



Combined Sewer System Long Term Control Plan Update

**City Council
May 26, 2015**

Transportation and Environmental Services
Stormwater and Sanitary Infrastructure Division



Agenda

- Combined Sewer System Mandate
- Long Term Control Plan Update Planning Process
- Project Status
- Next Steps
- Discussion

Note: The stormwater system and combined sewer system have two separate permits administered by the Virginia Department of Environmental Quality with different mandates

What is the Policy Question?

- Council consideration of a short list of CSO (combined sewer outfall) control strategies for further evaluation, which will include feasibility and cost



Combined Sewer System Mandate

Combined Sewer System Mandate

- Hunting Creek Bacteria Total Maximum Daily Load (TMDL):
 - 80-99% reduction in combined sewer discharges from Royal St and Hooffs Run CSOs
- August 2013 Permit:
 - City must update Long Term Control Plan to address Hunting Creek TMDL
 - Due to Virginia Department of Environmental Quality in August 2016
 - Includes public outreach





Long Term Control Plan Update Planning Process



Combined Sewer Strategies Evaluated

- **Store and treat:** build CSO storage and send to wastewater treatment facility after CSO event for high level of treatment
 - Storage tanks (aboveground or underground)
 - Deep tunnels
- **Sewer separation:** build new sewers to separate all storm and sanitary sewers in Old Town
- **Green infrastructure:** Reduce stormwater runoff
- **Disinfection:** kill the bacteria in the overflow
- **Combination** of the above strategies

Long Term Control Plan Update Decision Process





Peer Review Panel

- Independent check of the Long Term Control Plan Update progress to:
 - Confirm approach or identify additional alternatives
 - Facilitate the best possible plan for the City
- Peer Review Panel:
 - Director of the Clean Rivers Program, DC Water
 - Director of Public Utilities, City of Richmond
 - Director of Water Resources, City of Lynchburg
 - Independent Consultant, experience with several large CSO programs



Project Status

Technical Memoranda



Evaluation Criteria

City's Evaluation Criteria

- Cost
- CSO Reduction (volume)
- Effectiveness (bacteria reduction)
- Implementation Effort
- Impact to the Community
- Expandability
- Net Environmental Benefit
- Potential Credits for Chesapeake Bay TMDL
- Permitting Issues
- Required Maintenance
- **Assigned weighting**
- **Ranked combined sewer control strategies based on criteria**





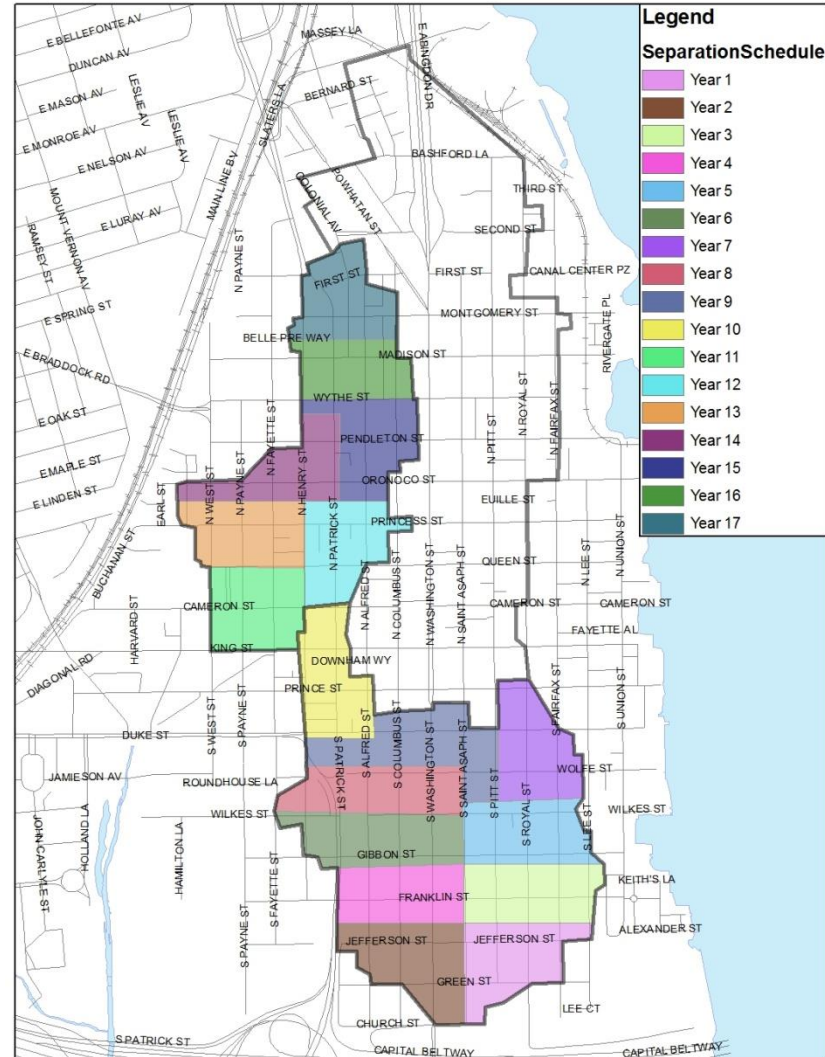
Combined Sewer Control Strategy Rankings and Cost

Rank	CSO Control Strategy
9	Complete Sewer Separation
8	Green Infrastructure
7	Separate Disinfection Facilities
6	One Storage Tunnel (relocate outfalls to the Potomac)
5	Storage Tunnel for Hooffs Run and Disinfection at Royal Street
4	Separate Storage Tanks
3	One Storage Tunnel
2	Storage Tunnel for Hooffs Run and Storage Tank at Royal Street
1	Separate Storage Tunnels

9. Complete Sewer Separation

Not Recommended

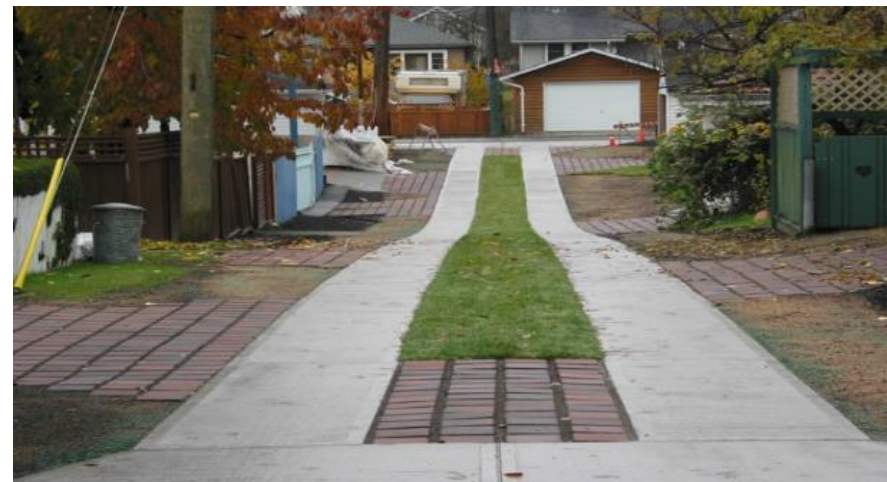
- 19 acres under construction continuously for 17 years
 - Unrealistic before 2035
- No reduction in number of overflows until full separation is completed
- Additional area added to the stormwater (MS4) permit
 - No nutrient credit
- Potential impact of historical character
- **Most disruptive**
- **Cost: \$300 - \$450 M**



8. Green Infrastructure

Recommended as Integrated Complementary Strategy
Not Recommended as Primary Strategy

- Reduces stormwater volume, but does not address bacteria load directly
- How evaluated:
 - Implement on **ALL** City-owned parcels and City right-of-way
- Results:
 - 20-30% reduction in combined sewer overflow volume
 - **Will not achieve regulatory compliance**
 - Full implementation of green infrastructure unrealistic by 2035
- Cost: \$140 - \$210 M



7. Separate Disinfection Facilities

Not Recommended

- **Primary criteria for elimination:**
Safety concerns related to transportation and storage of chemicals (chlorine) in urban area
- No reduction in combined sewer volume
- Only kills bacteria, other pollutants remain
- Cost: \$65 - \$100 M

6. One Storage Tunnel

(relocate outfalls to the Potomac River)

Not Recommended

- **Primary criteria for elimination:** Relocated outfall invites significant regulatory, permitting challenges
 - All other store and treat strategies considered do not require outfall to the Potomac
- Most costly store and treat option
- Cost: \$130 - \$195 M

5. Storage Tunnel for Hooffs Run and Disinfection at Royal Street

Not Recommended

- **Primary criteria for elimination:**
Safety concerns related to transportation and storage of chemicals (chlorine) in urban area
- No reduction in combined sewer volume at Royal Street
- Only kills bacteria, other pollutants remain from Royal Street outfall
- Cost: \$85 - \$130 M

4. Separate Storage Tanks

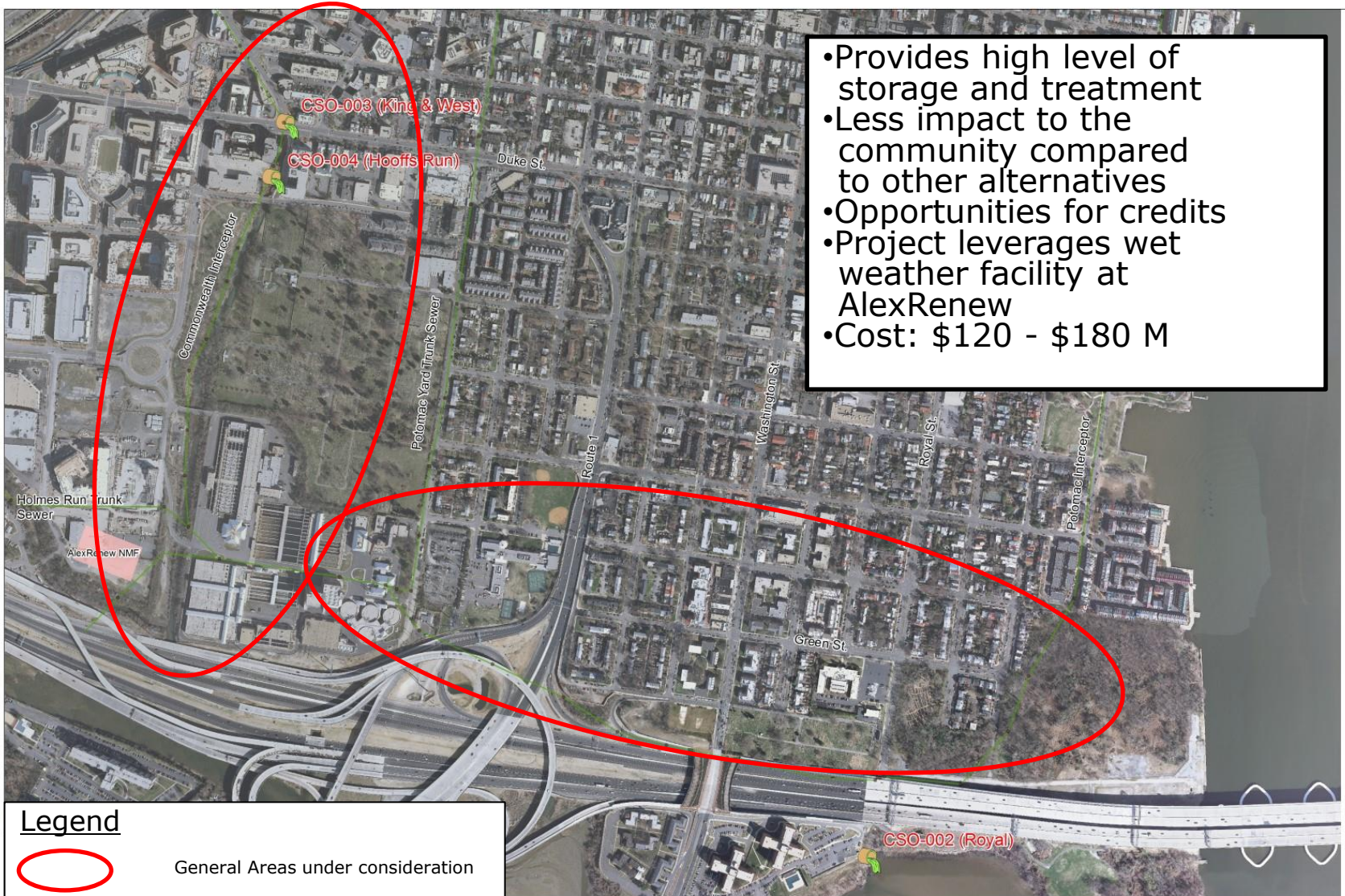
Not Recommended

- **Primary criteria for elimination:**
Siting Challenges
 - Tank/construction under Duke Street
 - Major disruption to traffic
 - Future maintenance challenges
- Does not address additional wet weather issues that control strategies # 1-3 address
- Cost: \$90 - \$135 M

3. One Storage Tunnel


(Connect Outfalls)

Recommended for Further Evaluation

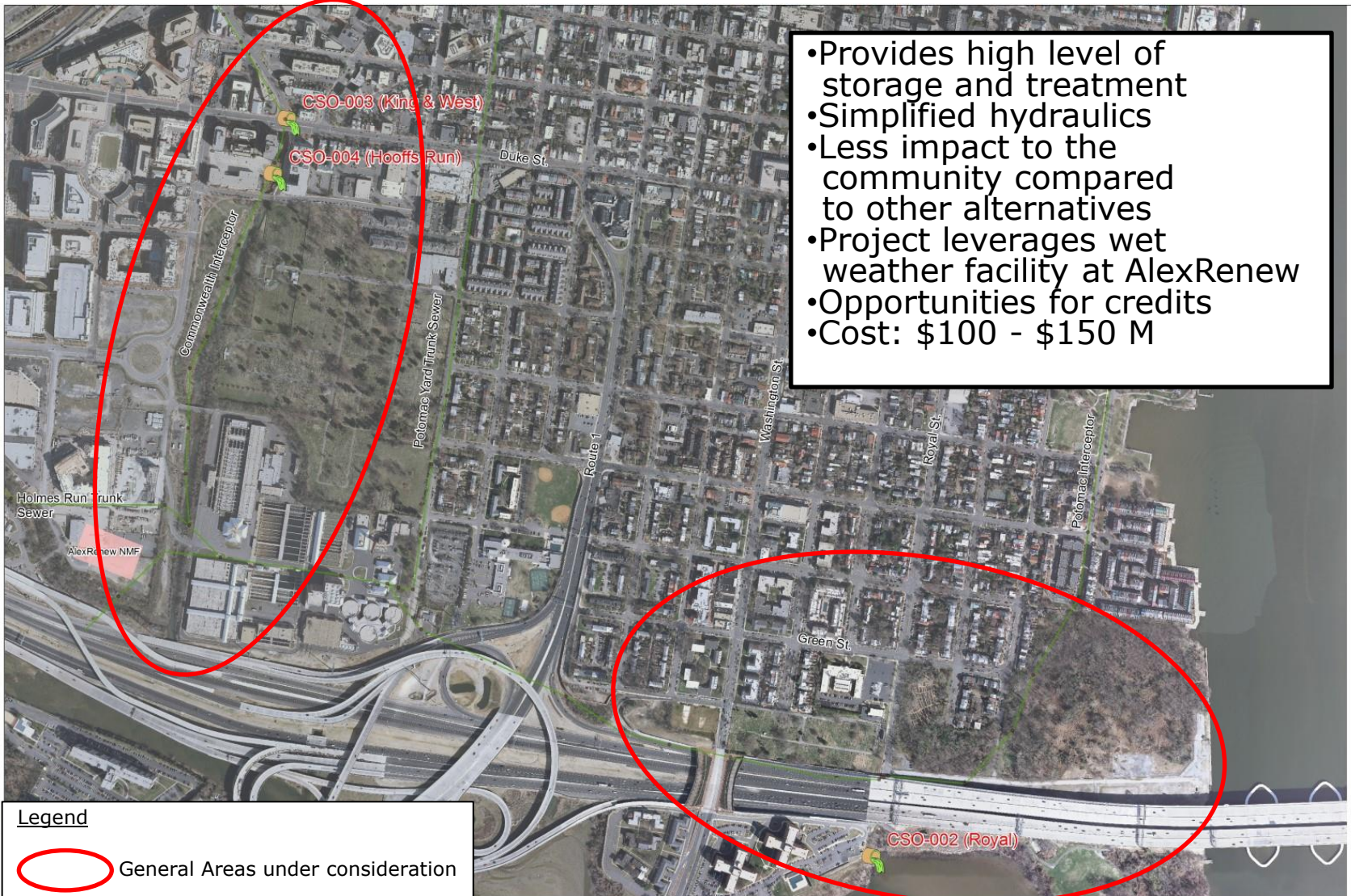


- Provides high level of storage and treatment
- Less impact to the community compared to other alternatives
- Opportunities for credits
- Project leverages wet weather facility at AlexRenew
- Cost: \$120 - \$180 M

Legend


 General Areas under consideration

2. Storage Tunnel for Hooffs Run and Storage Tank at Royal Street Recommended for Further Evaluation



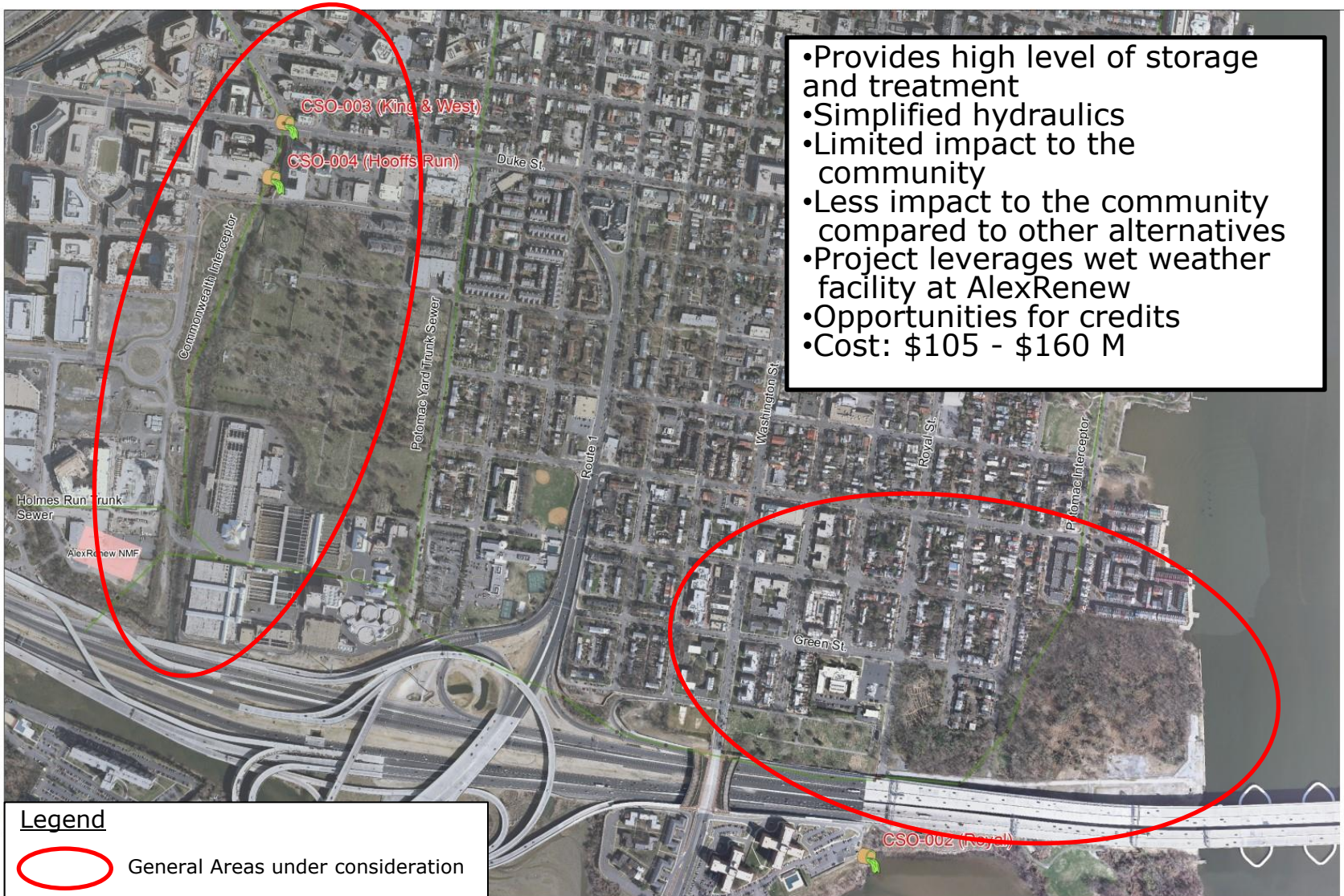
- Provides high level of storage and treatment
- Simplified hydraulics
- Less impact to the community compared to other alternatives
- Project leverages wet weather facility at AlexRenew
- Opportunities for credits
- Cost: \$100 - \$150 M

Legend

 General Areas under consideration

1. Separate Storage Tunnels

Recommended for Further Evaluation



- Provides high level of storage and treatment
- Simplified hydraulics
- Limited impact to the community
- Less impact to the community compared to other alternatives
- Project leverages wet weather facility at AlexRenew
- Opportunities for credits
- Cost: \$105 - \$160 M

Recommended Short List of Strategies for Further Evaluation

Primary Strategies

(will select one for final plan)

1. Separate storage tunnels
2. Storage Tunnel for Hooffs Run and Storage Tank at Royal Street
3. One storage tunnel

Complementary Strategies

(may include one or more)

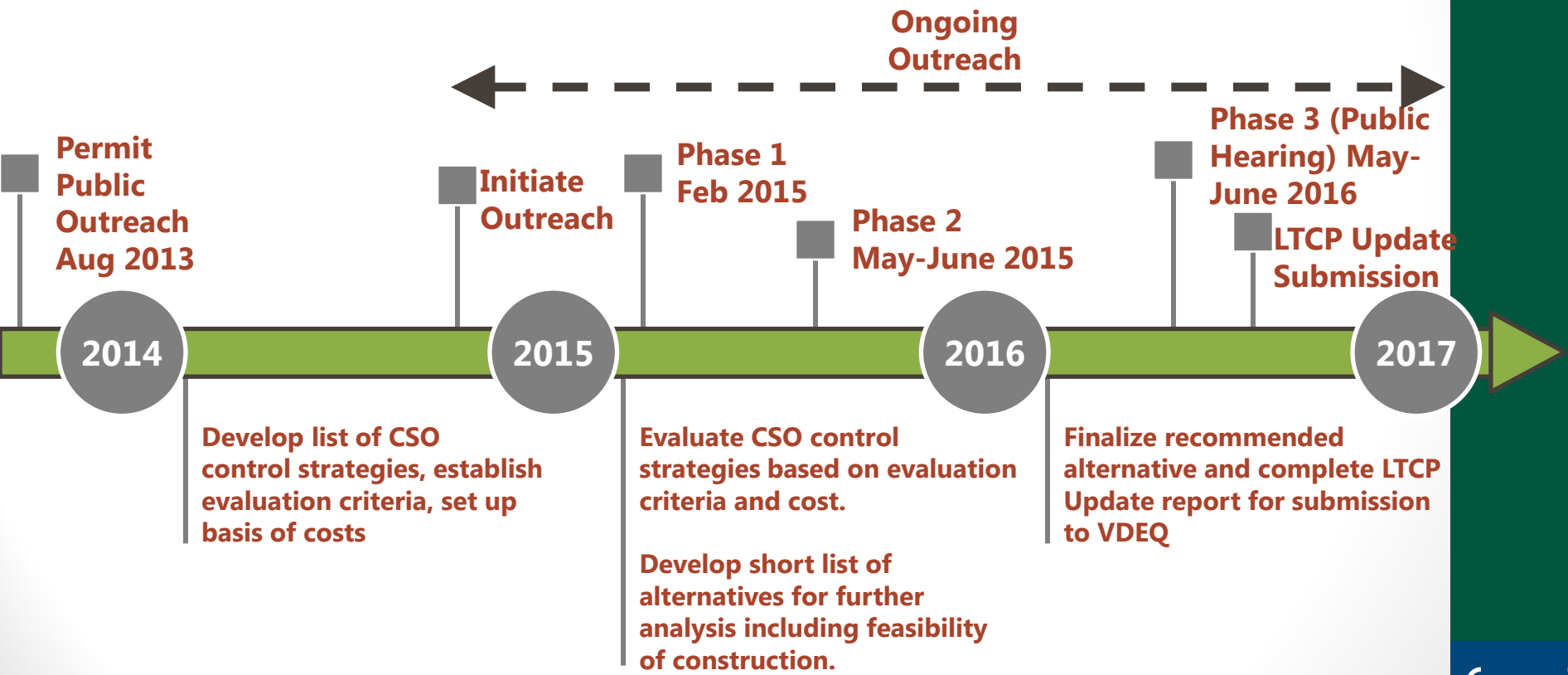
1. Green Infrastructure
2. Targeted Sewer Separation



Next Steps



Schedule for Long Term Control Plan Update



CSO: Combined Sewer Overflow
LTCP: Long Term Control Plan
VDEQ: Virginia Department of Environmental Quality

Next Steps for Long Term Control Plan Update

- Further evaluation of short list of CSO control strategies
- Siting and alignment studies
 - Property owners and other stakeholders
 - Easements
 - Permitting
 - Utilities
 - Cultural Resources
- Geotechnical and soil permeability studies
- Refine costs of CSO control strategies
- Final CSO control strategy selection
- Develop implementation plan



Continuing Collaboration with Partners

- City has been collaborating with AlexRenew on regulatory issues including CSO permits, Long Term Control Plan Update and EPA inspections
- AlexRenew, City and Fairfax County have been working on a plan to mitigate sanitary sewer overflows and basement backups due to wet weather
- AlexRenew could potentially build, own and/or operate facilities constructed as part of Long Term Control Plan Update



Public Outreach and Engagement

Prior Public Outreach and Engagement since Permit Issuance in August 2013

Upcoming Outreach:

- What's Next Alexandria Civic Engagement Principles will be applied
- May 18, 2015: Environmental Policy Commission
- May 26, 2015: City Council Work Session
- June 18, 2015: Phase II Public Meeting
 - Background information on CSOs and new permit requirements
 - Discussion of CSO control strategies and evaluation criteria
 - Discussion of recommended strategies for further evaluation
- June/July 2015: Civic/Citizen Associations, Business Community and other stakeholders



Discussion

Recommended Short List of Strategies for Further Evaluation

Primary Strategies

(will select one for final plan)

1. Separate storage tunnels
2. Storage Tunnel for Hooffs Run and Storage Tank at Royal Street
3. One storage tunnel

Complementary Strategies

(may include one or more)

1. Green Infrastructure
2. Targeted Sewer Separation



Questions/Comments

THANK YOU!