Delaware County Regional Water Quality Control Authority
DELCORA
Delaware County, PA

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

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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"

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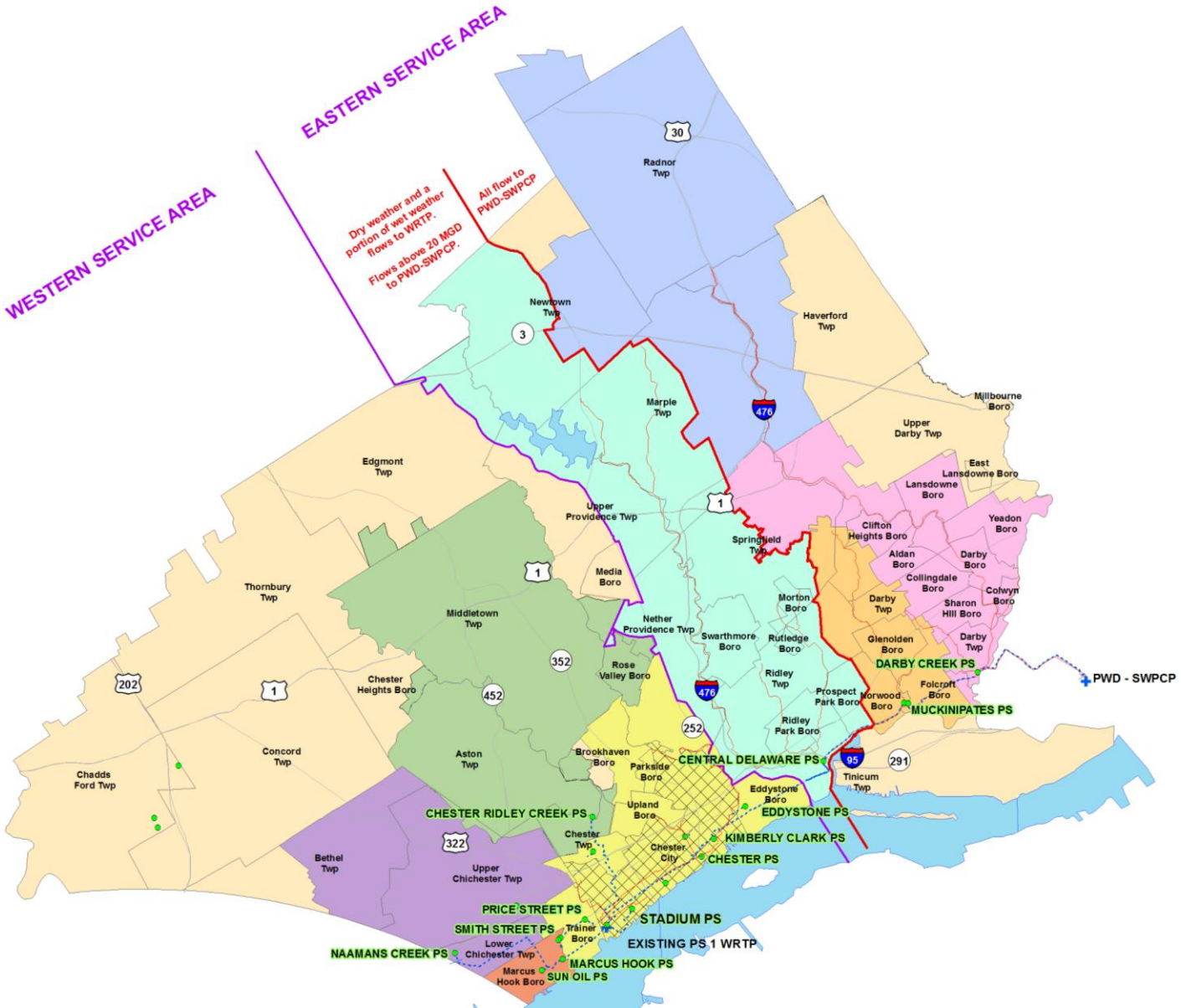
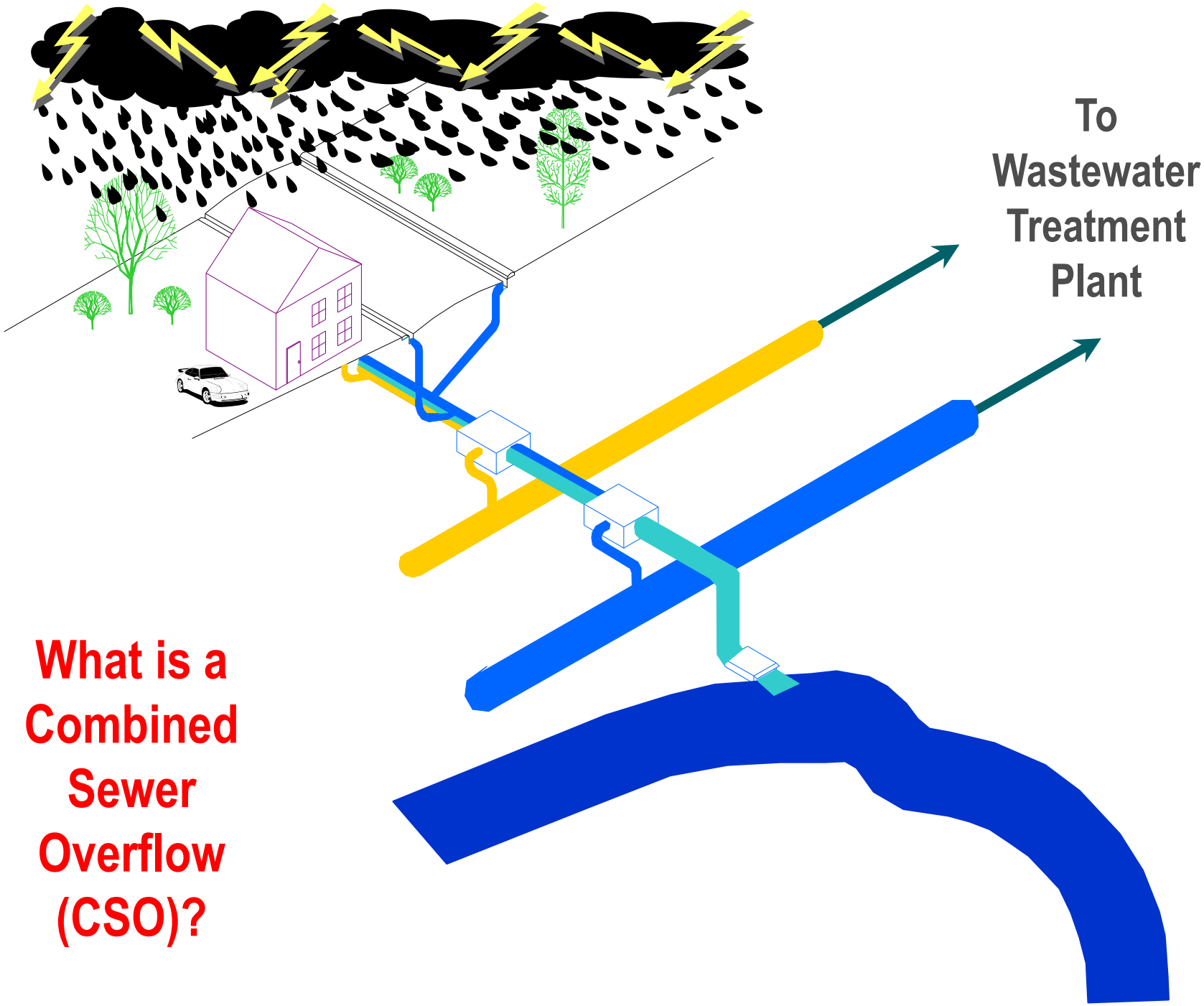
DELCORA Service Area





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.

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DELCORA Combined Sewer Area

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

Philadelphia LTCP

DELCORA is Currently Contributing to Philadelphia LTCP

- *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.*

DELCORA LTCP Background

- 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.

LTCP Background (Continued)

- 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.

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

LTCPU 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

Financial Capability Assessment (FCA)

- The Consent Decree Requires DELCORA 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

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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**

LTCPU System Characterization

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

LTCPU System Characterization

- 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."*

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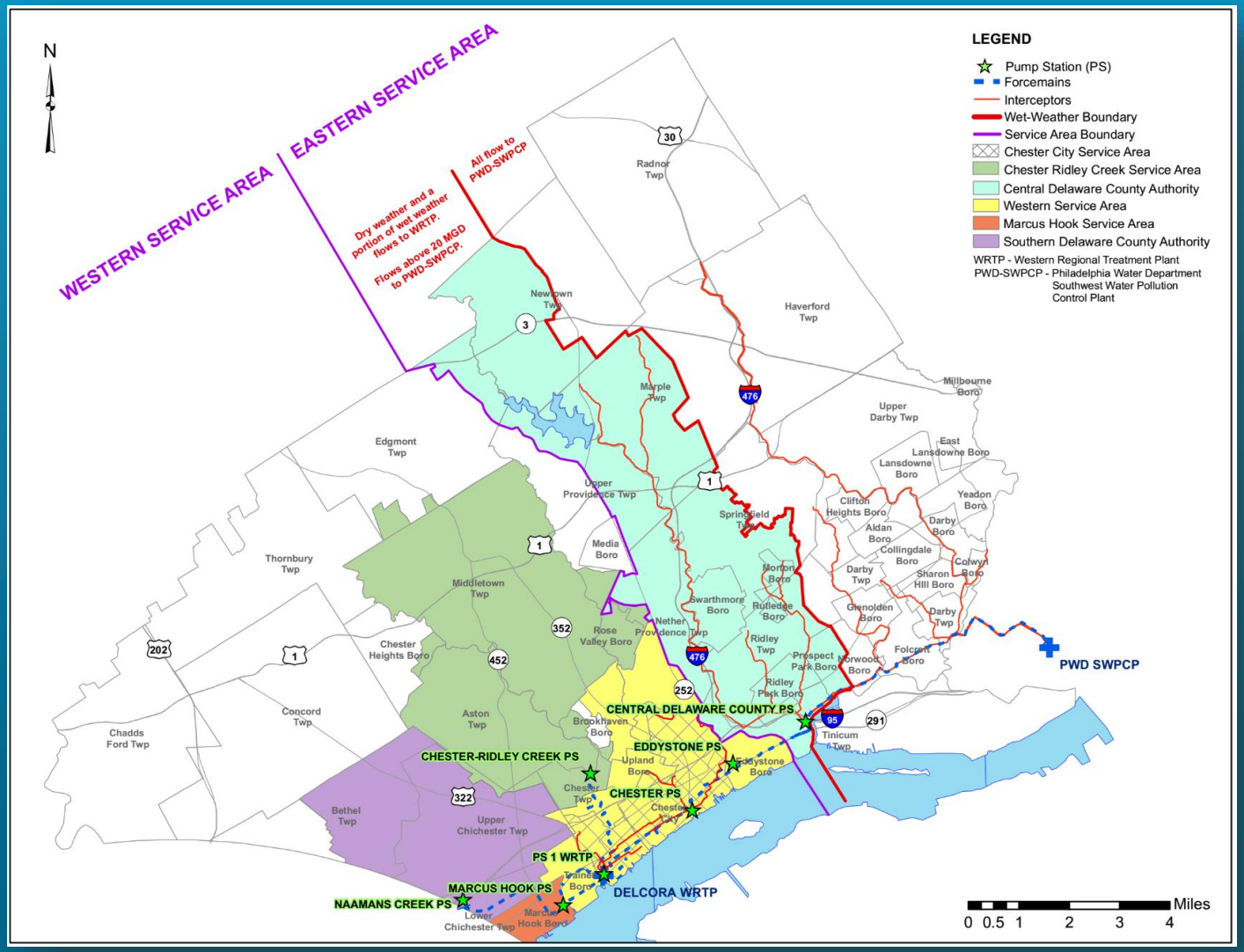
LTCPU System Characterization

Model Area

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



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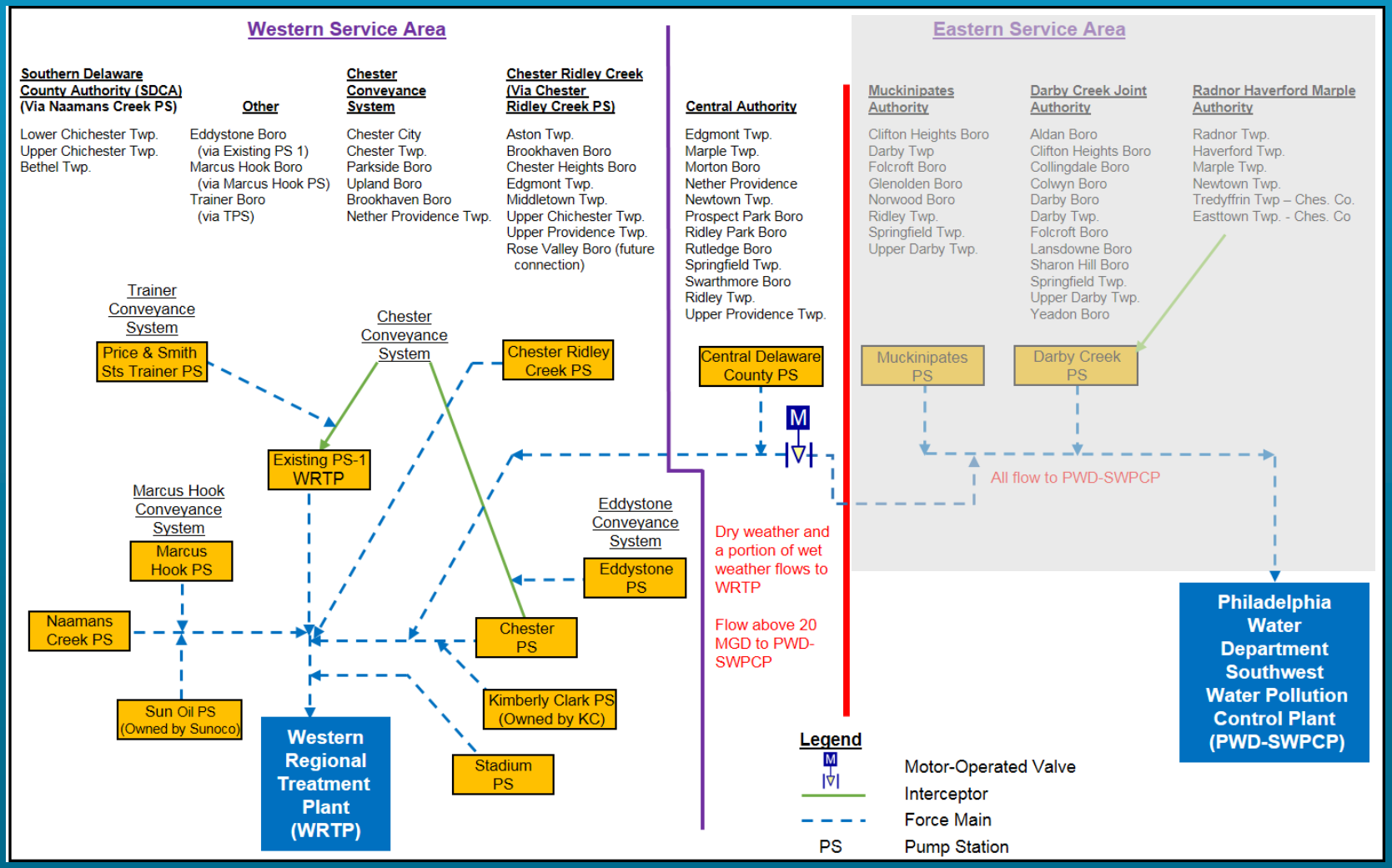
LTCPU System Characterization

Model Area



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

Name of Receiving Stream	CSO Regulator/Outfall	Interceptor/CSO Regulator Location
Delaware River	002	Front and Booth
Delaware River	003	Front and Highland
Delaware River	004	Front and Haves
Delaware River	005	Front and Townsend
Delaware River	007	Delaware and Reaney
Delaware River	008	2nd and Tilghman
Delaware River	009	2nd and Lloyd
Delaware River(1)	010	5th and Pusey
Delaware River	011	2nd and Parker
Delaware River	013	2nd and Welsh
Delaware River	014	3rd and Upland
Delaware River(2)	032	2nd and Avenue of The States
Chester Creek	012	2nd and Edgmont
Chester Creek	019	14th and Crozer Hospital
Chester Creek	020	Kerlin and Finland
Chester Creek	021	9th and Sproul
Chester Creek	022	6th and Sproul
Chester Creek	023	3rd and Edgmont
Chester Creek	024	3rd and Dock
Chester Creek	025	5th and Penn
Chester Creek	026	7th and Penn
Ridley Creek	015	4th and Melrose
Ridley Creek	016	8th and McDowell
Ridley Creek	017	9th and Campbell
Ridley Creek	018	Sun Drive and Hancock Street
Ridley Creek(2)	033	Elkington Boulevard and Ridley Creek

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

LTCPU 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

LTCPU 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

LTCPU Sensitive 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

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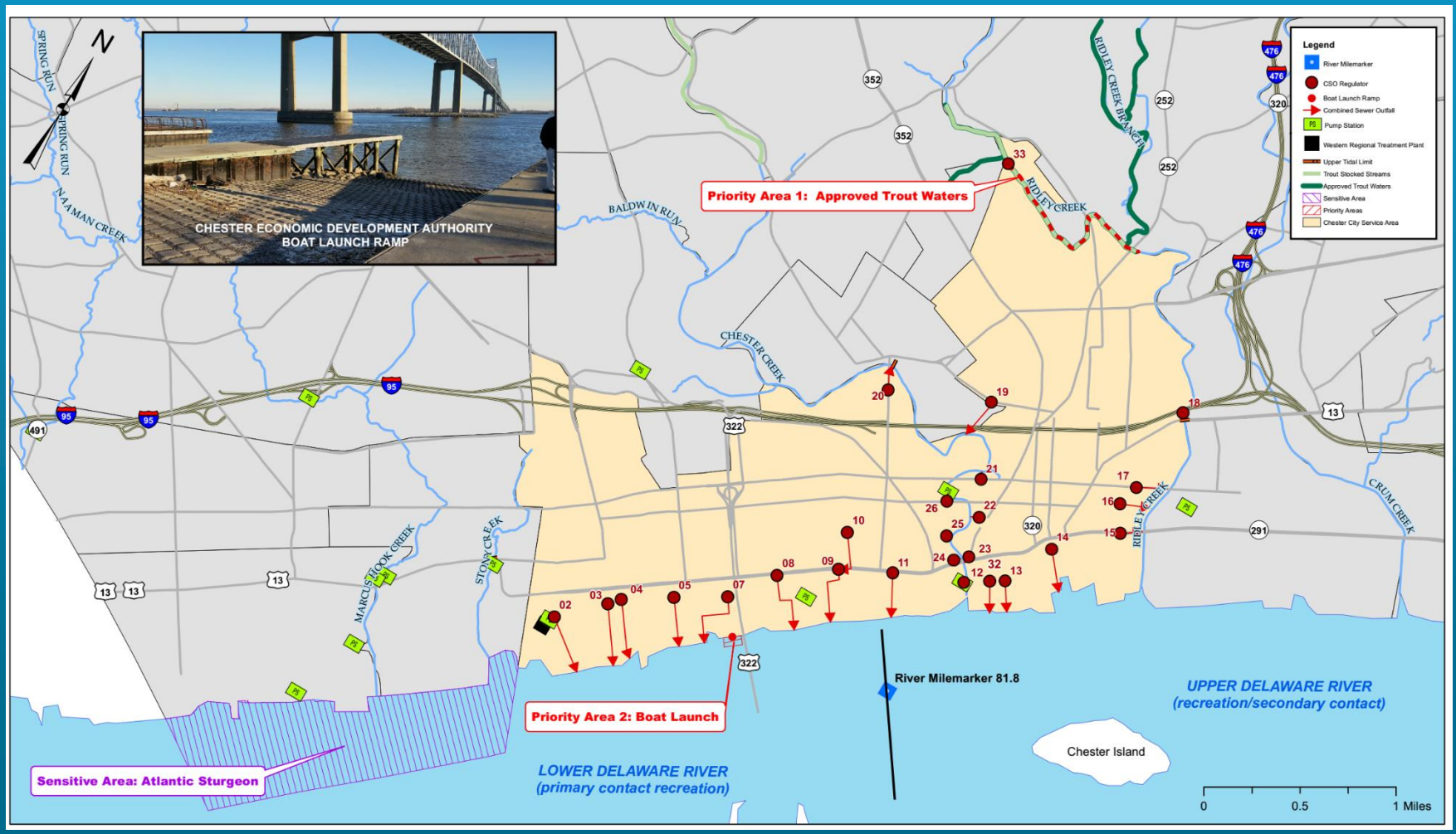
LTCPU Sensitive Areas

Sensitive Areas



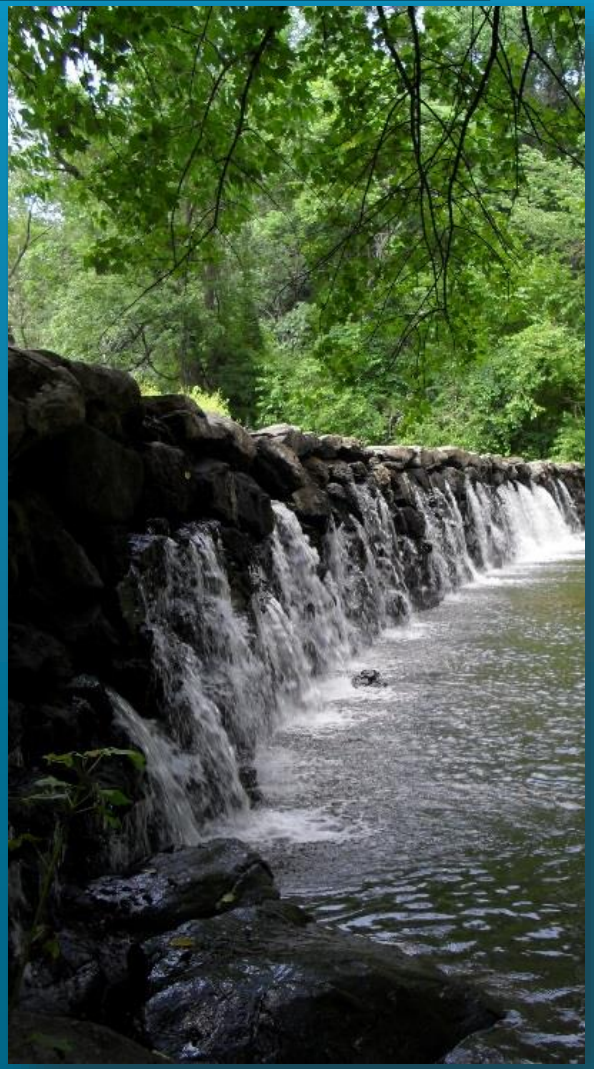
Future Public Meetings

- **3nd Meeting – December 5, 2017**

  Topic: **Development and Evaluation of Alternatives for CSO Controls**
  When: 4th Quarter 2017
  Where: Chester City Hall
  1 E. 4th Street; Chester, PA 19103

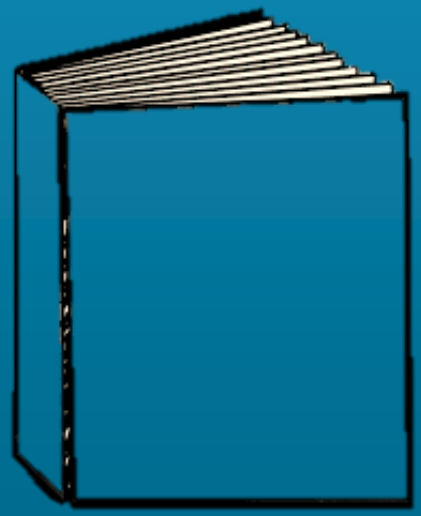
- **4th Meeting**

  Topic: **Selection and Implementation of the Long-Term Plan**
  When: 3rd 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



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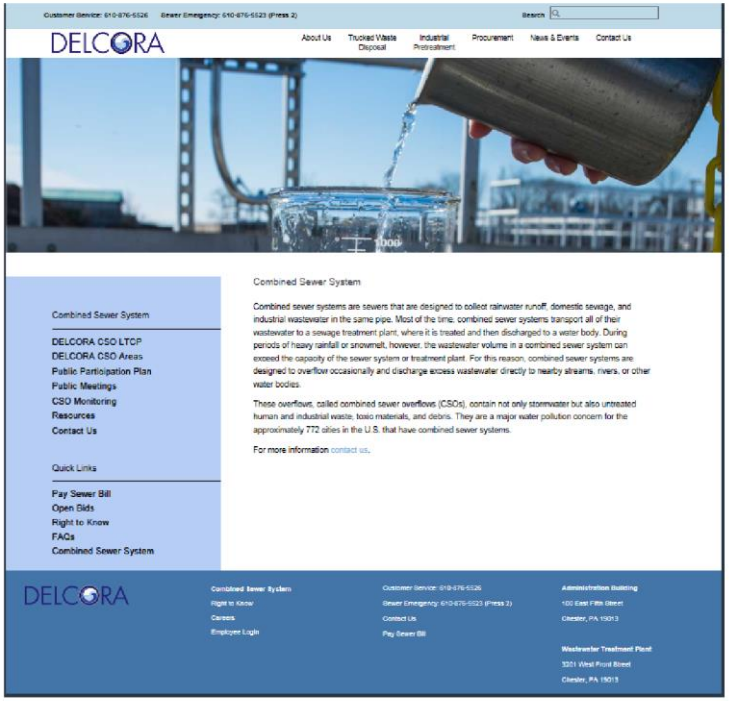

www.delcora.org

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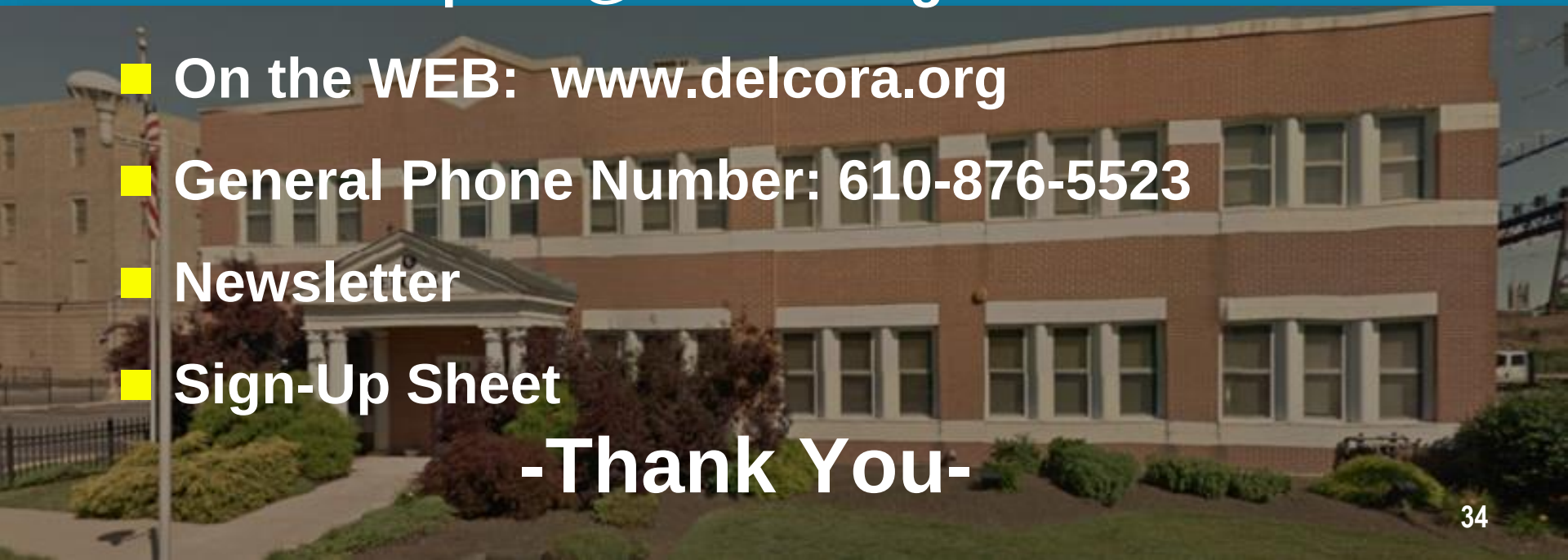
- **General Phone Number: 610-876-5523**
- **Newsletter**
- **Sign-Up Sheet**



-Thank You-

Discussion - Q&A