

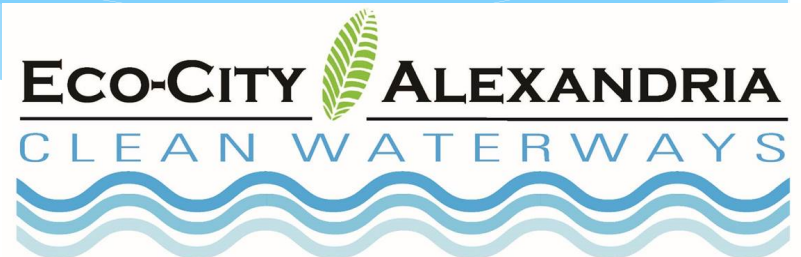
City of Alexandria, Virginia

Long Term Control Plan Update & Impacts of Recent Combined Sewer Legislation

May 30, 2017

Bill Skrabak, Deputy Director, Infrastructure and
Environmental Quality

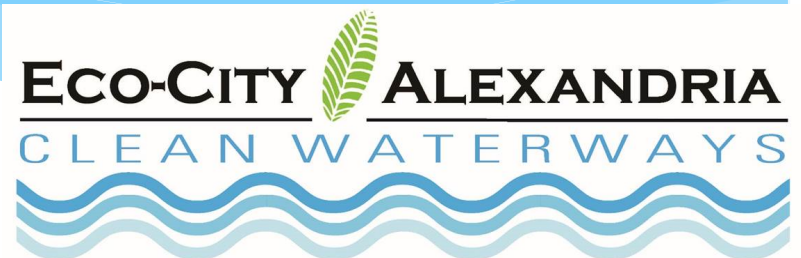
Department of Transportation and Environmental
Services



City of Alexandria, Virginia

PRESENTATION OUTLINE

- City's Combined Sewer System (CSS)
- Recap of Long Term Control Plan Update (LTCPU)
- Recent Legislation
- Looking Forward



City of Alexandria, Virginia

City's Combined Sewer System (CSS)

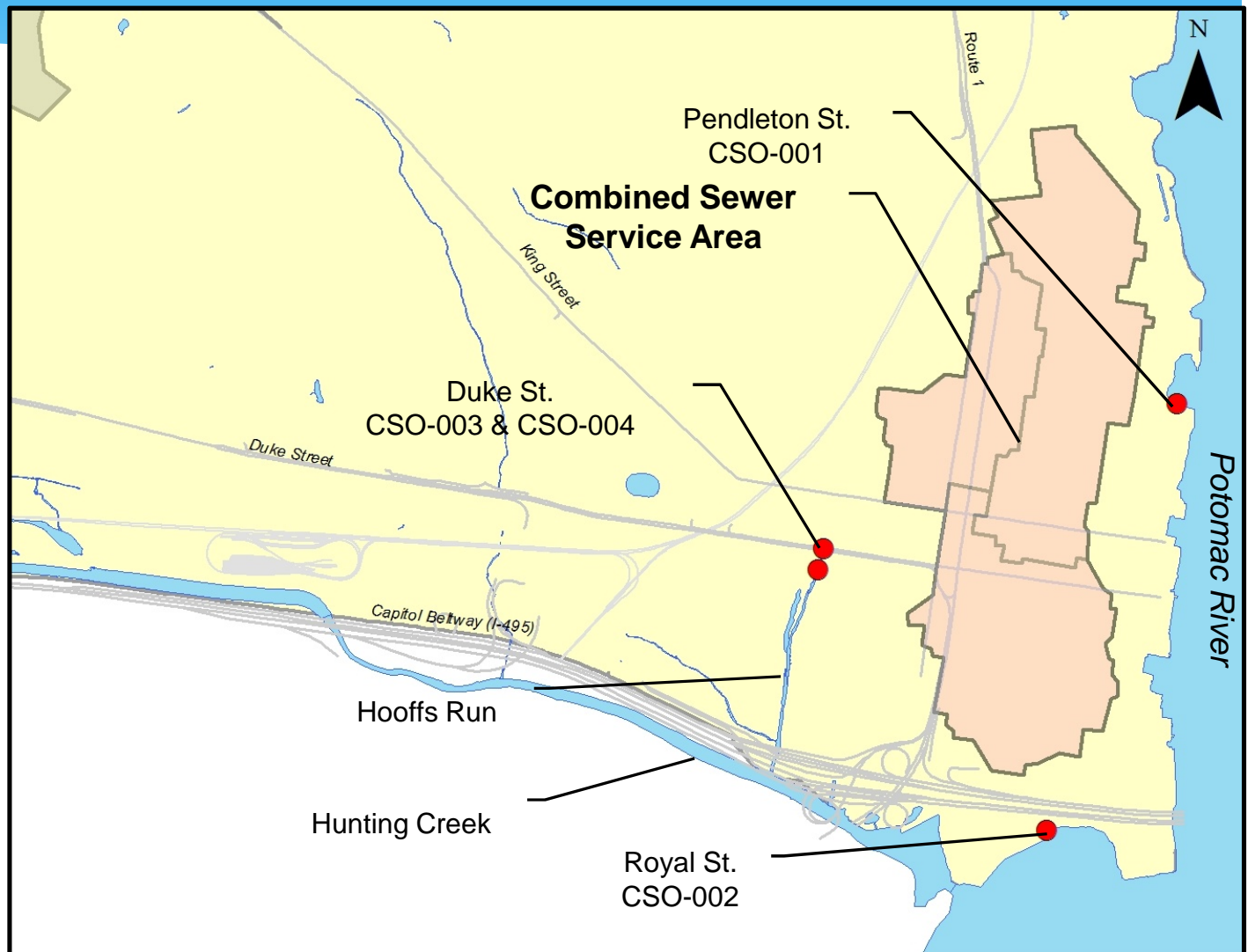


Combined Sewer System

Total Area = 540 acres (6% of City)

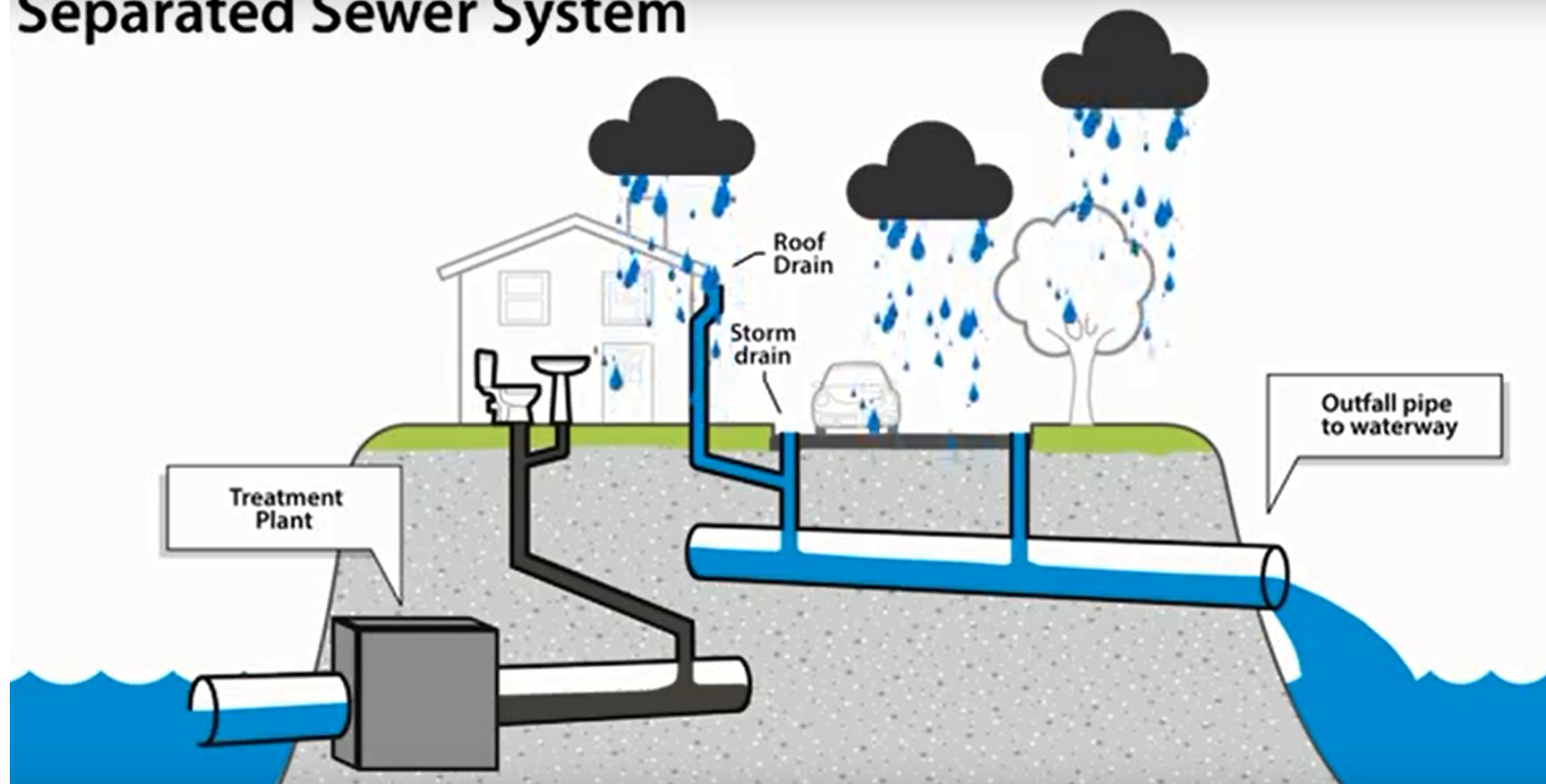
Four permitted outfalls:

- CSO-001 to Oronoco Bay
- CSO-002 to Hunting Creek
- CSO-003 to Hooffs Run
- CSO-004 to Hooffs Run
- Outfalls permitted by the Virginia Department of Environmental Quality (VDEQ)



Separate Sewer System

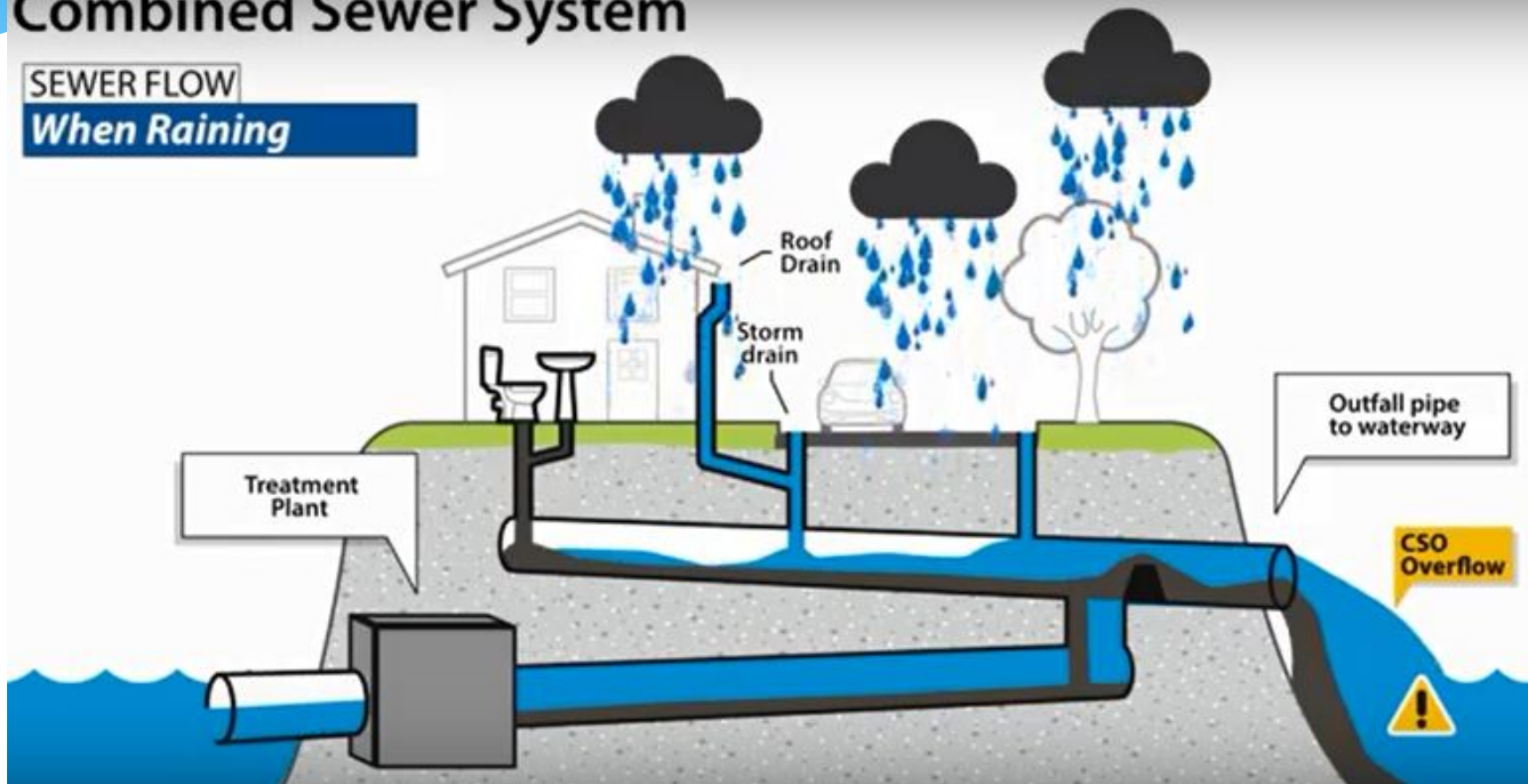
Separated Sewer System



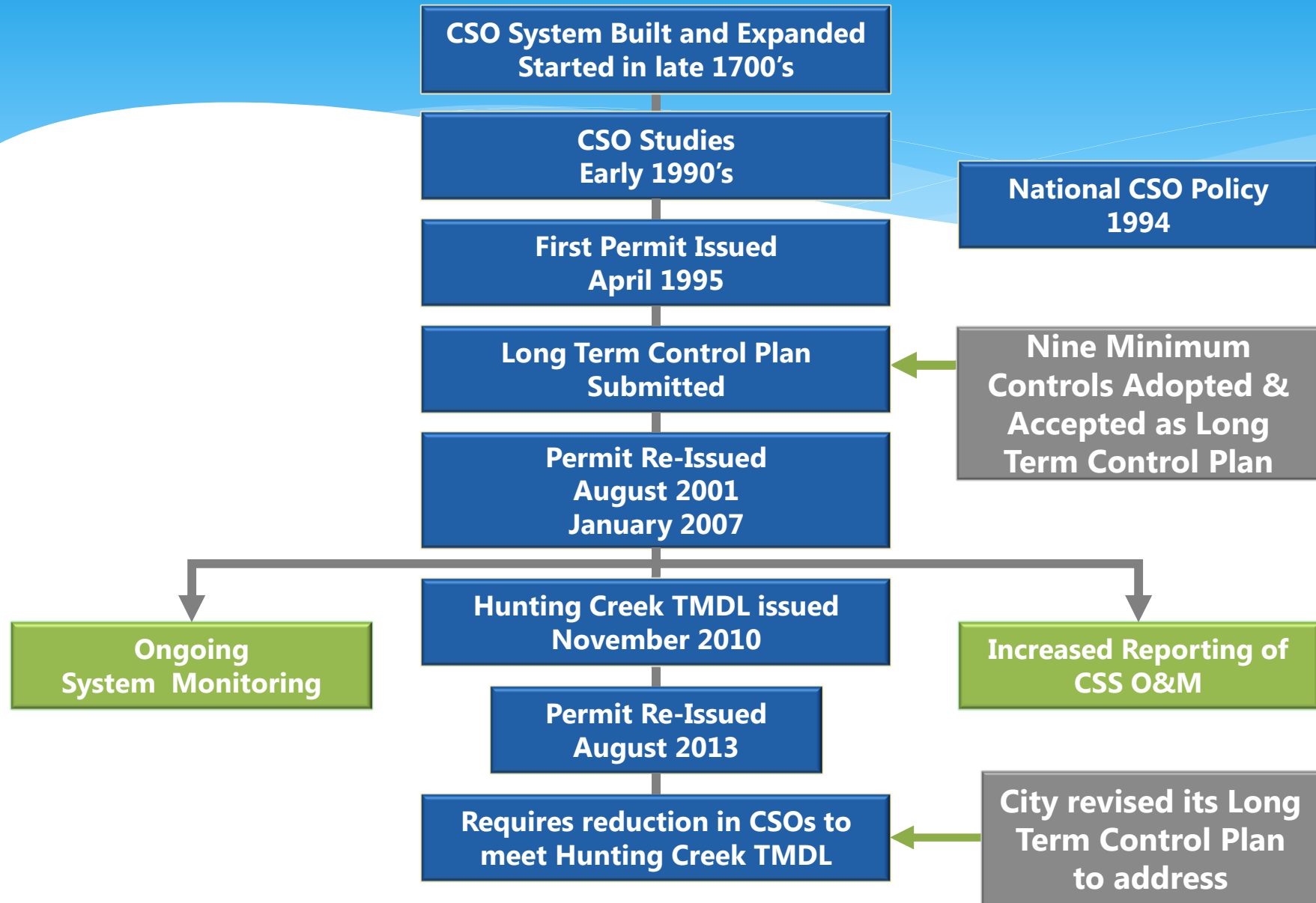
Combined Sewer System

Combined Sewer System

SEWER FLOW
When Raining



Regulatory History of Alexandria's CSS



Clean Water Act Goals

Total Maximum Daily Load

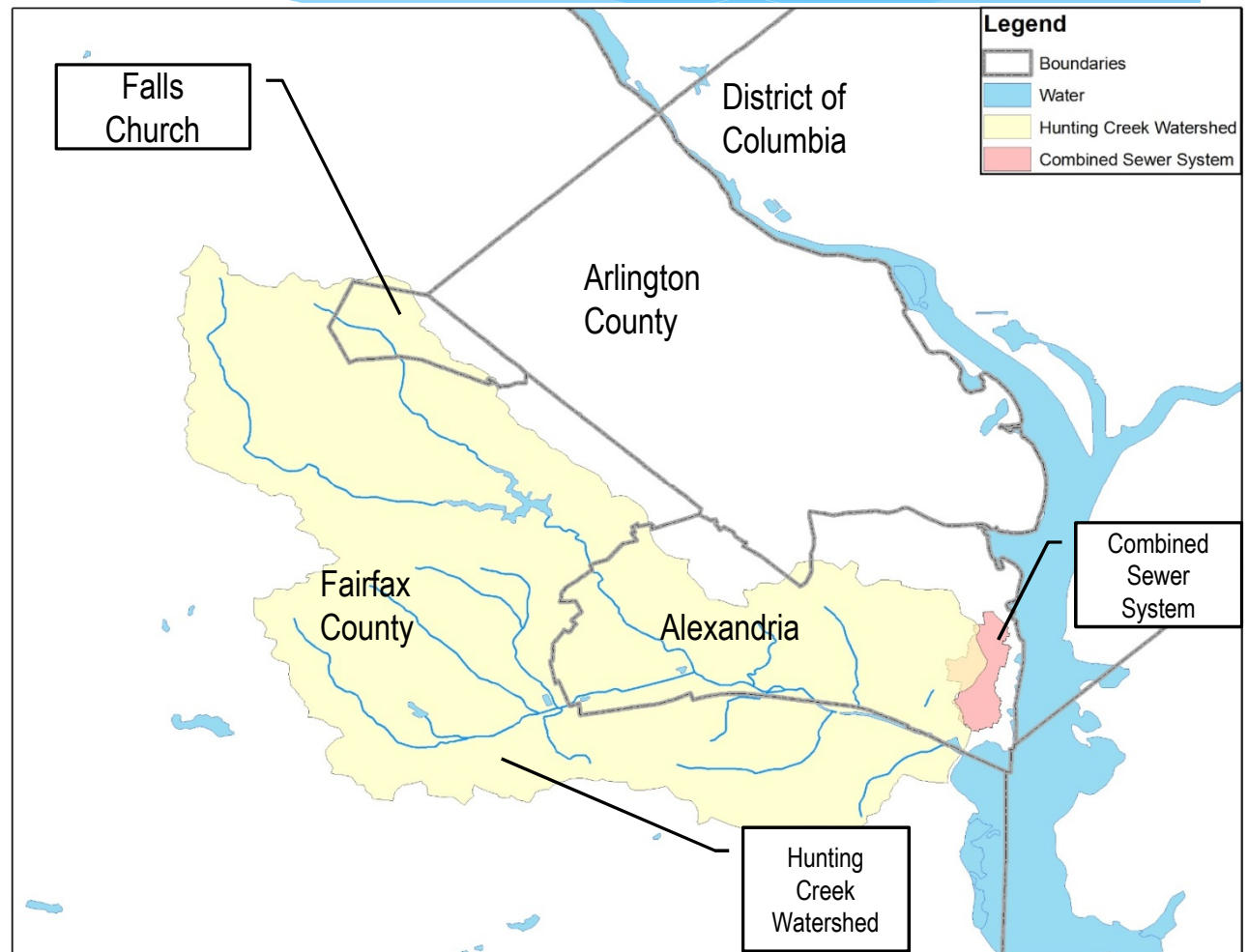
- * Clean Water Act goal that all waters of the United States be “fishable” and “swimmable”
 - State develops impaired waters list and total maximum daily loads
- * Hunting Creek listed as an impaired water for *E. coli* bacteria



Hunting Creek Drainage Area

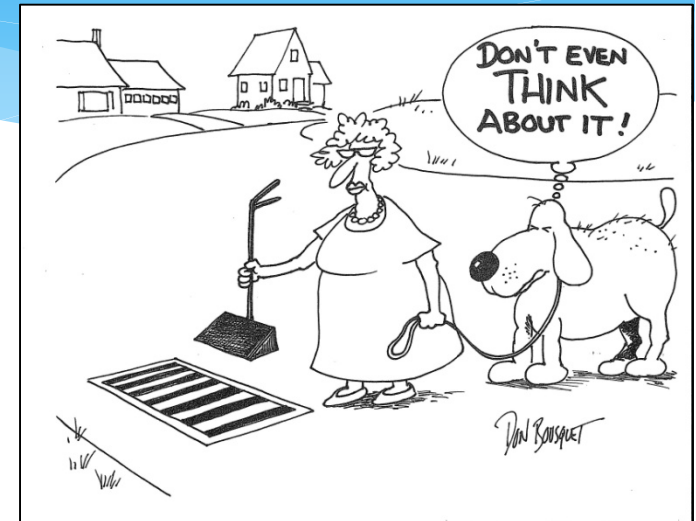
Sources of Bacteria

- * Virginia Bacteria Water Quality Criteria
 - 126 *E.coli* counts per 100mL
- * Sources of Bacteria:
 - Stormwater
 - Wildlife
 - Pets
 - Combined Sewer System
 - Septic Systems
 - Sanitary Sewer Overflows
 - AlexRenew Water Resource Recovery Facility



TMDL Requirements and Combined Sewer System Mandate

- * TMDL Bacteria Reductions
 - Stormwater (85-98% removal)
 - Wildlife (50% removal)
 - Combined Sewer System (86% overall removal)
 - Septic Systems (100% removal)

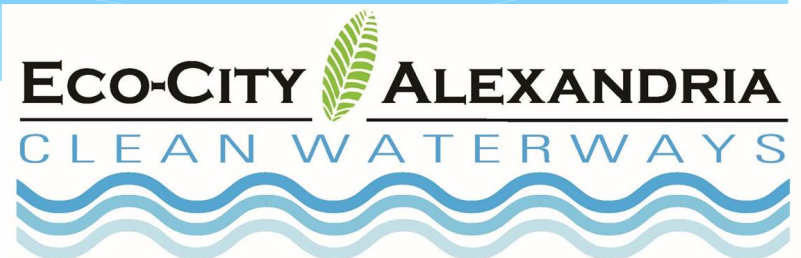


- * August 2013 CSS Permit
 - City must submit Long Term Control Plan Update (LTCPU) to address Hunting Creek TMDL
 - Due to VDEQ August 2016
 - Complete construction by 2035



City of Alexandria, Virginia

City's Long Term Control Plan Update (LTCPU)



Long Term Control Plan Update Framework



Store and Treat

Primary Strategy

- * Store and treat: build CSO storage and send to the wastewater treatment facility after CSO event for high level of treatment
 - Storage tanks (underground)
 - Deep tunnels



Toronto: Keelestdal-Hyde Ave
Underground CSO Storage Tank

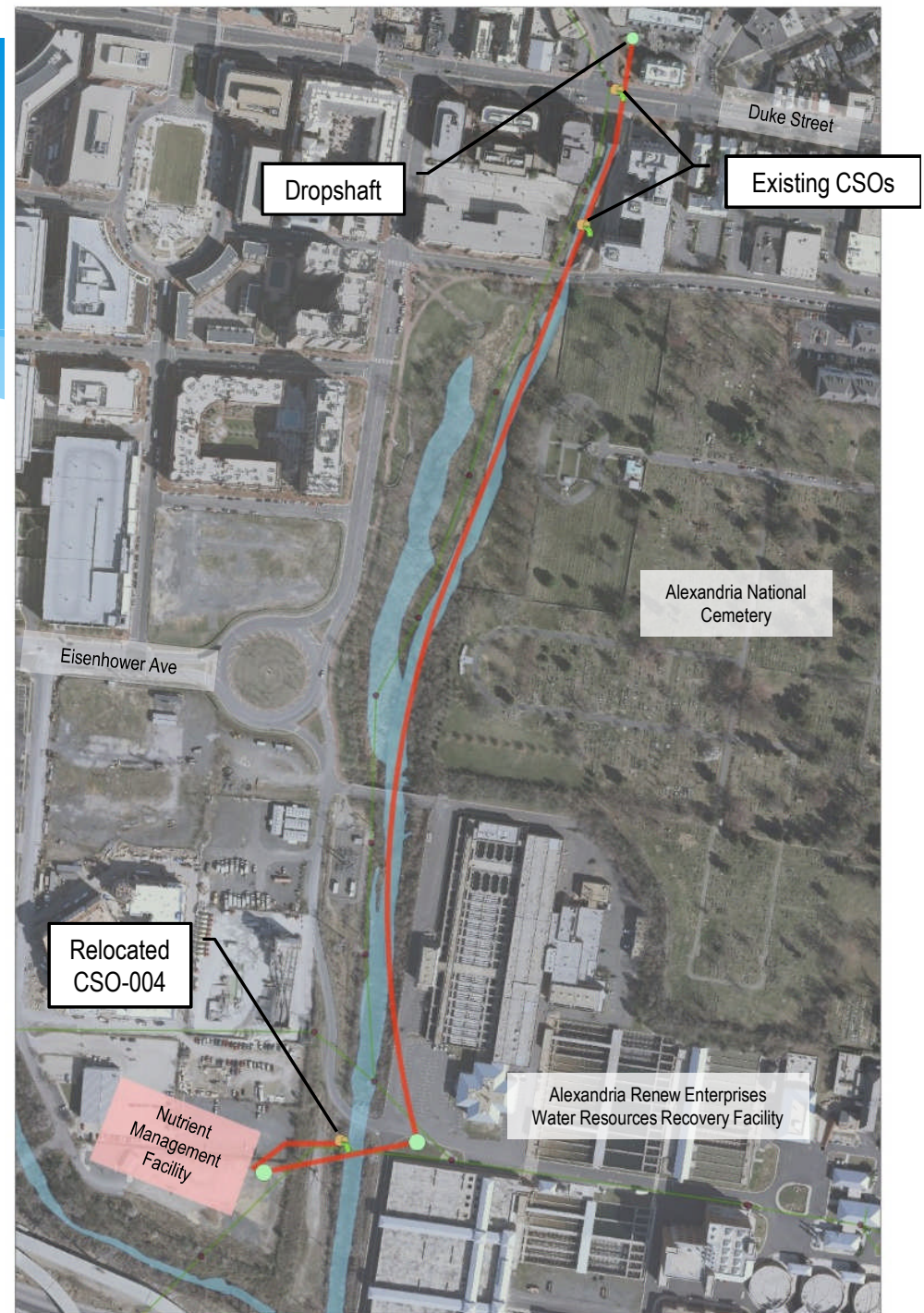


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DC Water: Tunnel Boring Machine

CSO-003/004 Project

- * 10-foot diameter tunnel from Duke Street to AlexRenew WRRF
 - 1.6 million gallons storage
 - 60% larger than minimum required
 - Less than 4 overflows in a typical year
- * Shafts range in diameter from 20-ft to 30-ft
- * Shafts and tunnel range in depth from 60-ft to 100-ft
- * Benefits
 - Substantial reduction in CSO occurrences and volume
 - Reduces basement backups
 - Maximizes pollution reduction



Green Infrastructure

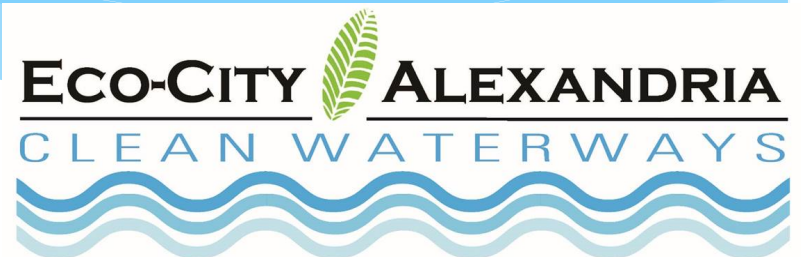
Complementary Strategy Recommendation

- * Helps to reduce the amount of stormwater entering the combined sewer system
- * Provides ancillary environmental and community benefits
- * City-led and developer-led projects



City of Alexandria, Virginia

Recent Legislation



Recent State Legislation

Signed into law April 26, 2017

- * Requires VDEQ by July 1, 2018 to determine what actions by the City are necessary to bring all combined sewer outfalls into compliance with the Hunting Creek TMDL and the Presumption Approach of the EPA CSO Policy
 - Must comply with whichever is more stringent
- * Requires initiation of construction activities by July 1, 2023
- * Requires completion of construction by July 1, 2025
- * Requires City to submit to VDEQ annual report on progress of meeting state legislation

What does this mean for the LTCPU?

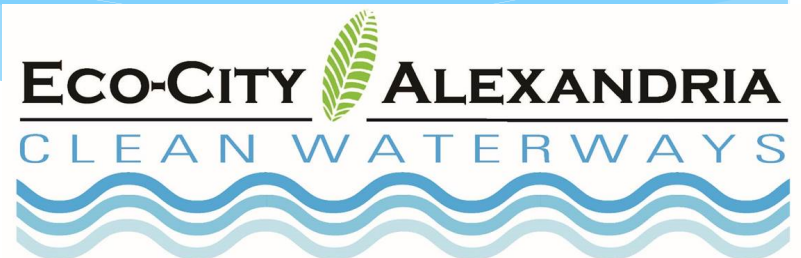
- * Accelerates the Long Term Control Plan Update schedule for outfalls impacted by the Hunting Creek TMDL
 - CSO-003/004 tunnel project by 6 months
 - CSO-002 project by 7 years
- * Requires CSO-001 project based on Presumption Approach
 - 4-6 overflows per year or 85% capture/treatment
- * Planning Process
 - Potential to address CSO-001 and 002 together
 - Additional community and stakeholder engagement
 - Revision to Long Term Control Plan Update

What does the mean for City residents and businesses?

	2016 Long Term Control Plan Update	Recent State Legislation
Construction	- 2035 deadline allowed for phased construction projects	- Projects will be done concurrently in order to meet 2025 deadline
Water Quality	- CSO reductions achieved later - Does not account for other bacteria sources	- CSO reductions achieved sooner - Does not account for other bacteria sources
Sanitary Sewer Rates	- Rates increased gradually due to phased construction - Estimated \$10-15/month additional (today's dollars over existing bill)	- Rates to be increased over shorter time period - Total rate impact to be determined, currently estimated to be \$22-\$36/month additional

City of Alexandria, Virginia

Looking Forward



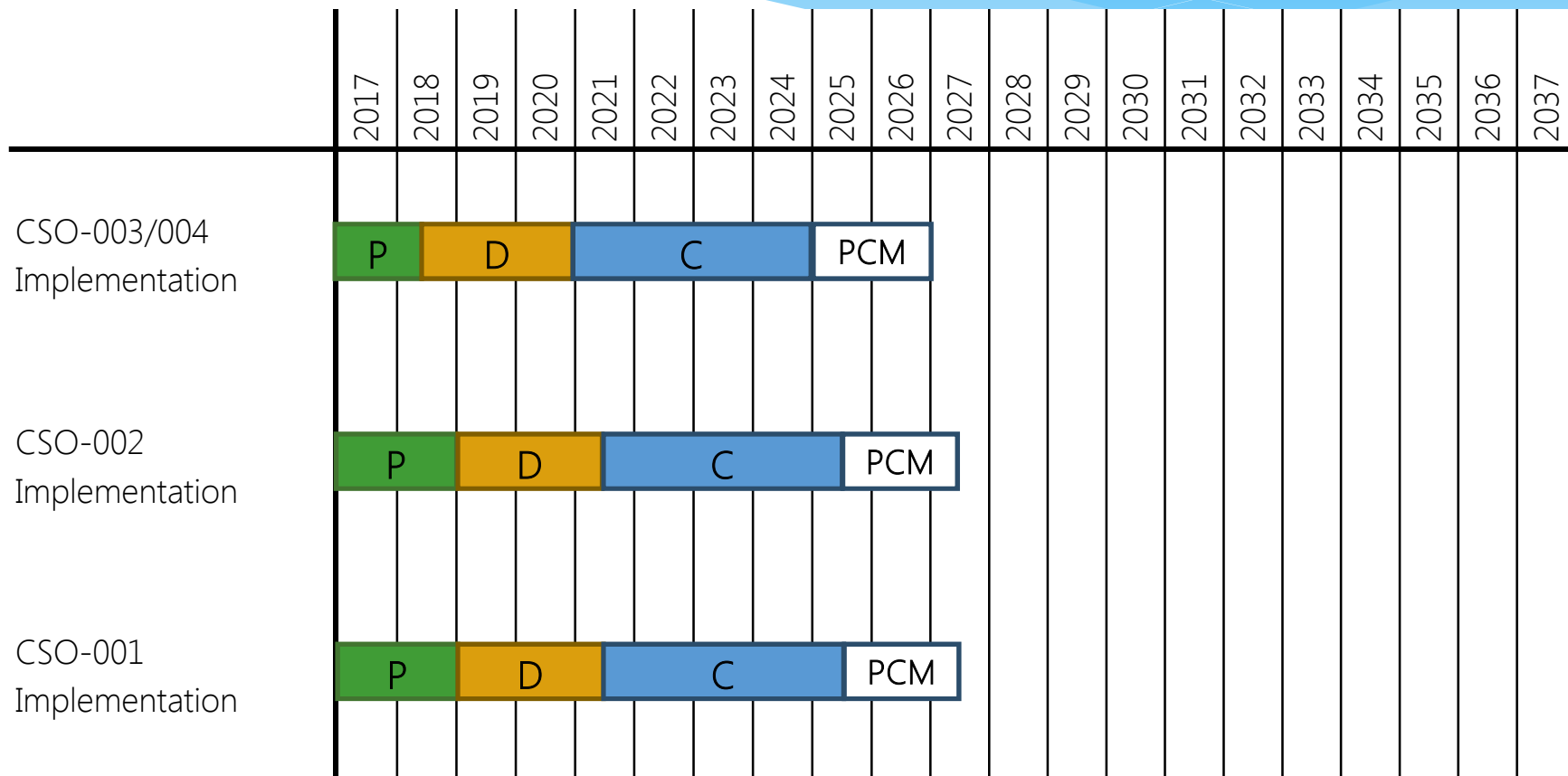
Long Term Control Plan Update

- * Long Term Control Plan Update to be modified and submitted in two phases:
 - Phase 1 – Submit plan for the CSO-003/004 tunnel project in the near-term (Summer 2017)
 - Phase 2 – Submit plan for the CSO-001/002 project(s) and complementary strategies by June 1, 2018
 - Develop planning scenarios for a store and treat strategy
 - Two separate tanks, one tunnel, one tank + one tunnel
 - Provide recommendation of store and treat project(s) based on evaluation of sizing, location, cost, impacts/constraints, etc.

Community Engagement Process

- * Combined Sewer System Plan Stakeholder Group
 - Resolution to Council to reconvene a stakeholder group (June 13th City Council Legislative Meeting)
 - Stakeholder Group to reconvene Fall 2017
 - Provide input as plan developed to address CSO-001 and 002
 - All meetings open to the public for input and comment
- * Other planned outreach
 - Public meetings
 - Homeowner and civic associations
 - Boards and commissions
 - Website and AlexEngage

Preliminary Implementation Schedule



Legend:

P: Planning; D: Design; C: Construction;
PCM: Post Construction Monitoring

Long Term Control Plan Update

Preliminary Costs

- * CSO-003/004 tunnel
 - (Approx. 2019-2024)
- * CSO-001/002 Project(s)
 - (Approx. 2020-2025)
- * Green infrastructure and targeted sewer separation
 - Ongoing
- * **FY2018 10-Year CIP: \$370 million**
 - Adopted May 4, 2017

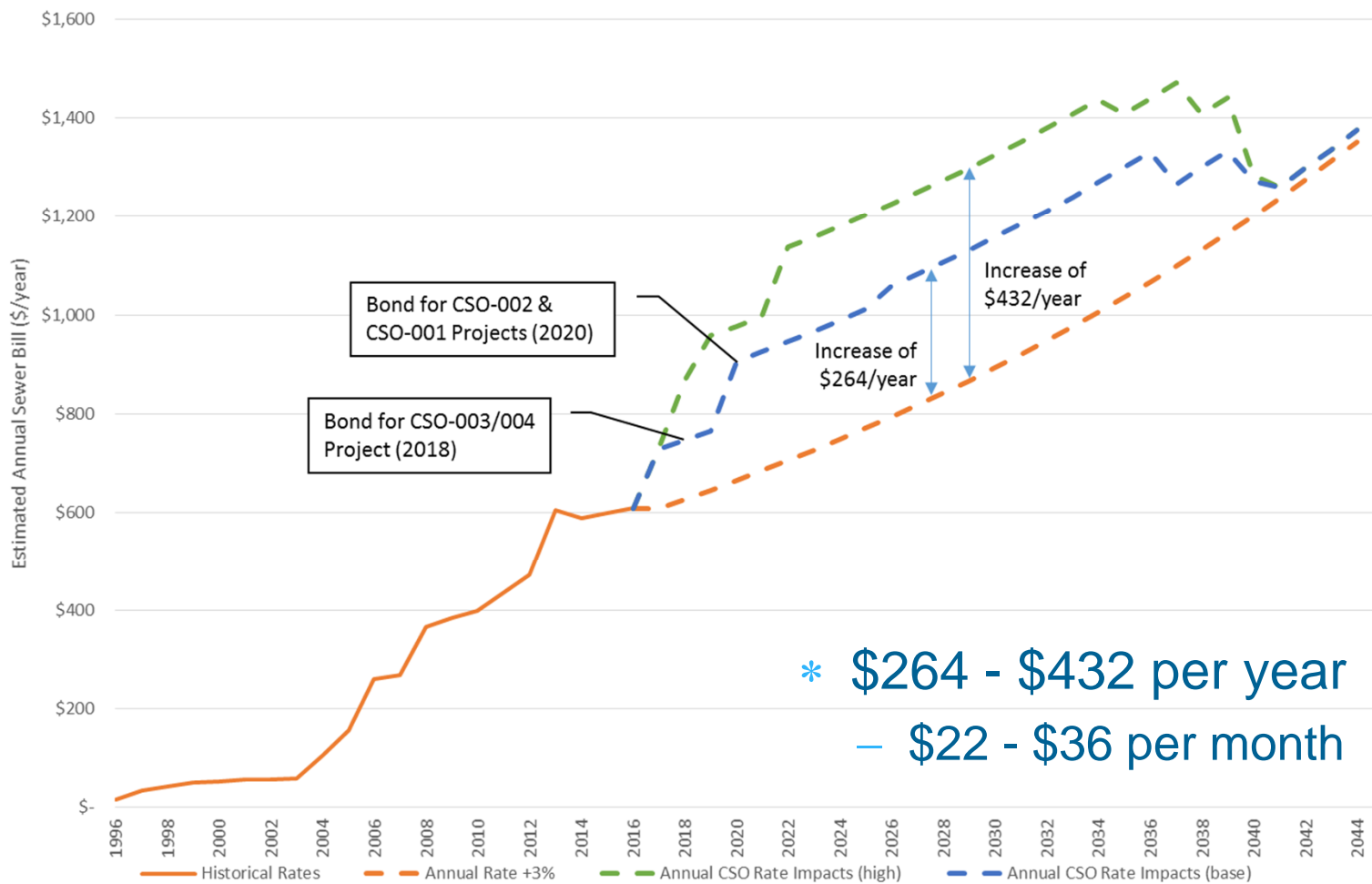
Preliminary Capital Costs

Project	Capital Cost ¹
CSO-003/004 Tunnel	\$87-130 million
CSO-002 Project	\$28-42 million
CSO-001 Project	\$50-130 million
Green Infrastructure	\$5-7.5 million
Targeted Sewer Separation	\$5-7.5 million
Staff Augmentation	\$5.5-8.3 million
TOTAL	\$180 - 392 million

¹Capital Costs in 2015 dollars

Potential Rate Impacts

Projected Range of Alexandria Annual Sewer Bill for Completion of All Outfalls by 2025
 (@ 5,000 gallons/month)



Questions/Suggestions/Comments

For more information, contact:

William.Skrabak@alexandriava.gov

703.746.4065

Erin.BevisCarver@alexandriava.gov

703.746.4154

www.alexandriava.gov/sewers

City of Alexandria, Virginia

Thank You

