek Interceptor
- Chester Creek East Interceptor
- West End Interceptor
- Chester Creek West Interceptor
- CSO Area
- Western Regional Treatment Plant

Map of Chester Creek area showing various 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.