Combined Sewer Overflow - Long Term Control Plan Update

DELCORA
Public Participation Meeting No. 2
LTCPU System Characterization
June 27, 2017

Ridley Township Municipal Building
100 East MacDade Boulevard, Folsom, PA
Delaware County Regional Water Quality Control Authority

DELCORA

Delaware County, PA

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 Concerns
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”
What is a Combined Sewer Overflow (CSO)?
Definitions

- **LTCP**: The Long Term Control Plan is the document that lays out how DELCORA will maintain the outfalls and reduce the flow and/or treat the discharge from the outfalls to the water ways to meet the requirements of the Clean Water Act.

- **Sanitary Sewer**: The system that contains only waste from bathrooms, sinks, washers etc.

- **Storm Sewer**: Run off from streets.

- **Combined Sewer System**: Pipe that has both sanitary sewage and storm water in it.

- **Combined Sewer Overflow**: An overflow is the relief point in the combined sewer system that allows the extra flow when it rains to be discharged directly to streams and rivers.

- **USEPA**: United States Environmental Protection Agency

- **PADEP**: Pennsylvania Department of Environmental Protection
History of Combined Sewer System

- In the early 1900’s the City of Chester’s Combined Sewer System was constructed.
  - This was, at the time, a typical engineering practice in Urban areas.

- In 1971 DELCORA became the owner of the existing Sanitary and Combined Sewer System in the City of Chester.

- Discharges from CSOs are authorized through the National Pollutants Discharge Elimination System (NPDES) permit during Wet Weather Flow.
DELCORA Combined Sewer Area

Legend:
- River Milemarker
- CSO Regulator
- Pump Station
- Western Regional Treatment Plant
- Combined Collector
- Interceptor
- Outfall Line
- Force mains
- Combined Sewers
- Separate Sewers
- Chester City Service Area
- XXX: Regulator SubAreas
History of EPA LTCPs

- LTCP Consent Decrees/Order for Various Wastewater Systems not only Throughout Pennsylvania, but Entire Country
  - Washington DC, New York City, Richmond

- Current Pennsylvania Communities Already Impacted by LTCP Consent Decree Costs & Fines:
  - Williamsport
  - Scranton
  - Harrisburg
  - Pittsburgh
The Philadelphia LTCP is currently being re-negotiated with EPA. The initial amount of the Philadelphia LTCP was approximately $2.2 billion. A recent Philadelphia bond document stated that the revised cost could be around $4.5 billion. It is uncertain what the outcome of the negotiations will be.

DELCORA’s proportionate share of Philadelphia’s LTCP is dependent on the results of the Philadelphia – EPA negotiation. DELCORA’s initial share as of 2013 was approximately $175 million. DELCORA is waiting for Philadelphia to confirm its revised cost. The term of the DELCORA - PWD contract runs from 2013 to 2028.
In 1999 in response to increased environmental regulations, DELCORA implemented an LTCP for the DELCORA Combined Sewer System in the City of Chester.

The LTCP identified capital improvements and operation and maintenance practices to reduce overflows.

From 1999-2009 DELCORA spent in excess of $5 million on 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.

In 2009, the DEP and 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 2012, DELCORA submitted a revised LTCP to DEP and EPA.

A key element in DELCORA’s revised plan position was that the CSOs are only found in the City of Chester and the financial burden on the City of Chester residents must be considered.

In 2014, DEP and EPA determined that DELCORA’s revised LTCP required further evaluation and development so the Department of Justice was assigned to pursue a Consent Decree.
Delaware County Regional Water Quality Control Authority

DELCORA Consent Decree

The Consent Decree was agreed to by DELCORA on July 1, 2015 and signed into effect by the Dept. of Justice (DOJ) in November 2015. The Consent Decree is a legally binding agreement between DELCORA, EPA, and DEP in which DELCORA agrees to update the current LTCP.

Generally, the Consent Decree consists of:

- Compliance Measures
- Milestones for Plan Update and Implementation
- Civil Penalty
- Stipulated Penalties for Non-Compliance

DELCORA has been given 42 months (3½ years) to develop a plan and 20 total years to implement the plan. When projects are complete and on-line, sewer fee charges will include costs for the updated LTCP.
LTCPU Summary – Where We Are

- Hired Expert Consultants with Good Track Records as Well as Experience Specifically Related to LTCP
  - Greeley & Hansen: Engineering Consultant for the LTCP
  - Municipal & Financial Services Group: Rate Model Consultant
  - Blank Rome: Law Firm

- 100% Compliance to Date with Consent Decree
  - Reports Submitted to Date:
    - Public Participation Plan
    - Hydrologic and Hydraulic Model Update and Calibration Plan
    - Typical Hydrologic Period Plan
    - Semi-Annual Reports for 2015 and 2016
    - Sensitive Areas and Pollutants of Concern Report
LTCP U Summary – Where We Are

- 100% Compliance to Date with Consent Decree (Continued)

  - Reports Submitted to Date (Continued):
    - Draft Financial Capabilities Assessment (FCA) Report
    - Alternative Evaluation Approach
    - Rainfall and Flow Monitoring Quarterly Reports for 1st, 2nd, 3rd, and 4th Quarters
    - Water Quality Monitoring and Modeling Work Plan
    - Water Quality Monitoring and Modeling Quality Assurance Project Plan
The Consent Decree Requires DELCOROA to Submit a DRAFT FCA by May 17, 2016 and a FINAL FCA at End of Project. The Draft FCA was submitted on May 13, 2016.

FCA’s Purpose is to Determine Affordability of LTCP

Develop Fair, Equitable, and Legal Cost Share for Conveyance, Storage and Treatment of Wet Weather Flows
Financial Capability Assessment (FCA)

Financial Capability Matrix

| Permittee Financial Capability Indicators Score (Socioeconomic, Debt & Financial Indicators) | Residential Indicator (Cost Per Household as a % of MHI) |
|---|---|---|
| Low (1.0% and Below) | Mid-Range (Between 1.0% and 2.0%) | High (2.0% and Above) |
| Weak (1.5 and Below) | Medium Burden | High Burden | High Burden |
| Mid-Range (Between 1.5 and 2.5) | Low Burden | Medium Burden | High Burden |
| Strong (2.5 and Above) | Low Burden | Low Burden | Medium Burden |
LTCPU Status – Next Phase

- Rainfall and Flow Monitoring - Completed
- Dry Weather and Wet Weather Water Quality Sampling - Completed
- Data Analysis - Under Development
- Hydrologic and Hydraulic Model Development - Under Development
- Water Quality Model Development - Under Development
- System Characterization - Under Development
- Development and Evaluation of Alternatives for CSO Controls - Under Development
- Selection and Implementation of the Long Term Plan Alternatives – 2018
- Continued Public and Stakeholder Involvement – Ongoing
LTCPUs System Characterization

- Regulatory Requirements
- DELCOROA Model Area
- Model Area Characteristics
- Receiving Water Characteristics
- Combined Sewer System Modeling
- Water Quality Modeling
Regulatory Requirements

- **Consent Decree:** “Not later than two years (24) months after the Date of Lodging of the Consent Decree, DELCORA shall submit a characterization of the Model Area that includes all of the information required by CSO Control Policy Section II.C.1 and associated guidance…”

- **CSO Control Policy (USEPA, 1994).** Section II.C.1 of the CSO Control Policy: “In order to design a CSO control plan to adequately meet the requirements of the CWA, a permittee should have a thorough understanding of its sewer system, the response of the system to various precipitation events, the characteristics of the overflows, and the water quality impacts that result from CSOs. The permittee should adequately characterize through monitoring, modelling, and other means as appropriate, for a range of storm events, the response of its sewer system to wet weather events including the number, location and frequency of CSOs volume, concentration and mass of pollutants discharged and the impacts of the CSOs on the receiving waters and their designated uses.”
Model Area

- **Combined Sewer Area** – Chester City
- **Separated Sewer Areas** – Separate Sanitary Sewer System and Separate Storm Water include Western and Central
LTCPUs System Characterization

Model Area

Legend:
- M: Motor-Operated Valve
- I: Interceptor
- F: Force Main
- W: Pump Station

Western Service Area:
- Southern Delaware County Authority (SDDCA)
  - Naamans Creek PS
- Marcus Hook Conveyance System
  - Marcus Hook PS
- Eddystone PS (Owned by Sunoco)
- Existing PS-1 WRTP
- Chester PS
- Eddystone Conveyance System
- Eddystone PS
- Chester Ridley Creek Conveyance System
- Chester Ridley Creek PS
- Eddystone PS
- Sun Oil PS (Owned by Sunoco)
- Stadium PS
- Kimberly Clark PS (Owned by KG)
- Trainer Conveyance System
- Trainer Sts Trainer PS

Eastern Service Area:
- Central Authority
  - Aston Twp.
  - Brookhaven Boro
  - Chester City
  - Chester Ridley Creek PS
  - Chester Heights Boro
  - Edgemont Twp.
  - Middletown Twp.
  - Upper Chichester Twp.
  - Upper Providence Twp.
- Darby Creek Joint Authority
  - Alden Boro
  - Clifton Heights Boro
  - Collingdale Boro
  - Colwyn Boro
  - Darby Boro
  - Darby Twp.
  - Folcroft Boro
  - Lansdowne Boro
  - Sharon Hill Boro
  - Springfield Twp.
  - Upper Darby Twp.
  - Yeadon Boro

Legend:
- M: Motor-Operated Valve
- I: Interceptor
- F: Force Main
- W: Pump Station

Dry weather and a portion of wet weather flows to WRTP.
Flow above 20 MGD to PWD-SWPCP.

Philadelphia Water Department Southwest Water Pollution Control Plant (PWD-SWPCP)
Executive Summary

Delaware County Regional Water Quality Control Authority

LTCPU System Characterization

Model Area Characteristics

- Land Characteristics
  - Pervious vs. Impervious
  - Storm Water Infiltration vs. Runoff

- Obtain Collection System Data - DELCORA Existing Sewer Maps, Design Drawings and Field Surveys

- Collection System Piping

- Collection System Pump Stations – 7 Pump Stations

- Collection System Subcatchments – 55 CSO Subcatchments, 56 Separated Sewer Subcatchments

- Collection System CSO Regulator Structures

- CSO Regulator Improvement Program - 80% of Regulators Upgraded
# LTCPU System Characterization

## 26 Regulators and 25 CSO Outfalls

<table>
<thead>
<tr>
<th>Name of Receiving Stream</th>
<th>CSO Regulator/Outfall</th>
<th>Interceptor/CSO Regulator Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaware River</td>
<td>002</td>
<td>Front and Booth</td>
</tr>
<tr>
<td>Delaware River</td>
<td>003</td>
<td>Front and Highland</td>
</tr>
<tr>
<td>Delaware River</td>
<td>004</td>
<td>Front and Haves</td>
</tr>
<tr>
<td>Delaware River</td>
<td>005</td>
<td>Front and Townsend</td>
</tr>
<tr>
<td>Delaware River</td>
<td>007</td>
<td>Delaware and Reaney</td>
</tr>
<tr>
<td>Delaware River</td>
<td>008</td>
<td>2nd and Tilghman</td>
</tr>
<tr>
<td>Delaware River</td>
<td>009</td>
<td>2nd and Lloyd</td>
</tr>
<tr>
<td>Delaware River(1)</td>
<td>010</td>
<td>5th and Pusey</td>
</tr>
<tr>
<td>Delaware River</td>
<td>011</td>
<td>2nd and Parker</td>
</tr>
<tr>
<td>Delaware River</td>
<td>013</td>
<td>2nd and Welsh</td>
</tr>
<tr>
<td>Delaware River</td>
<td>014</td>
<td>3rd and Upland</td>
</tr>
<tr>
<td>Delaware River(2)</td>
<td>032</td>
<td>2nd and Avenue of The States</td>
</tr>
<tr>
<td>Chester Creek</td>
<td>012</td>
<td>2nd and Edgmont</td>
</tr>
<tr>
<td>Chester Creek</td>
<td>019</td>
<td>14th and Crozer Hospital</td>
</tr>
<tr>
<td>Chester Creek</td>
<td>020</td>
<td>Kerlin and Finland</td>
</tr>
<tr>
<td>Chester Creek</td>
<td>021</td>
<td>9th and Sproul</td>
</tr>
<tr>
<td>Chester Creek</td>
<td>022</td>
<td>6th and Sproul</td>
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<tr>
<td>Chester Creek</td>
<td>023</td>
<td>3rd and Edgmont</td>
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<td>3rd and Dock</td>
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<td>5th and Penn</td>
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<td>Ridley Creek</td>
<td>015</td>
<td>4th and Melrose</td>
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<td>016</td>
<td>8th and McDowell</td>
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<td>017</td>
<td>9th and Campbell</td>
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<td>Ridley Creek</td>
<td>018</td>
<td>Sun Drive and Hancock Street</td>
</tr>
<tr>
<td>Ridley Creek(3)</td>
<td>033</td>
<td>Elkington Boulevard and Ridley Creek</td>
</tr>
</tbody>
</table>

**Notes:**

1. CSO Regulator #010 Discharges to Delaware River through CSO Outfall #009
2. No Mechanical Regulator Used for this Outfall
3. Regulator No Longer Connected to Combined Sewer System, but has not yet been Deleted from NPDES Permit
LTCP System Characterization

- Receiving Water Characteristics

- Receiving Waters: Delaware River (Downstream of R.M. 81.8), Delaware River (Upstream of R.M. 81.8), Chester Creek, and Ridley Creek

- Parameters Considered: DRBC WQR, PA Code, NPDES Permit, CSO Guidance Document, 303(d) List, Detected at Plant Influent.

- Identified Pollutants of Concern (POCs) for each Receiving Water Body
  - Fecal Coliform Bacteria
  - Enterococcus Bacteria
  - Escherichia Coli (E. Coli) Bacteria
LTCPW System Characterization

- Combined Sewer System Modeling
  - Based on EPA Storm Water Management Model (SWMM)

- Simulates Runoff and Flow of Sewage Through Collection System During Storm Events

- Used to Estimate Existing (Baseline) CSO Discharge Volume to Receiving Water Bodies

- Used to Evaluate Effect of Proposed CSO Control Alternatives on CSO Discharge Volume
  - Helps Evaluate Effectiveness of Proposed Alternative
LTCPU System Characterization

- Water Quality Modeling
  - Software - Environmental Fluid Dynamics Code (EFDC)

- Simulate Effect of CSOs on Water Quality of Receiving Streams under Existing Conditions (Baseline)

- Used to Evaluate Effect of Proposed CSO Control Alternatives on Water Quality
LTCPU System Characterization

- Final System Characterization Report
  - Submit Report to USEPA by August 2017
  - Baseline H&H Modeling Results

- Final Water Quality Modeling Results Report Complete and Submitted by February 2018
LTCPUSensitive Areas

- Sensitive Areas
- Conducted Survey to Assist in Designated Use Determination Per Consent Decree
- The CSO Control Policy states the six (6) criteria for defining an area as a “Sensitive Area” include:
  1. Designated Outstanding National Resource Waters
  2. National Marine Sanctuaries
  3. Waters with Threatened or Endangered Species and Their Habitat
  4. Waters with Primary Contact Recreation
  5. Public Drinking Water Intakes or Their Designated Protected Areas
  6. Shellfish Beds
LTCPUs Sensitive Areas

Sensitive Areas
Future Public Meetings

■ 3\textsuperscript{rd} Meeting – December 5, 2017
  Topic: Development and Evaluation of Alternatives for CSO Controls
  When: 4\textsuperscript{th} Quarter 2017
  Where: Chester City Hall
  1 E. 4\textsuperscript{th} Street; Chester, PA 19103

■ 4\textsuperscript{th} Meeting
  Topic: Selection and Implementation of the Long-Term Plan
  When: 3\textsuperscript{rd} Quarter 2018
  Where: Aston Township Administration Building
  5021 Pennell Road; Aston, PA 19014
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
Delaware County Regional Water Quality Control Authority

Delaware County, PA

DELCORA WEBSITE

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Newsletter

Sign-Up Sheet

-Thank You-
Discussion - Q&A