

City of Alexandria, Virginia

Proposed Combined Sewer System Permit

Information Meeting & Public Hearing August 5, 2013

Environmental Policy Commission

&

Dept. of Transportation and Environmental Services

**William Skrabak,
Deputy Director, T&ES-OEQ**



ECO-CITY  **ALEXANDRIA**

City of Alexandria, Virginia

AGENDA

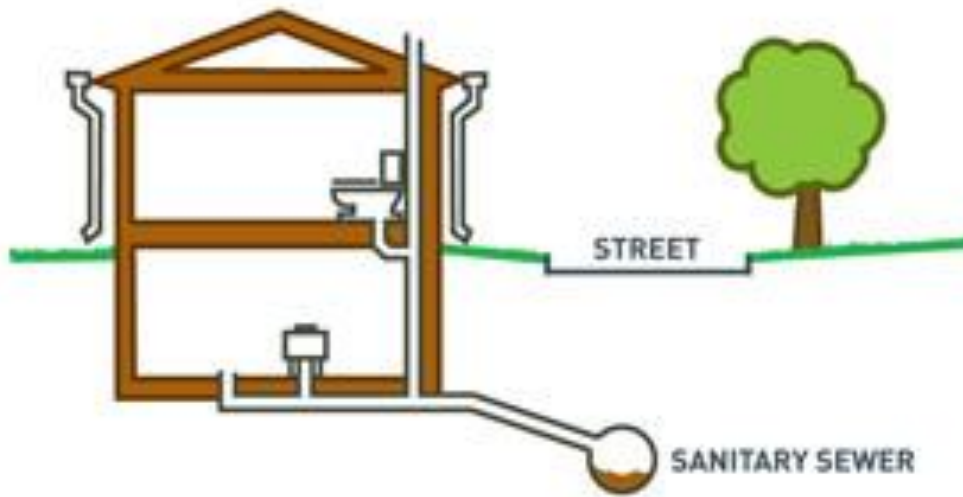
- ❑ Welcoming Remarks by Scott Barstow, Chair of the Alexandria Environmental Policy Commission
- ❑ Staff Presentation on Combined Sewer System, William J. Skrabak, Deputy Director, Transportation & Environmental Services, Office of Environmental Quality
- ❑ Public Comment and Hearing



Stormwater



Sanitary Sewer



Photo/Graphics Source: Global Innovative Campus

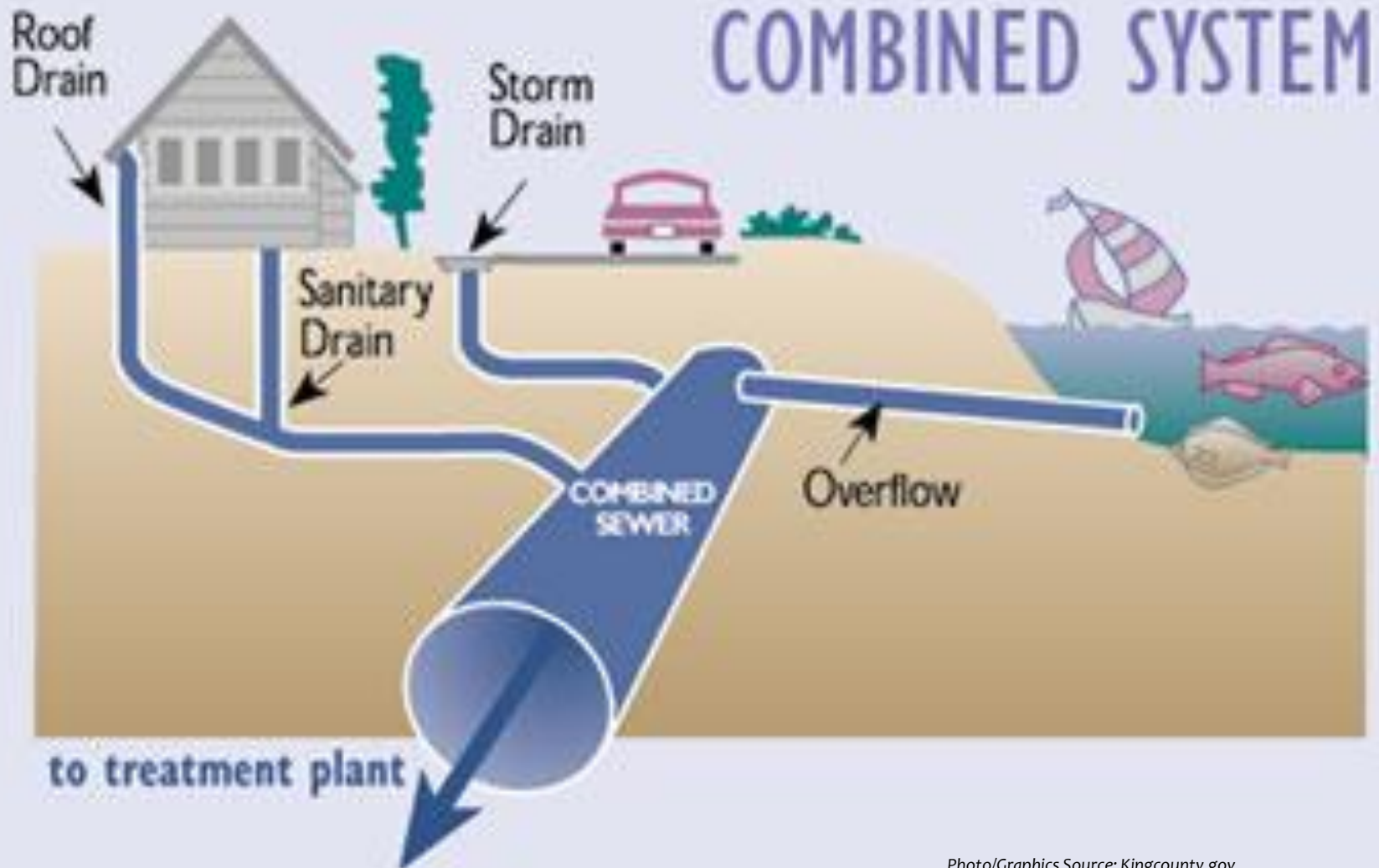


Types of Sewer Systems

Separate Sewer Systems: Conveyance system involving two separate sets of pipes, one for carrying only storm water, and the other for carrying only sanitary flows (wastewater/sewage).

- **Sanitary Sewer:** The sanitary sewer is a system of underground pipes that carries wastewater/sewage from bathrooms, sinks, kitchens, and other plumbing components to a wastewater treatment plant where it is treated and discharged.
- **Storm Sewer:** The storm sewer is a system designed to carry rainfall runoff. It is not designed to carry wastewater/sewage or accept hazardous wastes. The runoff is carried in underground pipes or open ditches and discharges untreated into local streams, rivers and other surface water bodies. Storm drain inlets are typically found in curbs and low-lying outdoor areas.

Combined Sewer System (CSS)



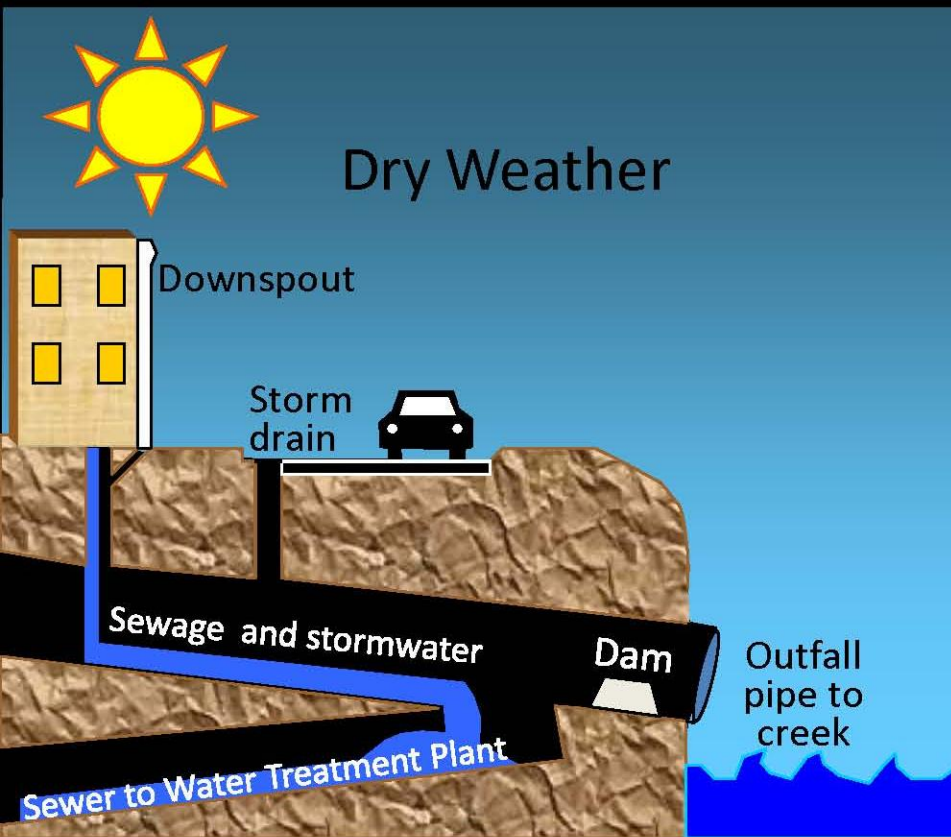
Types of Sewer Systems

Combined Sewer System: Conveyance system involving single set of pipes that carries both storm water, and sanitary flows (wastewater/sewage).

- * 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.

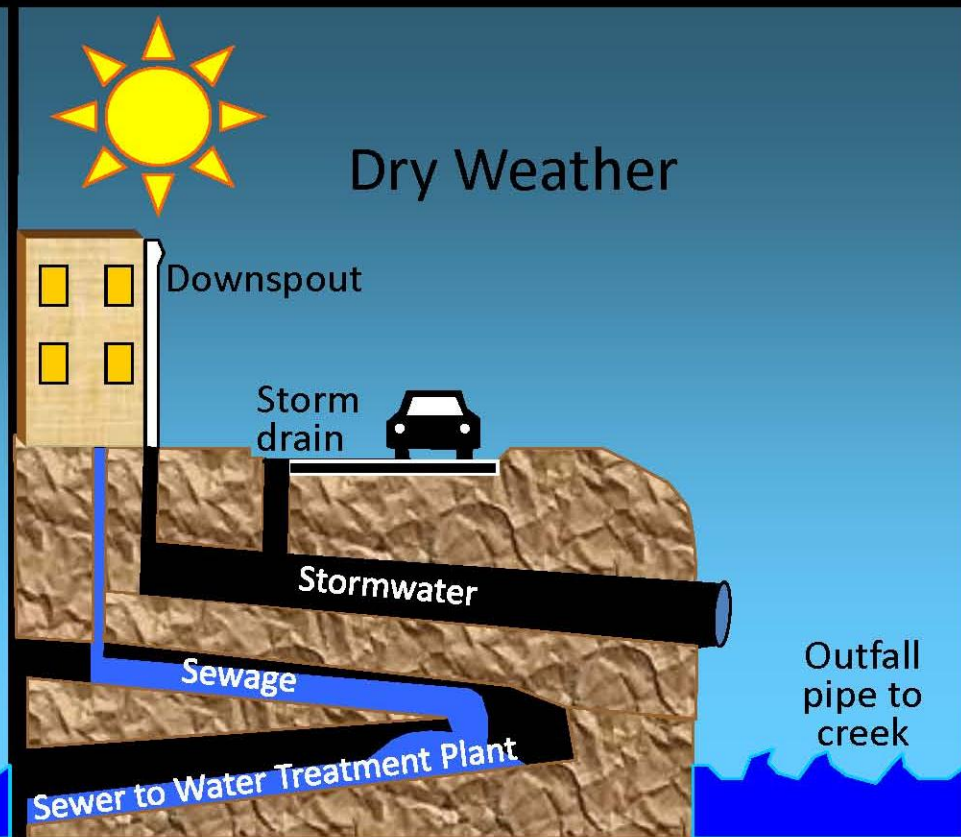
Types of Sewers in Alexandria

Combined Sewer



6.4% of Alexandria

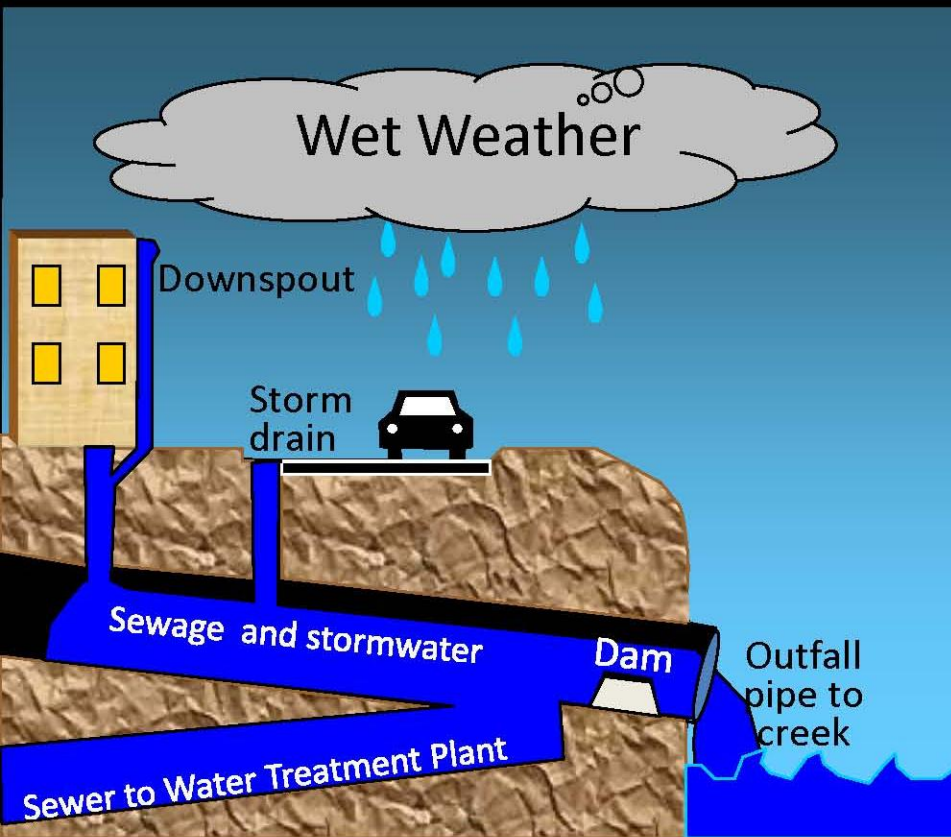
Separate Sewer



93.6% of Alexandria

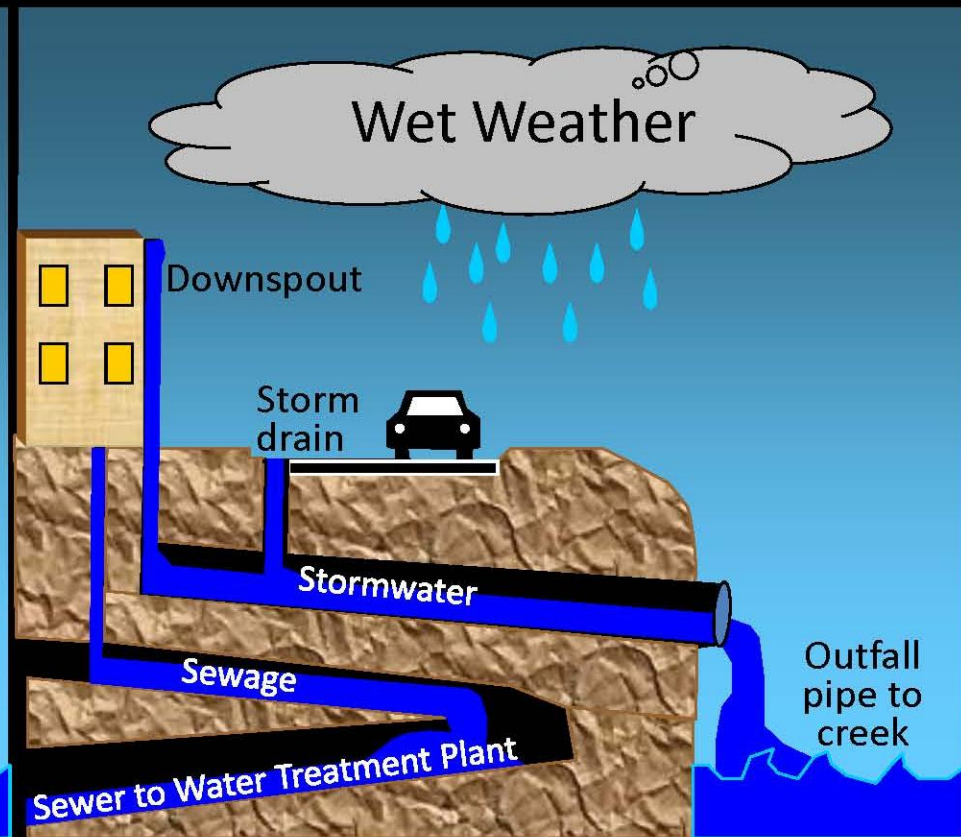
Types of Sewers in Alexandria

Combined Sewer



6.4% of Alexandria

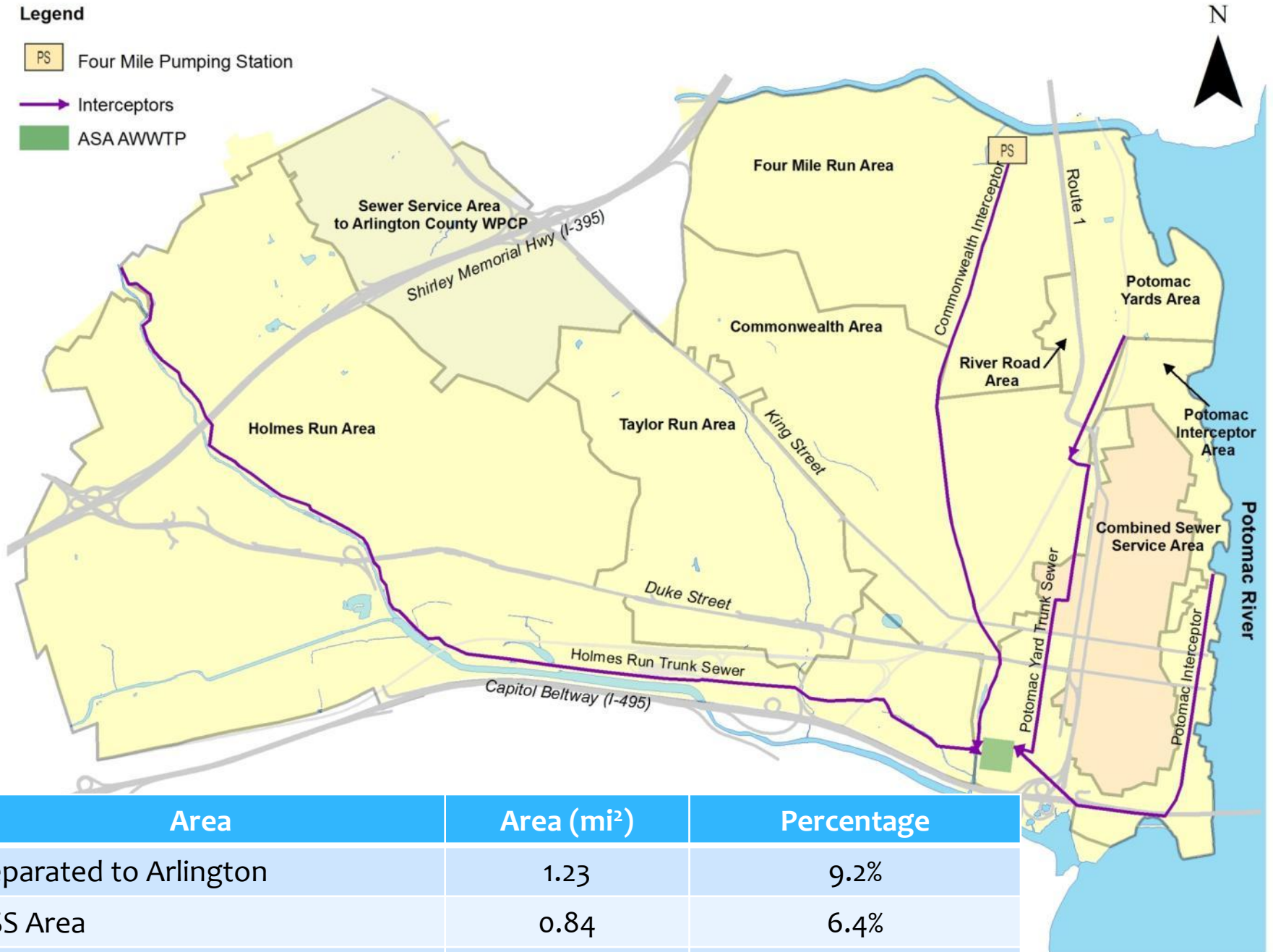
Separate Sewer



93.6% of Alexandria

Legend

- PS Four Mile Pumping Station
- Interceptors
- ASA AWWTP



Area	Area (mi ²)	Percentage
Separated to Arlington	1.23	9.2%
CSS Area	0.84	6.4%
Separated to AlexRenew	11.25	84.4%

System – Conveyance and Treatment

Separate Collection System

- Owned and operated by the City
- Underground, mostly in Right-of-Way, and Streets

Combined Sewer System

- Owned and Operated by the City
- Permitted by Virginia Department of Environmental Quality

Interceptor System

- Owned and Operated by the Alex Renew Enterprises

Advance Wastewater Treatment

- Owned and Operated by Alex Renew Enterprises (started 1952)
- Very high level of treatment – one of the most advanced wastewater treatment
- City owns 40% of the capacity, and County of Fairfax owns 60% of the capacity.



Photo/Graphics Source: Alexandria Renew Enterprises

Combined Sewer System

≈540 acres (6.4% of total area)

Four Outfalls

- Combined Sewer Overflow 001
Receiving Waterbody: Oronoco Bay
- Combined Sewer Overflow 002
Receiving Waterbody: Hunting Creek
- Combined Sewer Overflow 003
Receiving Waterbody: Hooffs Run
- Combined Sewer Overflow 004
Receiving Waterbody: Hooffs Run



Combined Sewer Overflow (CSO) Locations



Hunting Creek – CSO-002



Oronoco Bay – CSO-001



Hooffs Run – CSO-003 & 004

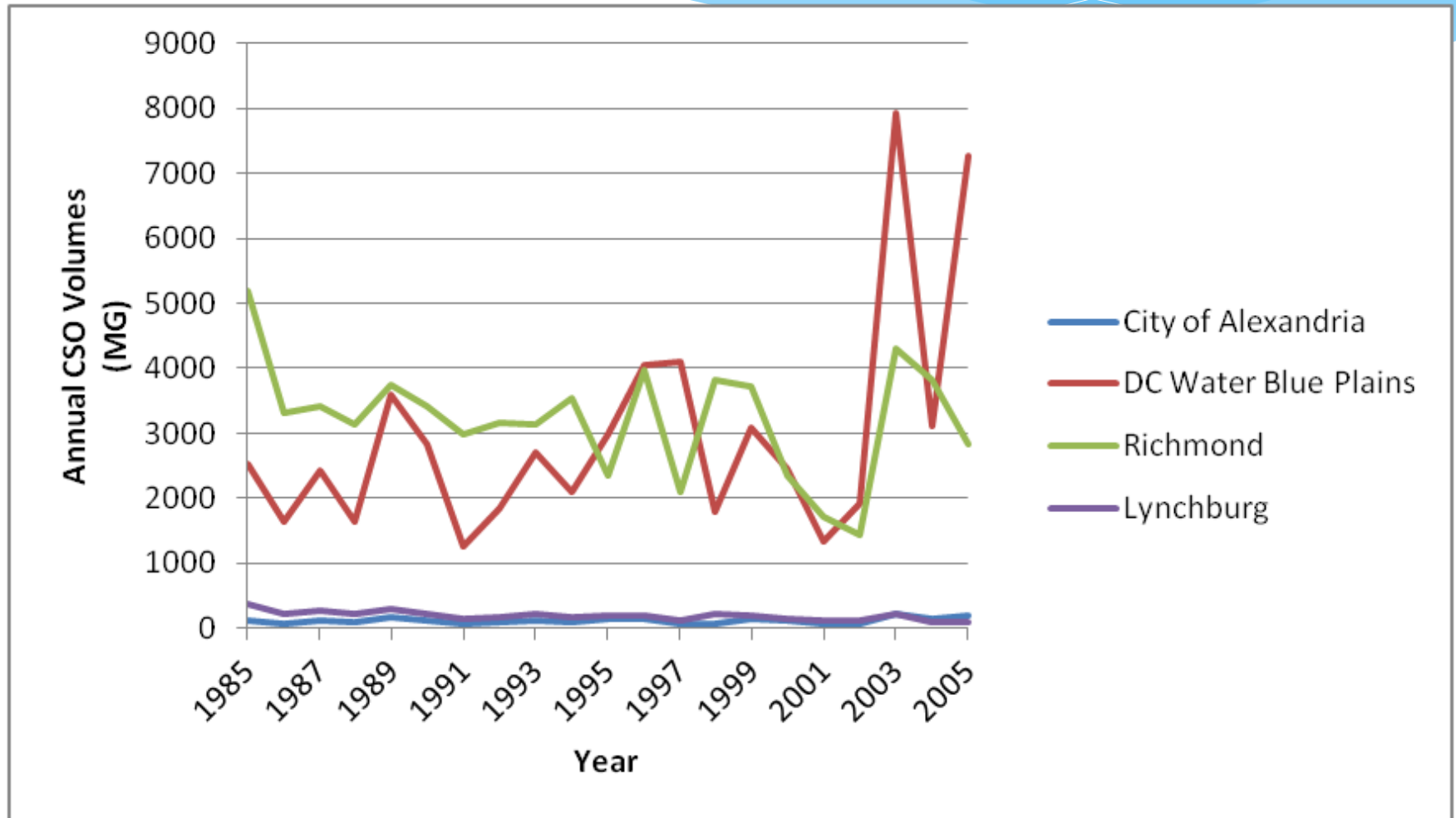
Location of Combined Sewer System (CSS) Communities

- * CSS communities are concentrated in older communities in the NE and Great Lakes regions.
- * Currently, 772 NDPES permits authorize discharges from 9,348 CSO outfalls in 32 states and DC.

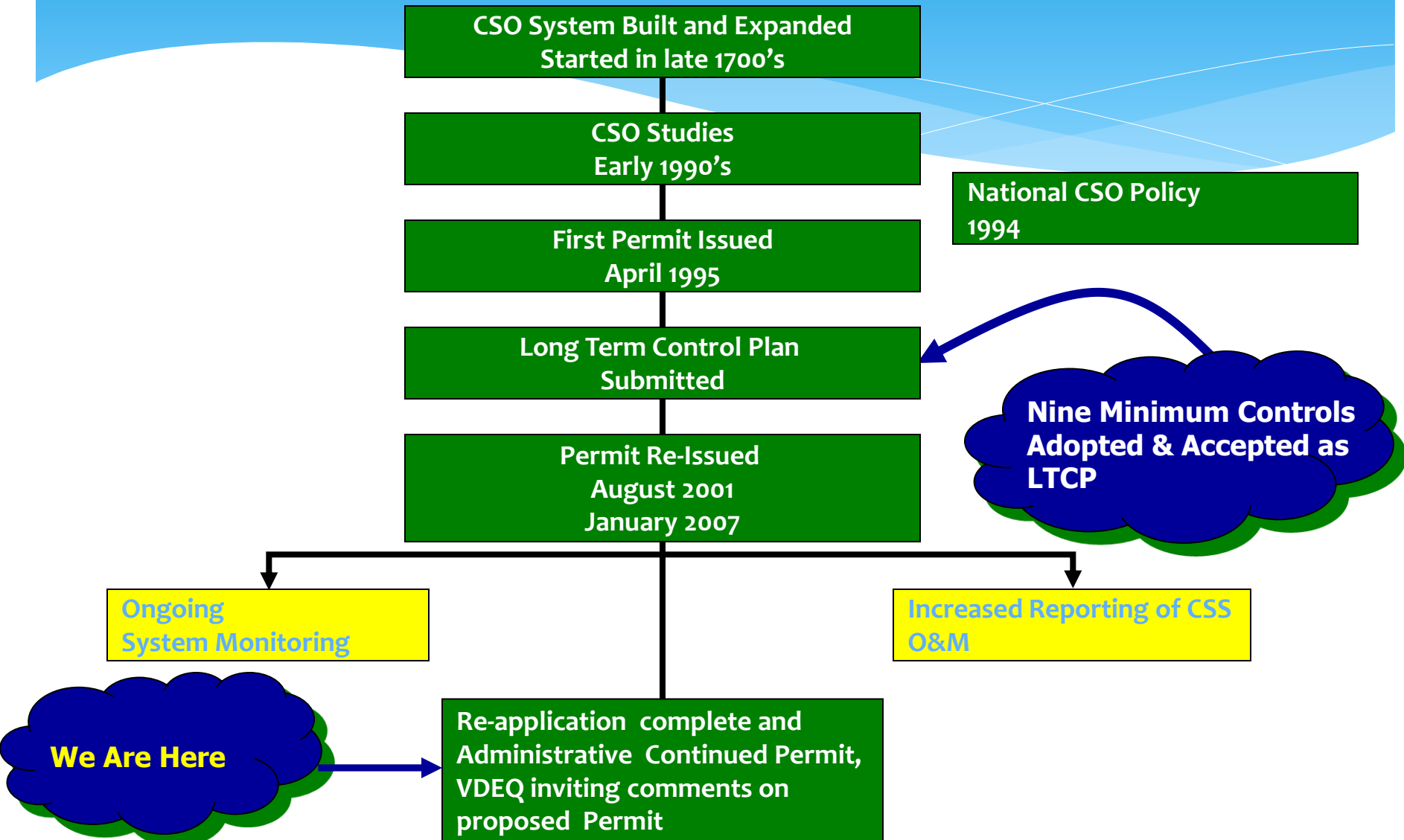


Photo/Graphics Source: www.epa.gov

Local Virginia/Regional Annual Combined Sewer Overflow (CSO) Volumes



Short History of Alexandria's CSS



Public Comments on the Draft CSS permit

VDEQ accepting comments on the CSS draft permit through August 12, 2013

- Can send comments to Douglas.Frasier@deq.virginia.gov
- Copy of the draft permit available online
www.alexandriava.gov/sewers

2012 Combined Sewer Overflow (CSO) Modeling Results

	CSO-001	CSO-002	CSO-003	CSO-004
Number of CSO Events	29	37	63	48
Total Duration of Overflow (hrs)	90	65	329	183
Average Duration of Overflow (hrs)	3.1	1.8	5.2	3.8

	All CSOs
Total Overflow Volume (MG)	112.82
Cumulative Average Overflow Volume (MG)	2.9
Average CSO Duration (hrs)	3.5

What does this really mean?

What factors influence the frequency, duration, and volume of overflows?

- number of rain events
- frequency of the events
- intensity of the events
- characteristics of the sewershed
- characteristics of the specific outfall

How frequently do the overflows take place?

Typically 30 to 60 times/year

How long the overflow events last?

Typically 2 to 5 hours typically

What is the total number of hours this occur over a year?

Equivalent of 3 to 12 days, depending on the outfall

How much of the overflows is stormwater, and how much is wastewater?

Greater than 90% of the overflows is stormwater

Alexandria Combined Sewer System Control Program

- * Management practices: Technology-based Nine Minimum Controls (NMCs). Current Long Term Control Plan
- * Monitoring programs for the receiving water bodies and outfalls
- * Improvements to the Combined Sewer System infrastructure
- * Reduction of the combined sewer area during redevelopment in the Combined Sewer System areas.

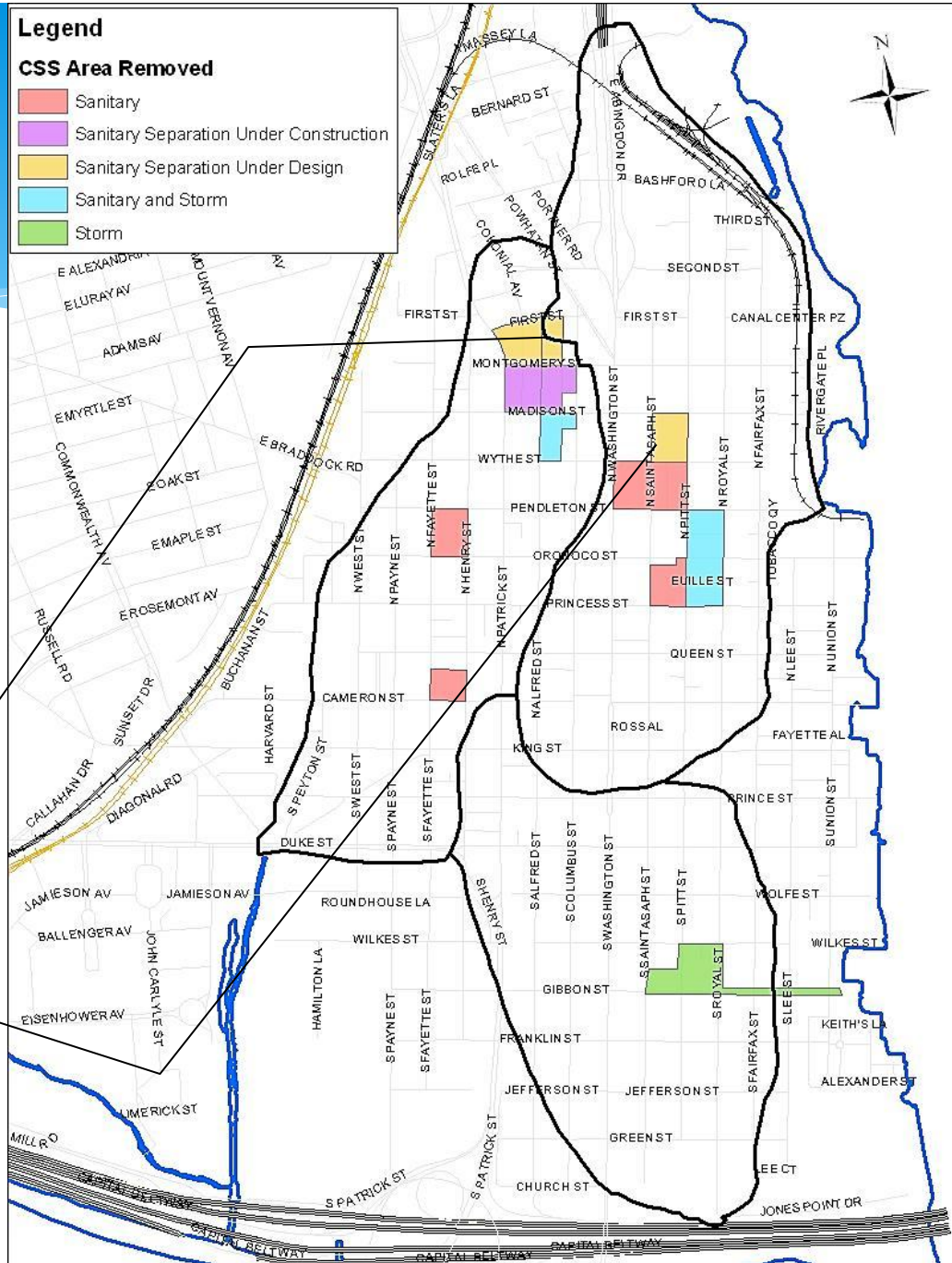
Area Reduction Plan and Targets of Opportunity

- * Proactive Approach
- * Consistent with Eco-City Alexandria Environmental Action Plan
- * Provides guidance for separation during redevelopment
- * Sanitary directed to separate sanitary sewers, and stormwater to separate storm sewer where feasible

Areas Removed

A total of 13+ acres removed since 2003.

Add'l separations planned or under construction



Draft Permit

- * **Several new requirements in draft permit**
- * **Several regulatory changes since last permit was issued**
- * **Most significant regulatory change:**
 - **Hunting Creek Bacteria Total Maximum Daily Load (TMDL)**

Clean Water Act Goals

Total Maximum Daily Load (TMDL)

- * Clean Water Act goal that all waters of the United States be “fishable” and “swimmable”
 - State develops impaired waters list and TMDLs

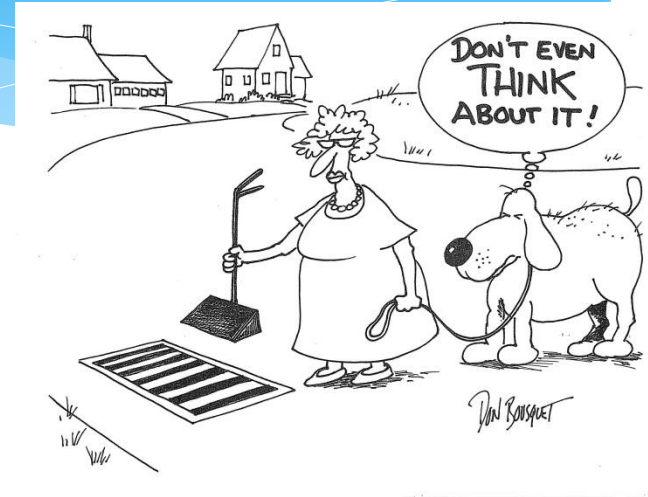


Significant Regulatory Changes: Recently Developed Total Maximum Daily Load (TMDLs)

- * TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards
- * An allocation of that load among the various sources of that pollutant (Waste Load Allocation – WLA)
- * Wasteload allocations (WLAs) developed for sources to meet Total Maximum daily Load (TMDL)
 - TMDLs based on modeling and monitoring data
- * Unfunded mandate

Hunting Creek Bacteria Total Maximum Daily Load (TMDL)

- * Virginia Bacteria Water Quality Criteria
 - 126 *E.coli* counts per 100mL
- * Sources of Bacteria:
 - Stormwater
 - Wildlife
 - Pets
 - Combined Sewer System
 - Sanitary Sewer Overflows
 - ARenew Advanced Waste Water Treatment Plant
 - Septic Systems



Hunting Creek Bacteria Total Maximum Daily Load (TMDL)

- * Hunting Creek Bacteria TMDL: finalized November 2010
 - Required reductions at CSS outfalls 002, 003, and 004 of 80%, 99%, and 99%, respectively for a total of 86%.
- * CSS permit and Long Term Control Plan (LTCP) used by State to implement the TMDL (City's WLA)
 - New proposed permit must be consistent with TMDL

Draft Permit Requires Long Term Control Plan (LTCP) Update

- * Long Term Control Plan (LTCP) Update – a plan that will provide a path for the City to meet the Hunting Creek Total Maximum Daily Load (TMDL)
 - Draft Work Plan due to VDEQ in 9 months
 - Final LTCPU due to VDEQ in 36 months
- * Plan must be implemented by no later than 2035
- * Requires extensive community education and outreach

Long Term Control Plan (LTCP) Update: Public Outreach Goals

- * Educate the community on:
 - History and Basics of Combined Sewer System and Overflows
 - Regulatory/permit requirements

- * Identify potential options and strategies
 - Identify impacts on the community
 - Effectiveness and Costs of those options

- * Alternatives Analysis
 - Identification of preferred strategy/option(s)
 - Develop Implementation Schedule

- * Targeted neighborhood outreach when implementing specific projects

Issues for Discussion for LTCP Development

Typical Strategies

- * Storage: storage tanks, in-line storage, tunnels
- * Separation: fully separate all storm and sanitary sewers in Old Town
- * Green Infrastructure: reduce the amount of runoff reaching the combined sewers
- * Combination: storage, separation, and green
- * Other options and combination of options will be evaluated as well

Issues for Discussion for LTCP Development Programmatic Impacts and Challenges

- * Construction in Old and historic area
- * Significant conflict with existing utilities
- * Existing infrastructure is old and antiquated and may require rebuilding beyond planned sewer work
- * Quality of life: disruption to community and businesses
- * Economic: loss to business and tax revenue
- * **Order of magnitude Costs** – Worst Case – \$200 to \$300million

Long Term Control Plan (LTCP) Update Permit Schedule

- * Draft Work Plan due to Virginia Department of Environmental Quality in 9 months

- * Public Informational Meetings by 18 & 36 months
To Explain:
 - Combined sewer systems
 - The impacts on surface waters
 - Progress to date on minimizing impacts
 - The proposed Long Term Control Plan Update milestones/schedule to comply with Hunting Creek Total Maximum Daily Load (TMDL)
 - Shall allow for public comments and inquiries

- * Final Long Term Control Plan Update due to Virginia Department of Environmental Quality in 36 months

Public Outreach

- * Already begun. Follow “*What’s Next Alexandria*”
- * Press Release
- * Web Site – Updated
- * VDEQ’s Public Notice inviting comments
- * Presentation to Environmental Policy Commission, July 15th, 2013
- * Public Hearing August 5th, 2013
- * Will offer to make presentations at key Civic Associations

Public Hearing

City wants your feedback on:

What type of information on CSS and LTCPU you are most interested in?

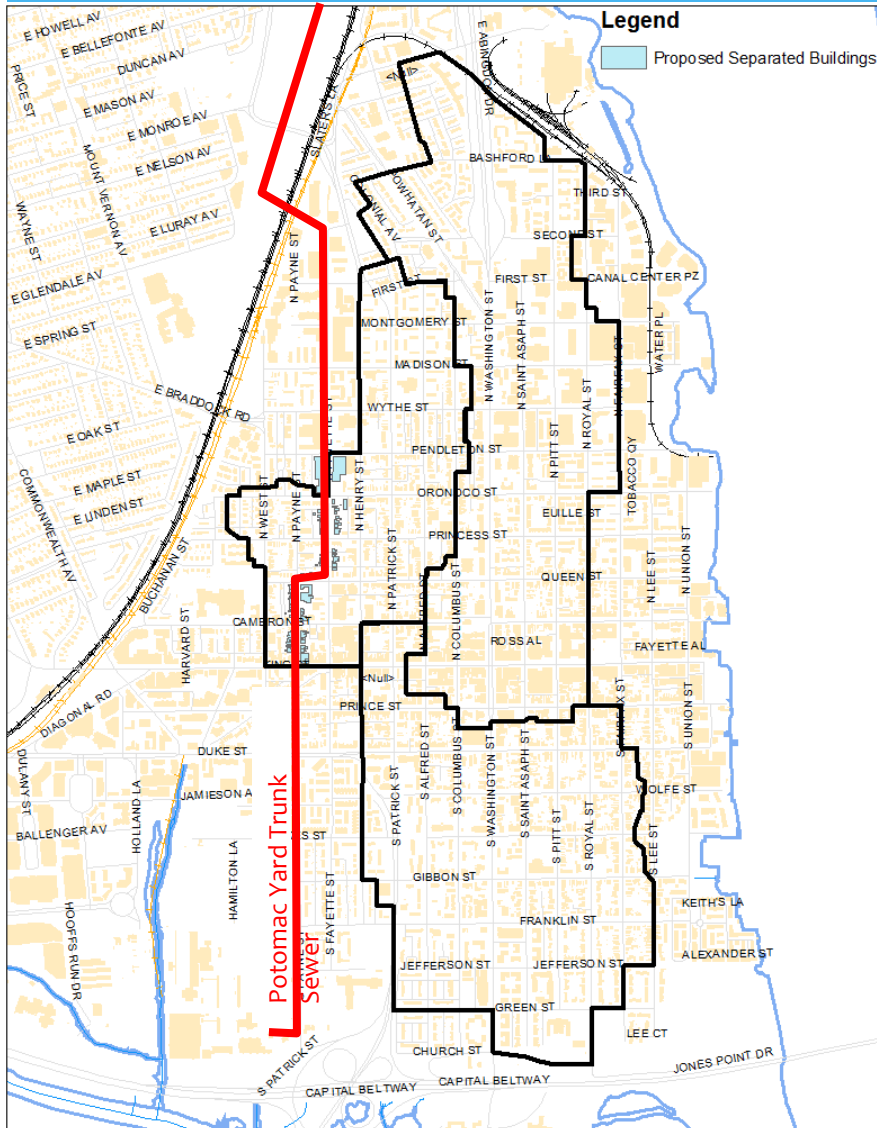
What is(are) the most effective way(s) for the City to provide information to you?

What is(are) the most effective way(s) for the City to solicit input from you?

Other Proposed Permit Requirements

- * Incorporation of the **Area Reduction Plan** as part of redevelopment
- * **5MG reduction of Stormwater Equivalent** – reduce water quality impacts
 - Payne & Fayette Sewer Separation (60- 92 laterals)
 - Combined Sewer Outfalls 003 and 004 Improvements – capture more flow
- * **Green Initiative** - study, implement, and promote green infrastructure
 - Green Public Facilities – during major maintenance/enhancement projects
 - Green Infrastructure Database – track installation and maintenance
- * **\$2.5M for CSO abatement**
- * **Evaluation of Tidal Intrusion at CSO-002**

Payne & Fayette Project Description



- Includes separation of at least 60 properties
- Sanitary sewers to be disconnected from the combined system and reconnected to the Potomac Yard Trunk Sewer
- Work to be confined generally to the following intersections :
 - N Fayette & Oronoco Sts
 - N Fayette & Princess Sts
 - N Fayette & Queen Sts
 - N Payne & Queen Sts
 - N Payne & Cameron Sts
- Separation of sanitary sewers will improve water quality

Payne and Fayette Separation



- Legend**
- PYTS Manholes
 - PYTS Sewer
 - Separated Buildings
 - Buildings

Proposed Buildings for Separation
Payne & Fayette Sewer Separation Project

City of Alexandria, Virginia
December 2012

Payne & Fayette Project Schedule

- * Project currently in the design phase
- * Anticipated schedule:
 - Design complete: Spring 2014
 - Construction: Earliest Fall 2014/2015
- * Approximate Cost: \$1.00 M

Types of Green Infrastructure

* Under Consideration

- Permeable Pavement
 - Alleys
 - Parking Lanes
 - Sidewalks
- Bioretention
- Rain Barrels
- Tree Boxes
- Green Roofs



Public Comments on the Draft CSS permit

VDEQ accepting comments on the CSS draft permit through August 12, 2013

- Can send comments to Douglas.Frasier@deq.virginia.gov
- Copy of the draft permit available online
www.alexandriava.gov/sewers

Public Hearing

City wants your feedback on:

What type of information on CSS and LTCPU you are most interested in?

What is(are) the most effective way(s) for the City to provide information to you?

What is(are) the most effective way(s) for the City to solicit input from you?

What can you do to help?

- * Get informed and stay engaged
- * Help the City to get the message out
- * Put off discretionary water use during and immediately after rain events (Combined Sewer System)

What can you do to help?

- * Do not pour anything into storm sewer drains.
- * Keep storm sewer drains clear of leaves, grass clippings, sticks and litter.
- * Repair any leaks and drips from your vehicle.
- * Collect and recycle motor oil.
- * Clean up spills and don't wash them into a drain.
- * Don't pour paints, solvents, cleaners, etc. into any drain – take it to City's household hazardous waste collection.
- * Minimize the use of herbicides and pesticides.

Questions

For more information, contact:

Lalit Sharma, Division Chief, Office of Environmental
Quality Lalit.Sharma@alexandriava.gov

703-746-4065

www.alexandriava.gov/sewers