



Combined Sewer Overflow - Long Term Control Plan Update

DELCORA

Public Participation Meeting No. 5
LTCPU Development and Evaluation
of Alternatives for Combined Sewer
Overflow Controls

June 9, 2020

Virtual Meeting



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”



Scope of Meeting

- This Public Meeting (6/9/20) is to:
 - ◆ Overview DELCORA Service Area
 - ◆ Present the proposed Control Sewer Overflow Control Plan
 - ◆ Describe Next Steps Towards Development of Long Term Control Plan Update (LTCPU)
 - ◆ Questions and Comments



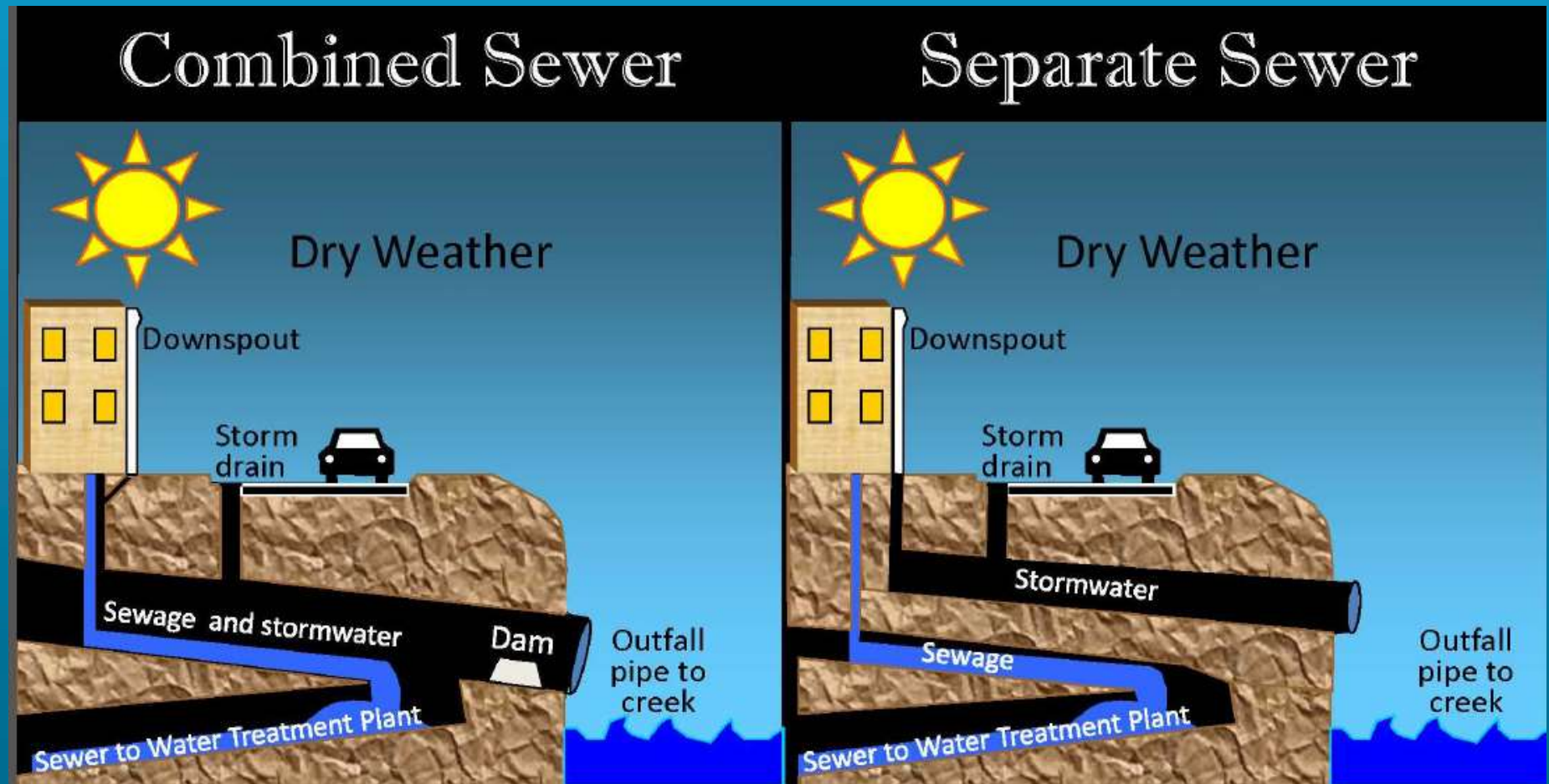
Public Participation Program Goals

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





Combined Sewer System vs. Separated Sewer

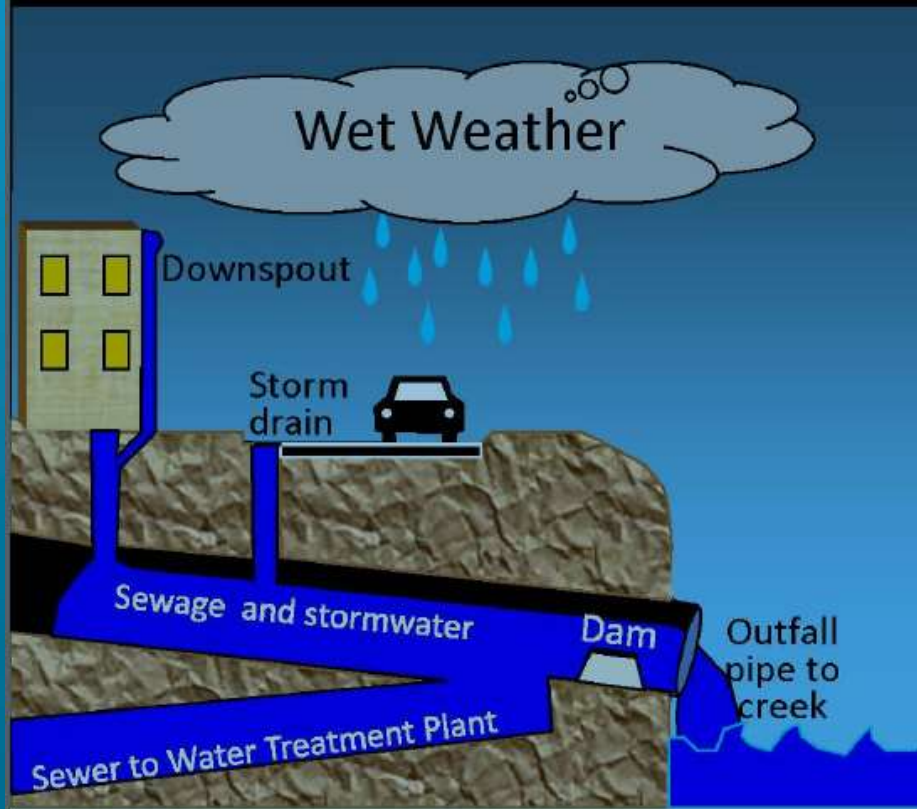


Source: City of Alexandria,
<https://www.alexandriava.gov/uploadedFiles/tes/oeq/CSSPermitInfoMeetingandPublicHearingPresentation08052013.pdf>

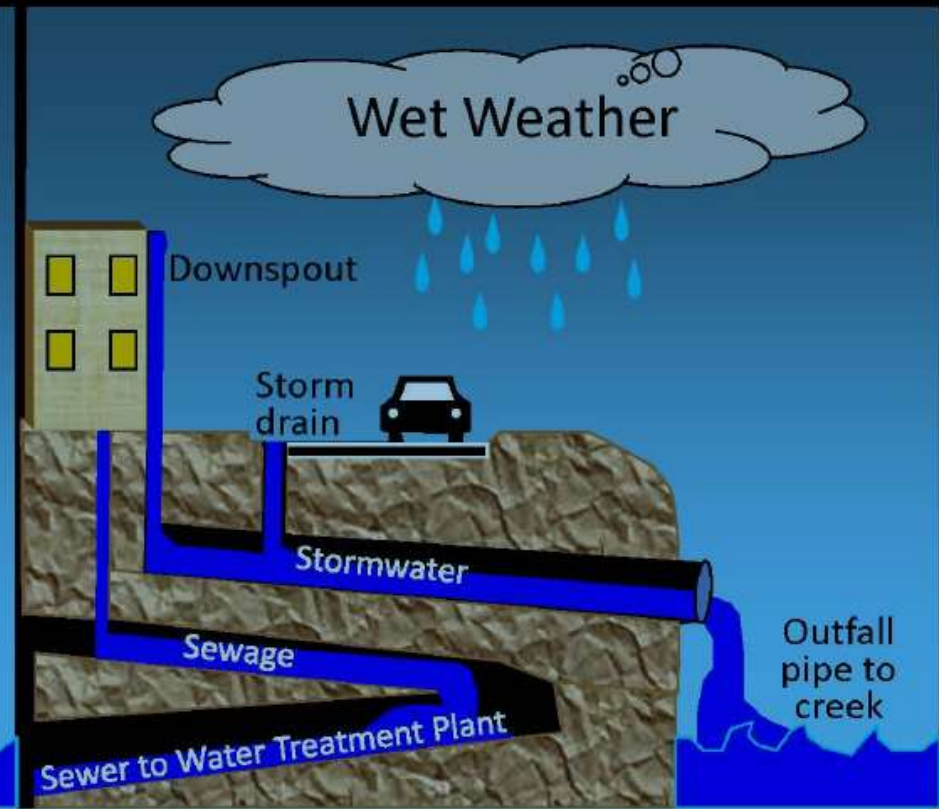


Combined Sewer System vs. Separated Sewer System

Combined Sewer



Separate Sewer

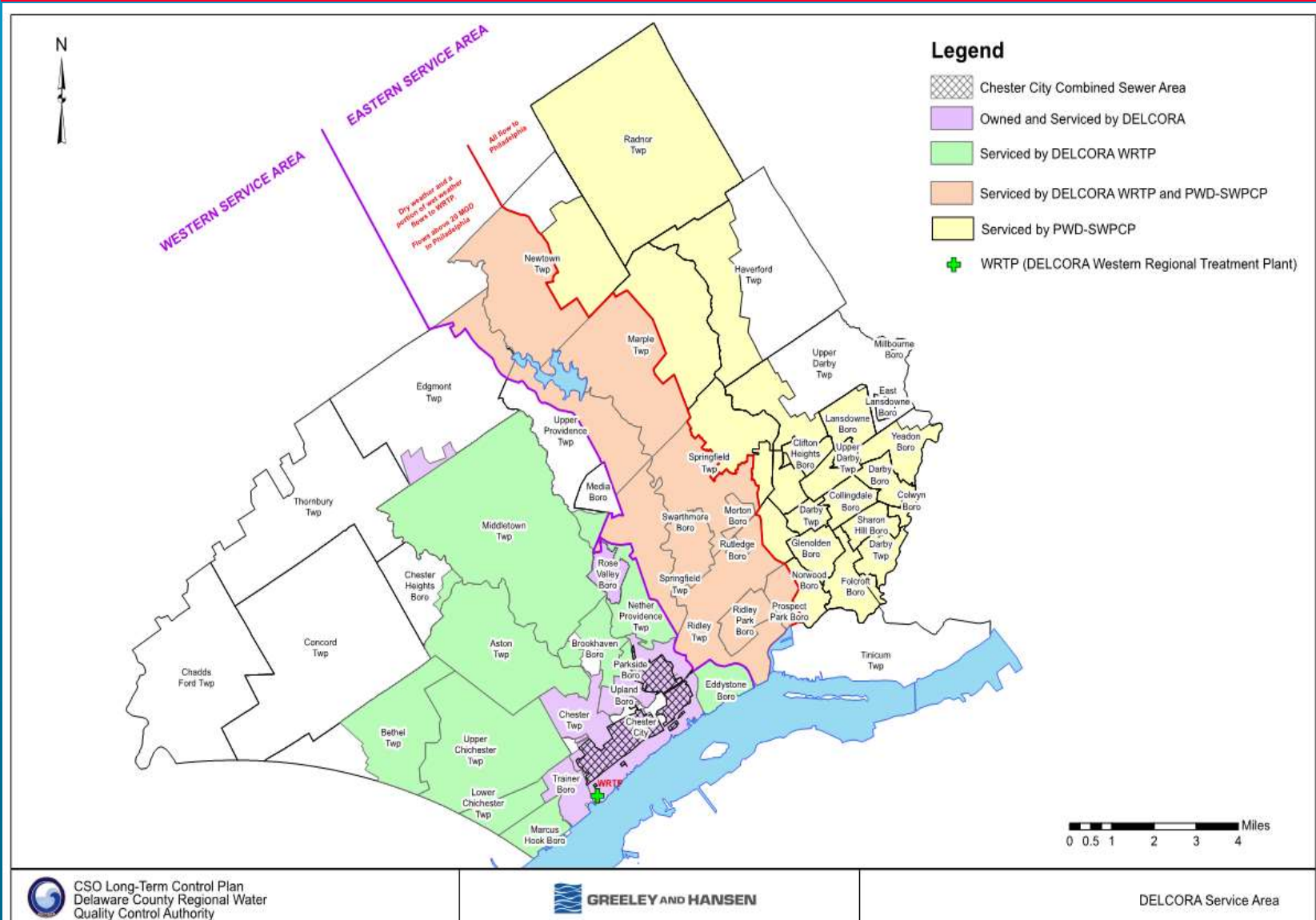


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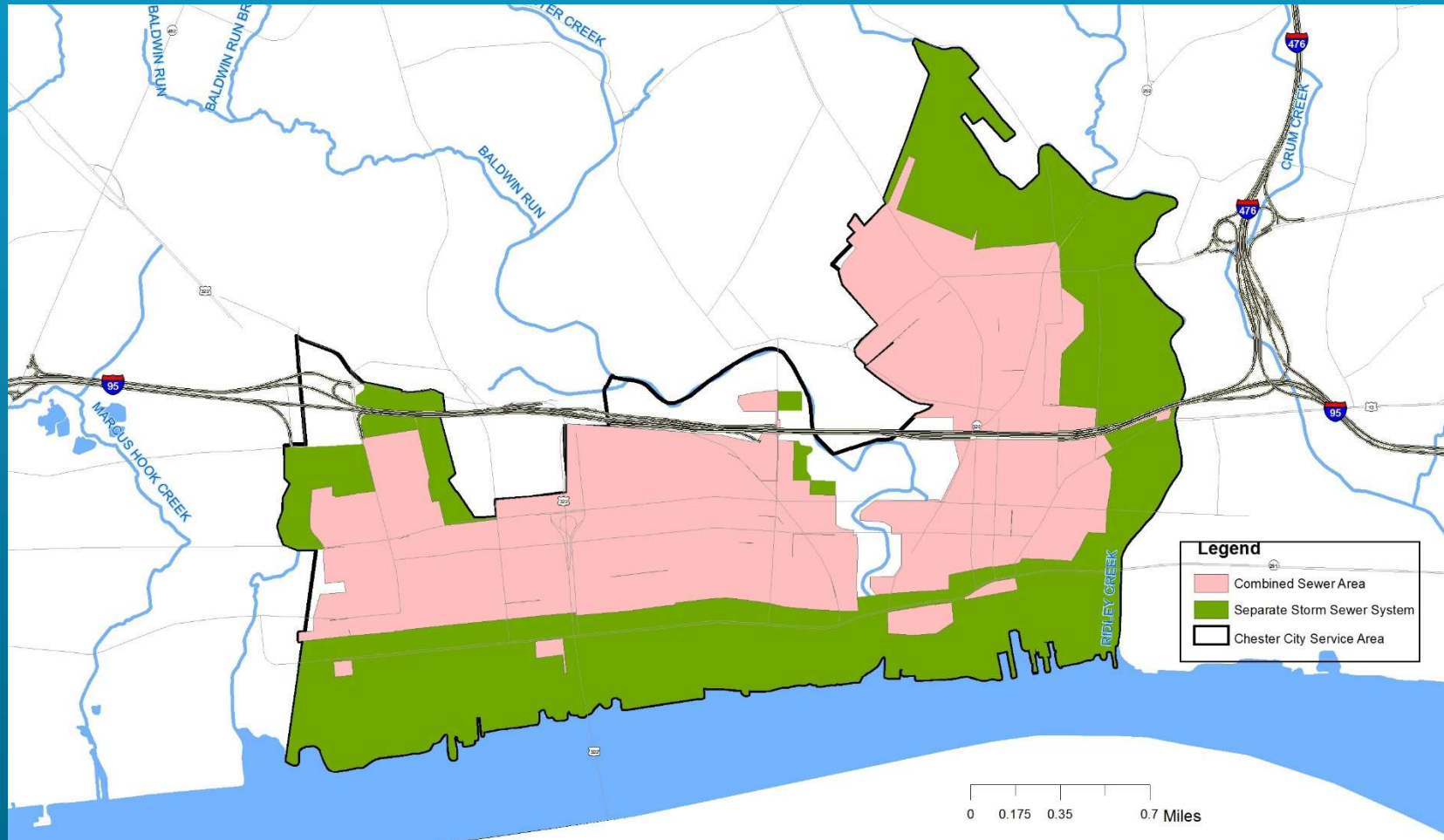


DELCORA Service Area





Chester City Service Area





LTCPU Program Schedule

Consent Decree Date of Lodging
August 17, 2015

Consent Decree LTCP Submittal
Feb. 17, 2019

5th Public Meeting
June 2020



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 capability 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 4th public meeting.

2019

- Submitted final reports to the EPA.

2020

- Hold 5th Public Meeting to present Proposed CSO Control Plan and submit final revised report to EPA and DEP.



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 5, 2018
 - ◆ New PS-6 moves more wet weather flow into the plant





Improvement Costs to Date

- From 1999-2018 DELCORA invested in excess of \$100 Million

- ◆ Includes

- overall system improvements
- contributions to the City of Chester

- ◆ Resulted in

- decreased volume of overflows,
- reduced debris in overflows,
- remote monitoring of the system,
- 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

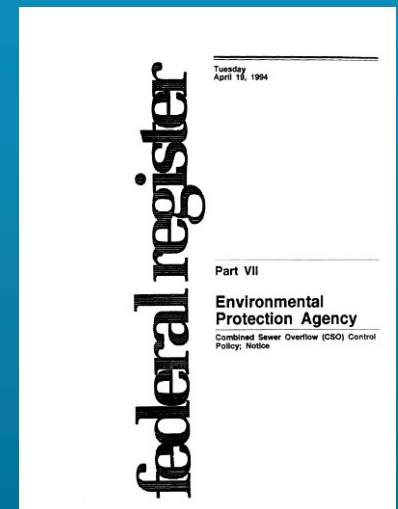
Annual informational
flyers mailed to
customers





National CSO Policy Requirements

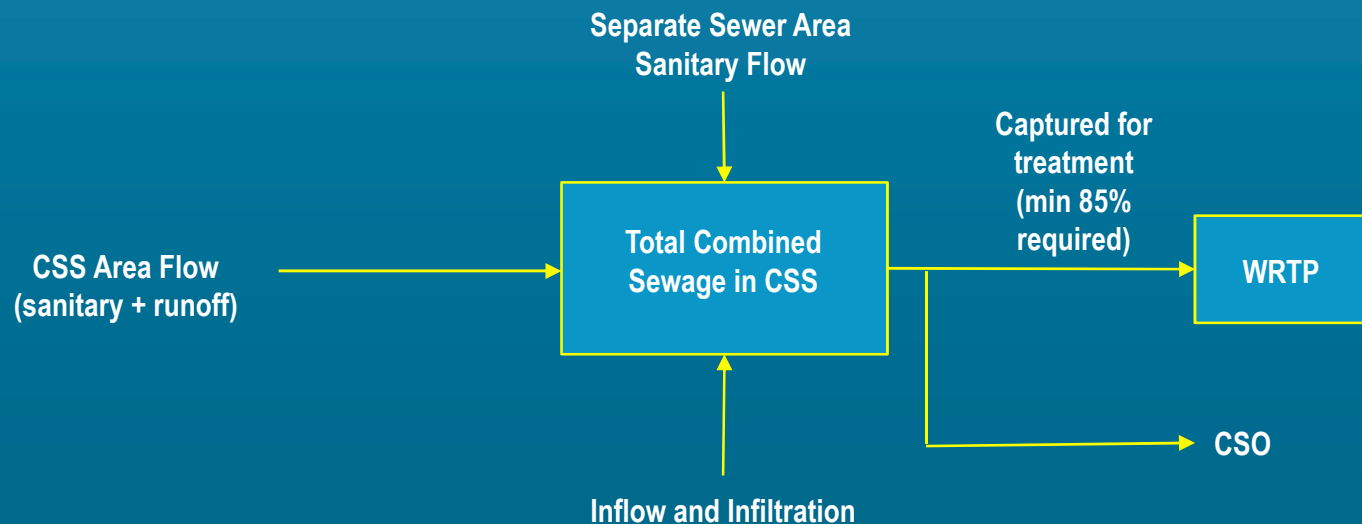
- National CSO Policy provides guidance to develop the LTCPU:
 - ◆ To meet one of the following (Presumption Approach):
 - No more than an average of 4 overflows a year
 - Elimination or capture for treatment of at least 85% of combined sewage volume during wet weather events
 - Elimination or removal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





What is Percent Capture?

- Percent of Combined Sewer System (CSS) volume captured for treatment during precipitation events
 - ◆ Precipitation event – Precipitation period + Period for CSS to drain
 - Period for CSS to drain
 - ◆ Period for runoff to pass through CSS (approx. 6-12 hours)
 - ◆ Time until flow returns to Dry Weather Flow





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 Water Quality Standards (subject to verification monitoring post-construction).
- Looked at over 15 combinations of technologies to reduce CSOs (includes required technologies as per consent decree)
- Estimated the costs associated for completing all projects in an alternative (Capital Cost) plus the cost of maintenance and operation for 20 years (Life Cycle Cost)



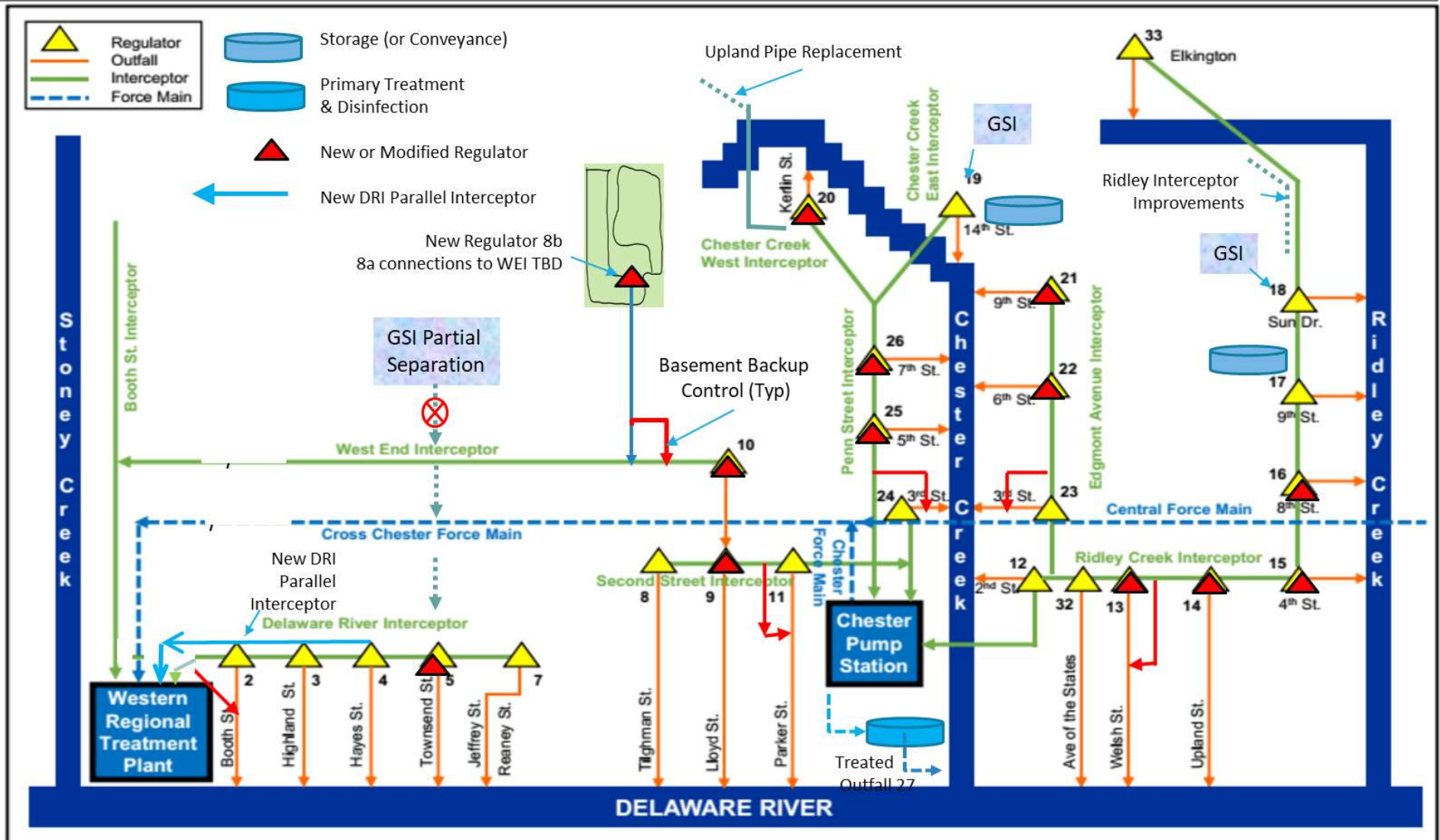
Proposed 2020 CSO Control Plan

- Developed based on inputs from Public Outreach, other public meetings, PADEP/EPA Review
- Require specific action to address unauthorized Combined Sewer Overflows and Sanitary System Overflows
- Require at least 85% capture in the Ridley Creek, Chester Creek and Delaware River
- Address high overflow frequency at certain priority CSO outfalls



DRAFT 2020 LTCP Elements

(Pump Station Improvements not shown)





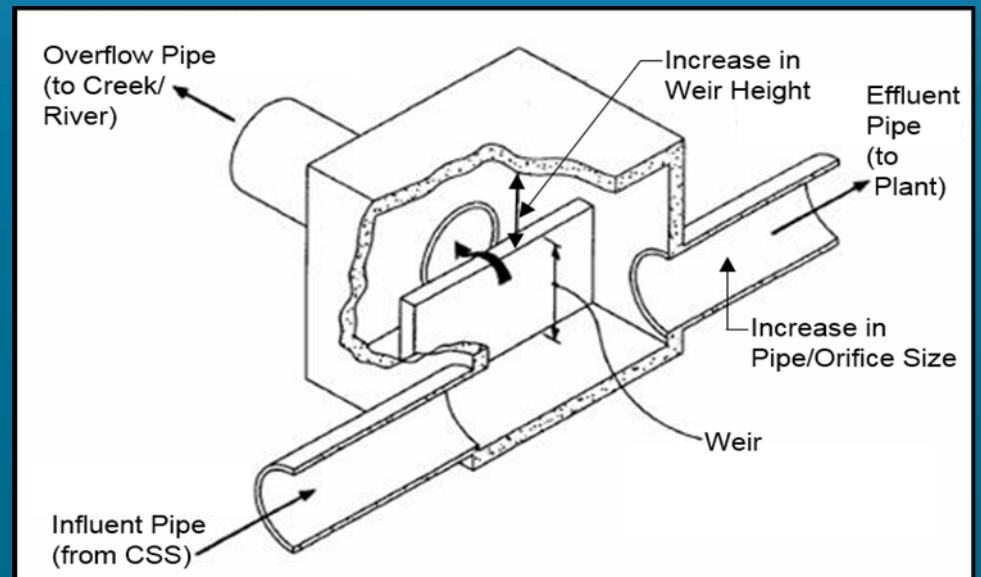
Discussion of Proposed CSO Controls

- Regulator Modifications
- Parallel Conveyance/Pipe Extension
- Diversion Piping
- Sewer Separation
- Storage
- Satellite Treatment
- Treatment Plant Improvements
- Management of Unauthorized Releases
- Green Stormwater Infrastructure (GSI)



Proposed CSO Control Plan: Regulator Modifications

- ◆ Target Areas - Ridley Creek, Chester Creek and Delaware River Watersheds
- ◆ Regulator modifications at 16 locations to maximize flow to the treatment plant using existing infrastructure.
- ◆ Can raise weir height or increase the size of effluent pipes (to interceptor), orifices, or gates.
- ◆ Allows more flow to enter the collection system and prevents CSOs during smaller storms.





Proposed CSO Control Plan: Parallel Conveyance/Pipe Extension

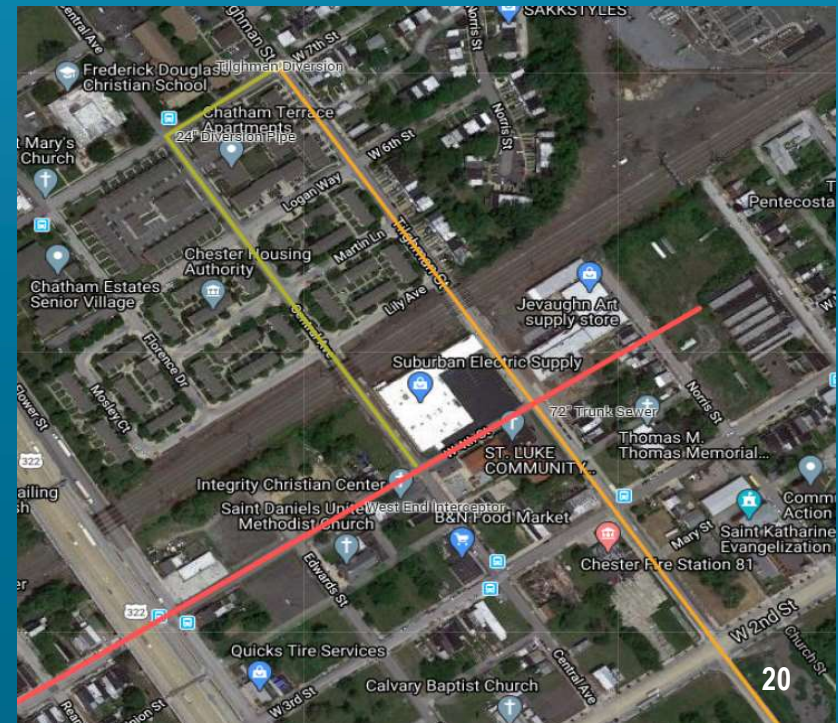
- ◆ Target Areas – Delaware River Watershed
- ◆ A parallel conveyance pipe along Front St. from Hayes St. to Clayton St.
 - Increases CSS volume capture and reduces overflow
- ◆ Restoration and extension of an existing line at Clayton and Front Streets.
 - Relieves bottleneck and allows more CSS volume capture





Proposed CSO Control Plan: Diversion Pipe

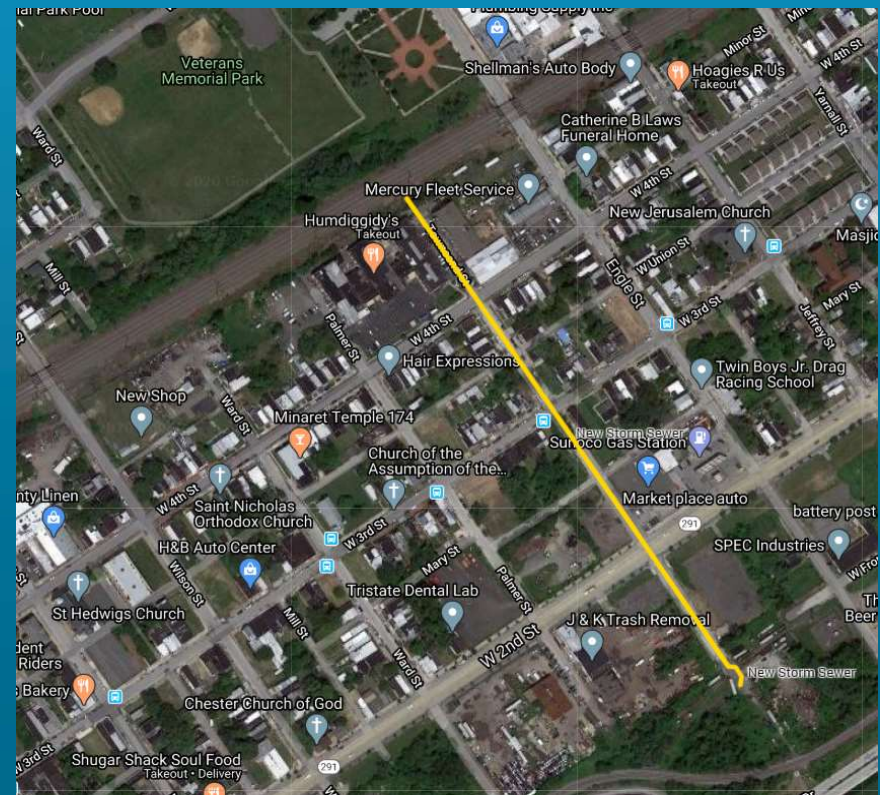
- Target Area – Delaware River Watershed
 - ◆ The boat ramp along the Delaware River is a public access point with an adjacent outfall (CSO-08)
 - ◆ Installing a diversion pipe at Tilghman Street and 7th Street to divert flows during storms to the West End Interceptor on 4th Street





Proposed CSO Control Plan: Sewer Separation

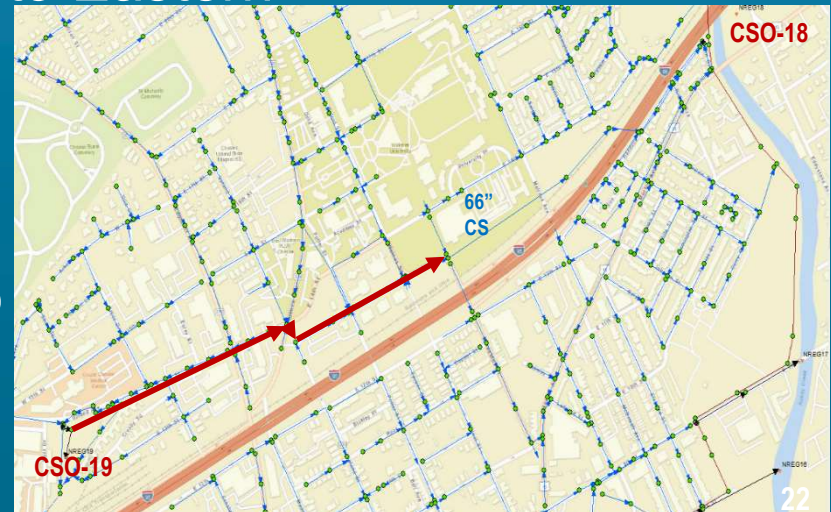
- Target Areas – Delaware River Watershed
- Installation of new piping to separate the combined sewer area north of Veterans Memorial Park
- Reduce flooding at Veteran's Memorial Park
- Reduction of sanitary discharges to receiving water
- Increased storm water discharge to receiving waters





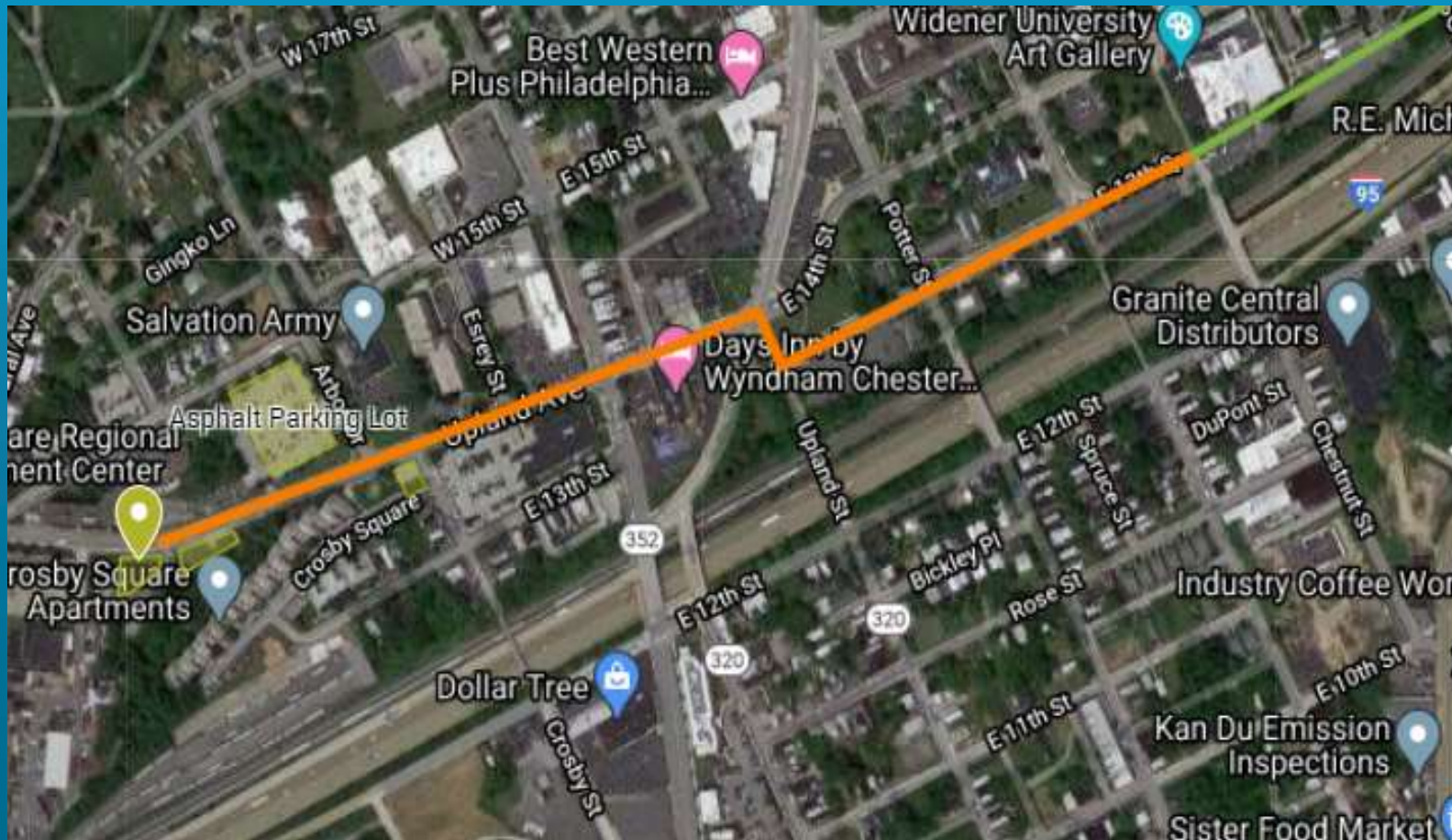
Proposed CSO Control Plan: Combined Sewer Storage

- Target Areas – Ridley Creek Watershed, Chester Creek Watershed
- Combined sewer storage at CSO-18 and CSO-19.
- Alternative 1 - Replace the storage at CSO 19 with a pump out to a larger tank at CSO-18
- Alternative 2 – Replace the storage at CSO 19 and CSO-18 with a pump out to Eastern Service Area (ESA) via Microtunnel
- Opportunities for synergies with other capital programs to reduce storage





Storage Tank Alternative for CSO 19





Below Grade Storage Tank (Example Photos)





Above Grade Storage Tank (Example Photos)





Proposed CSO Control Plan: Satellite Treatment at Chester Pump Station

- Used to treat excess wet weather flow
- Primary treatment, Screening and Disinfection in one unit
- Small footprint
- Low maintenance



Source: Hydro International, https://hydro-int.com/sites/default/files/storm_king.pdf



Proposed CSO Control Plan: Treatment Plant Improvements

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





Proposed CSO Control Plan: CDPS and Upland Borough

■ Unauthorized Releases Control

◆ New Crum Creek Pump Station

- Addresses overflows at the DELCORA Central Delaware Pump Station (CDPS). This will reduce flows to the CDPS and reduce the incidence of Sanitary System Overflows at the CDPS.
- New pump station will have peak capacity of 24 MGD and will be located at the site of the existing pump station.

◆ Relief sewer pipe in Upland Borough

- Installation of a relief sewer line will mitigate unauthorized releases in Upland Borough.



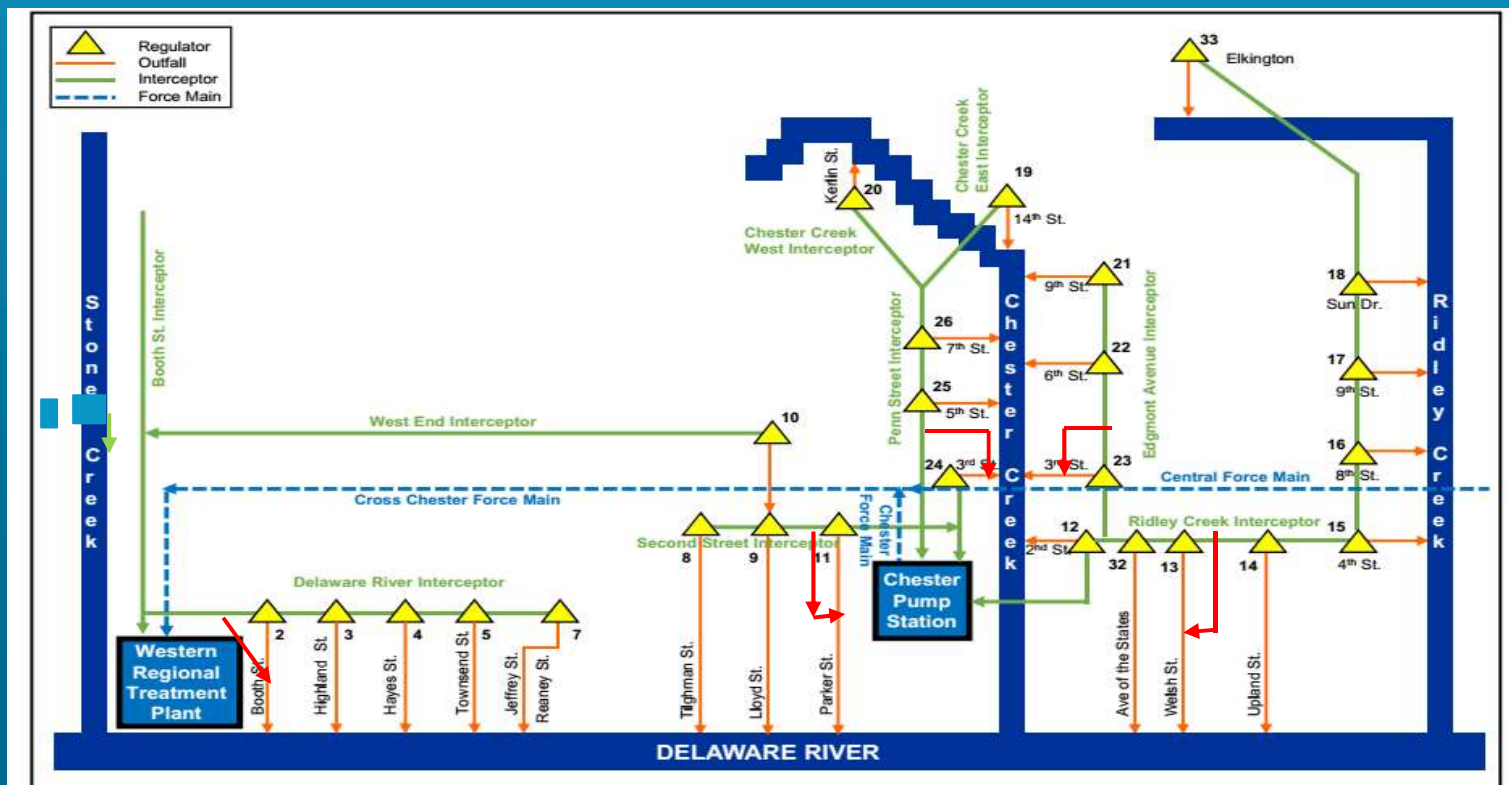


Proposed CSO Control Plan: Basement Backup Control

■ Unauthorized Releases Control (con't)

◆ Basement Backup Control

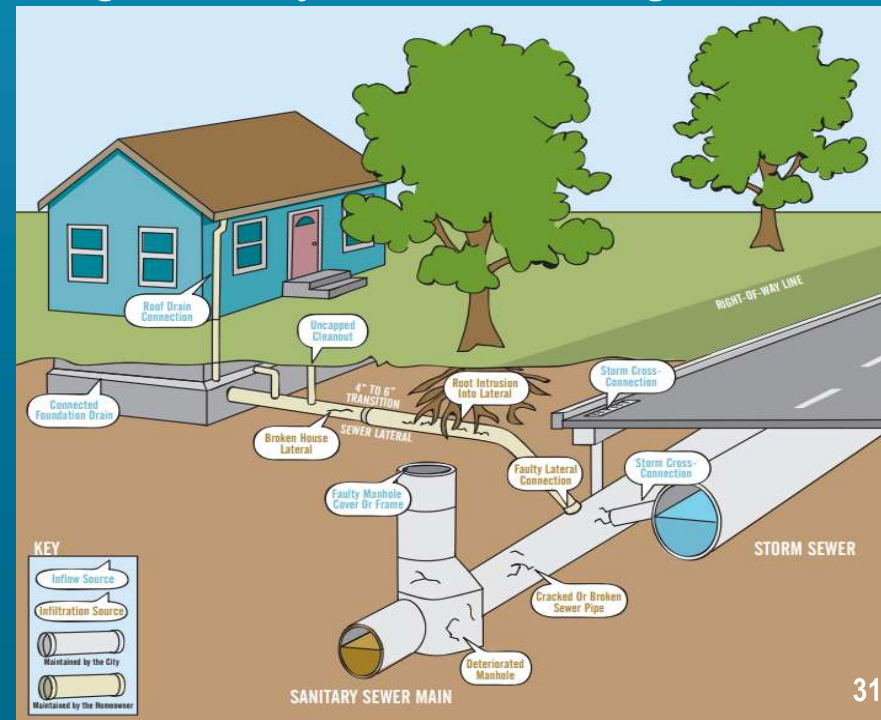
- Basement backup control structures to prevent surcharging of interceptors and basement backup during large storm events.





Proposed CSO Control Plan: Inflow/Infiltration Controls

- Unauthorized Releases Control - Old Mill Pump Station
 - ◆ Inflow – Water entering sanitary sewers through inappropriate connections
 - ◆ Infiltration – Groundwater entering sanitary sewers through defective pipe joints and cracked pipes.
 - ◆ Inflow/Infiltration (I/I) controls including manhole rehabilitation, public sewer lining, and pump station capacity increases will be implemented based on the results of the I/I studies.





Proposed CSO Control Plan: Taylor Arboretum

■ Unauthorized Releases Control

◆ Taylor Arboretum Modifications

- This will be addressed through an adaptive plan
- Regulator and overflow modifications at CSO Regulators 18 and 33 to reduce surcharge conditions in the Ridley Creek Interceptor
- Evaluation/implementation of manhole modifications to address additional surcharging
- Evaluation/implementation of controls to address excessive inflow/infiltration



Proposed CSO Control Plan Green Stormwater Infrastructure (GSI)

■ Additional Controls:

- ◆ Approach to stormwater management that protects, restores, or mimics the natural water cycle (American Rivers, 2016)
- ◆ Reduces and treats stormwater at its source while delivering environmental, social, and economic benefits
- ◆ GSI Elements include –
 - Downspout Disconnection, Rainwater Harvesting, Rain Gardens, Planter Boxes, Bioswales, Permeable Pavements, Green Streets and Alleys Green Parking Green Roofs
- ◆ Potential GSI locations North of I-95, near Veteran's Memorial Park and other possible sites being considered.





Property Impacts

- Exact project locations not selected
- Many projects in public Right-of-Way
- Some properties being considered are owned by commercial or public entities, including but not limited to parks
- Some properties being considered are privately owned and may have homes



CSO Improvements on Private Property

- Approach for projects proposed on private property
 - ◆ Notify landowners of proposed improvements
 - ◆ Communicate project requirements/alternatives
 - ◆ Develop land/easement offer of compensation
 - ◆ Communicate land/easement offer
 - ◆ Discuss concerns
 - ◆ Negotiate land/easement offer and concerns
 - ◆ Finalize land/easement paperwork
 - ◆ Construct CSO Improvements



Proposed CSO Control Plan

	Capital Cost (\$M)	LCC
Regulator Control Improvement		
Regulator Modifications	\$4.70	\$13.00
Targeted Overflow Reduction		
Parallel Delaware River Interceptor	\$3.30	\$3.40
West End Interceptor Rehab & Extension	\$2.50	\$2.60
Sewer Separation with Green/Gray Infrastructure	\$10.30	\$12.10
RCI Arboretum Modifications	\$7.40	\$17.50
Upland Relief Sewer Line	\$0.80	\$1.00
Rose Valley I/I Controls	\$3.10	\$3.10
Monitoring and Modeling	\$5.10	\$5.10
Public Outreach	\$3.10	\$3.10
Real Time Control	\$0.40	\$2.90
Crum Creek Pump Station	\$8.80	\$8.80
CSO Storage	\$22.2	\$33.9
Tilghman St Diversion	\$0.70	\$0.70
Basement Backup Controls	\$1.00	\$1.10
Satellite Treatment at Chester Pump Station	\$33.50	\$54.30
Project Management	\$5.10	\$5.10
Total	\$112.00	\$167.70



Proposed CSO Control Plan: Post Construction Monitoring Period

- ◆ 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.





Implementation of the LTCPU

- Regulator Control Improvements are ongoing.
- Targeted Overflow Reduction projects can be fully implemented within 12 years of regulatory approval, but depend on:
 - ◆ If excessive upstream flow into leaking pipes can be affordably addressed.
 - ◆ Eastern Service Area costs do not upset ratepayers' financial capability.
 - ◆ Recommended DELCORA treatment plant expansion approval by the PADEP and USEPA.
 - ◆ COVID-19 impacts may result in impacts to LTCP affordability.





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
- ★ Updated LTCP Final Report & Update NMCs Plan - Feb. 17, 2019
- ★ Public Participation Meeting – June 9, 2020
- ★ Regulator Control Improvements and Targeted Overflow Reduction Projects Complete – completed within 12 years from regulatory approval
- ★ Estimated completion of all LTCP projects - 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: 610-876-5526 Sewer Emergency: 610-876-5523 (Press 2)

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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 ground water 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](#)

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Combined Sewer System Right to Know Careers Employee Login

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Administration Building 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 wastewater 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 [contact us](#).

Quick Links

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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

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Chester, PA 19013

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■ On the WEB: www.delcora.org

■ General Phone Number: 610-876-5523

■ Newsletter

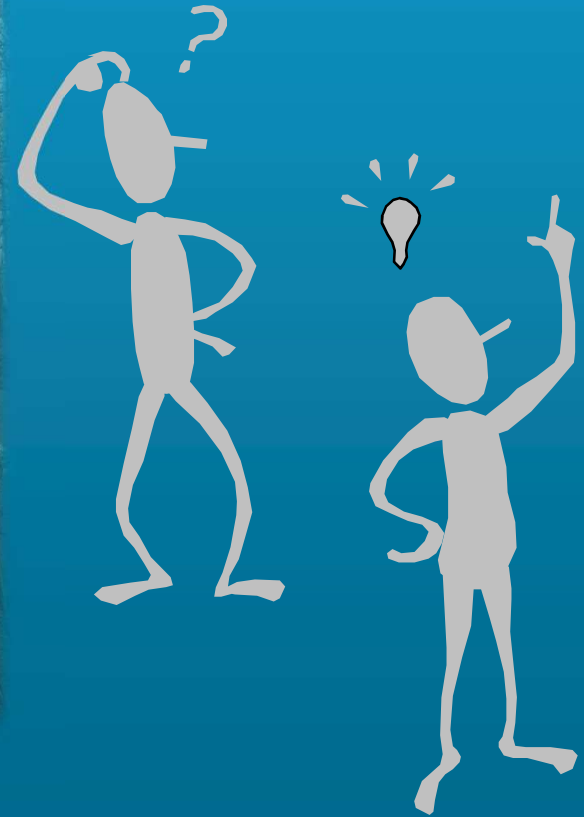
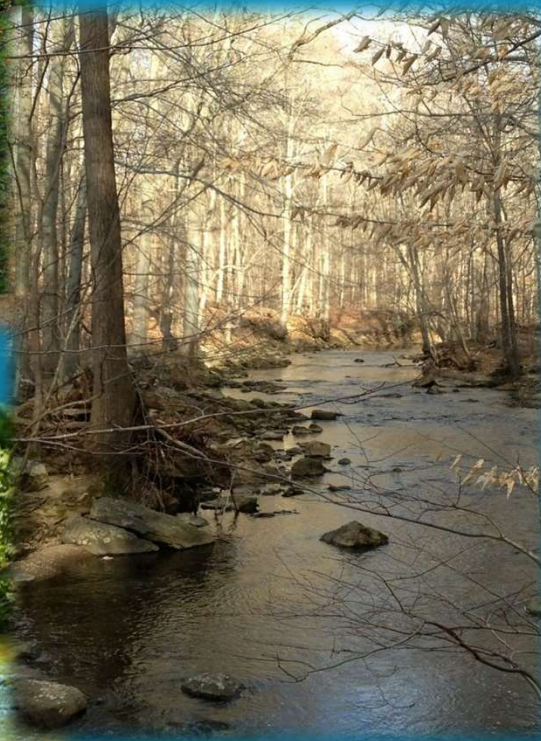
■ Sign-Up Sheet

-Thank You-





Discussion - Q&A





End of Presentation