

# City of Seattle & King County CSO Program Coordination

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# Short History on Metro/King County

## *The history of our mission*

*From this...*



*To this...*



- ◆ 1950s: 20-30 billion gallons per year of untreated or poorly treated wastewater flowed into Lake Washington, Puget Sound, and many rivers and smaller lakes per year

- ◆ Raw sewage outfalls in many locations
- ◆ No industrial controls

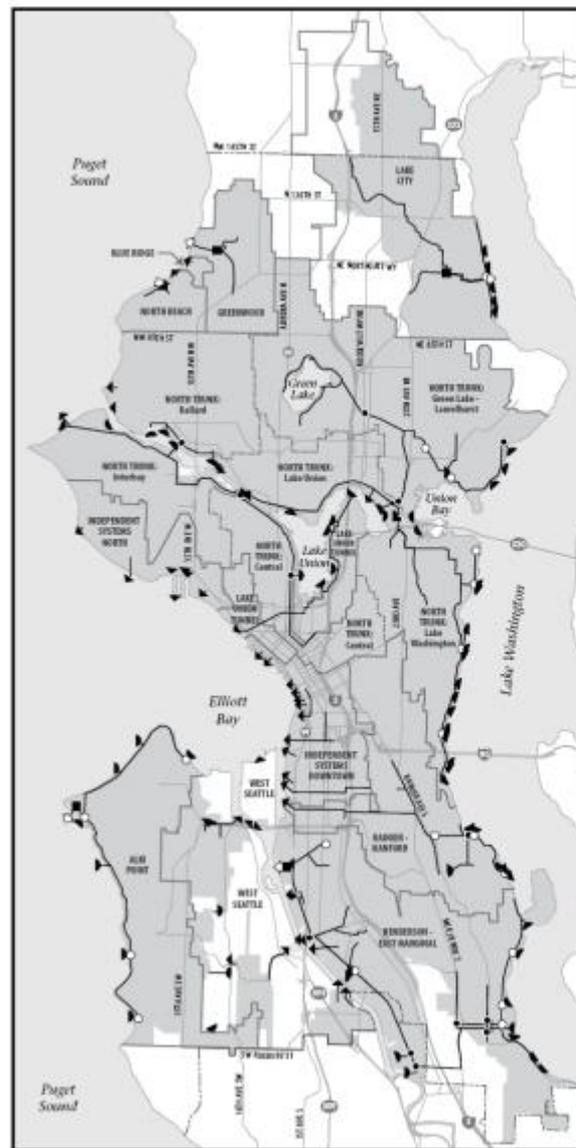
- ◆ 1958: the voters created Metro and developed a regional wastewater treatment system based on watersheds as opposed to political boundaries.

- ◆ Sewer infrastructure serving areas greater than 1,000 acres went to Metro
- ◆ Sewer infrastructure serving areas less than 1,000 acres stayed with the City of Seattle

- ◆ 1994: King County assumed authority of Metro and its legal obligation to treat wastewater for 34 local jurisdictions and local sewer agencies that contract with King County.

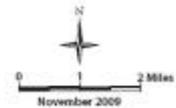
# King County's CSO Control Program

- ◆ CSO control planning began in 1979
  - ◆ 20-30 billion gallons per year to 2.4 billion by mid-1980s
  - ◆ Now approximately 900 million gallons per year from KC CSOs
    - ◆ ~100 million gallons per year from Seattle
- ◆ KC control to 1 event/year by 2030



Map 1a  
Wastewater Service and  
Sewage/Drainage Systems  
in Seattle: 1957 Data

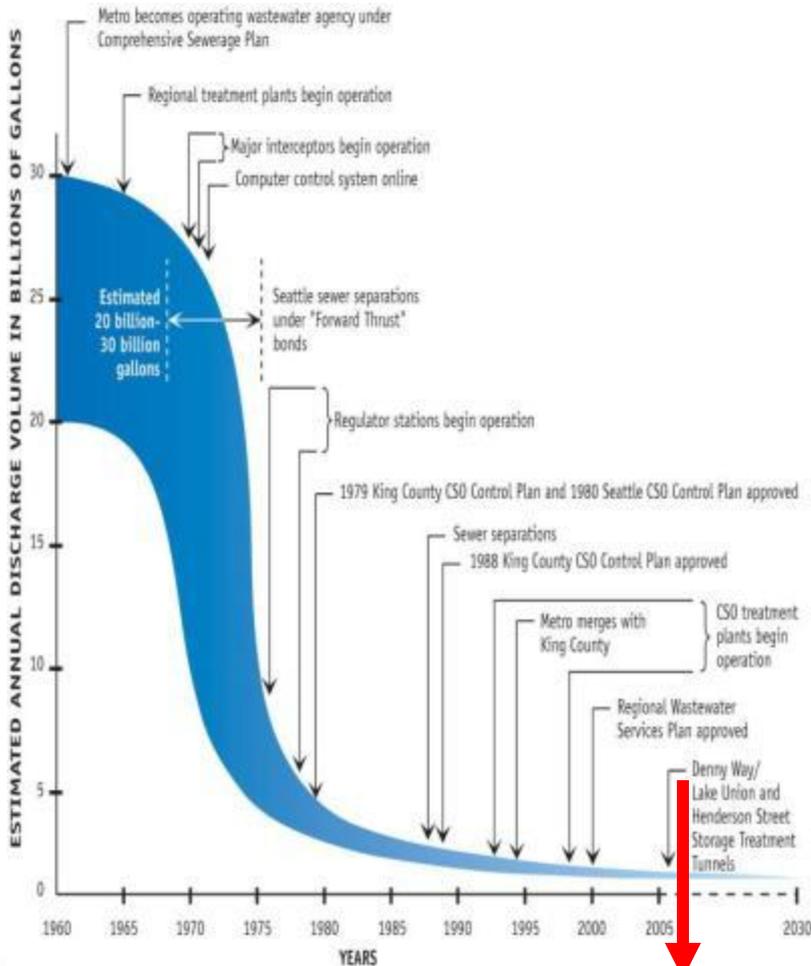
- Wastewater Service System Boundary
- North Trunk Sub-District Boundary
- Sewered Area
- Principal Sewer
- ◀ Raw Sewage Outfall
- ◊ Treated Sewage Outfall
- ▶ Overflow
- Sewage Treatment Plant
- Pump Station
- Special Structure
- 2009 Major Road (for reference purposes)
- 1957 Seattle City Limit



Map produced by King County under  
Visual Communications and GIS Unit.  
Data source: Department of Public  
and Community Services, Planning  
and Compliance for 1957 data generated from  
the 1957 Metropolitan Sewerage  
Change Survey. All other data from the  
King County Spatial Data Warehouse.  
November 2009/09/09/09/09/09

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# What Has King County Been Doing About CSOs?



- ◆ Reduced to 1.5 billion gallons/year by 2000
    - ◆ \$109M\* for completed
  - ◆ Finished 2 large projects in 2005
    - ◆ Mercer/Elliott W. & Henderson/MLK CSO plants for 33% reduction more
    - ◆ \$262M\*
  - ◆ Beach projects now underway
    - ◆ Barton, Murray, Magnolia, North Beach
  - ◆ Full system control (1 overflow/year) by 2030
    - ◆ \$424M\* RWSP
- \*Equiv. to 2009 \$  
@ 3% inflation/yr

# King County CSO Control Plan 1999 Regional Wastewater Services Plan (RWSP)

- ◆ Approved RWSP included 21 CSO control project/concepts
  - ◆ Includes conveyance upgrades, storage, and treatment projects
  - ◆ All CSOs controlled to State standard of one event per year by 2030
  - ◆ Cost is \$424 million (2009\$)

# RWSP schedule set to protect public health, the environment, and endangered species

1. Puget Sound Beaches Underway
2. East Ship Canal Start 2011
3. Duwamish Start 2012
4. West Ship Canal Start 2025

**Complete 2030**



# Current RWSP Schedule

RWSP	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
S. Magnolia																									
Murray																									
Barton																									
North Beach																									
Hanford@Rainier																									
Hanford																									
West Point Improvements																									
Lander/Hanford																									
Michigan																									
Brandon																									
Chelan																									
Kingdome																									
King St.																									
Univ+Montlake																									
8th Ave S																									
West Michigan																									
Terminal 115																									
3rd W																									
Ballard																									
11th Ave. West																									

We are Here



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Storage

Conveyance

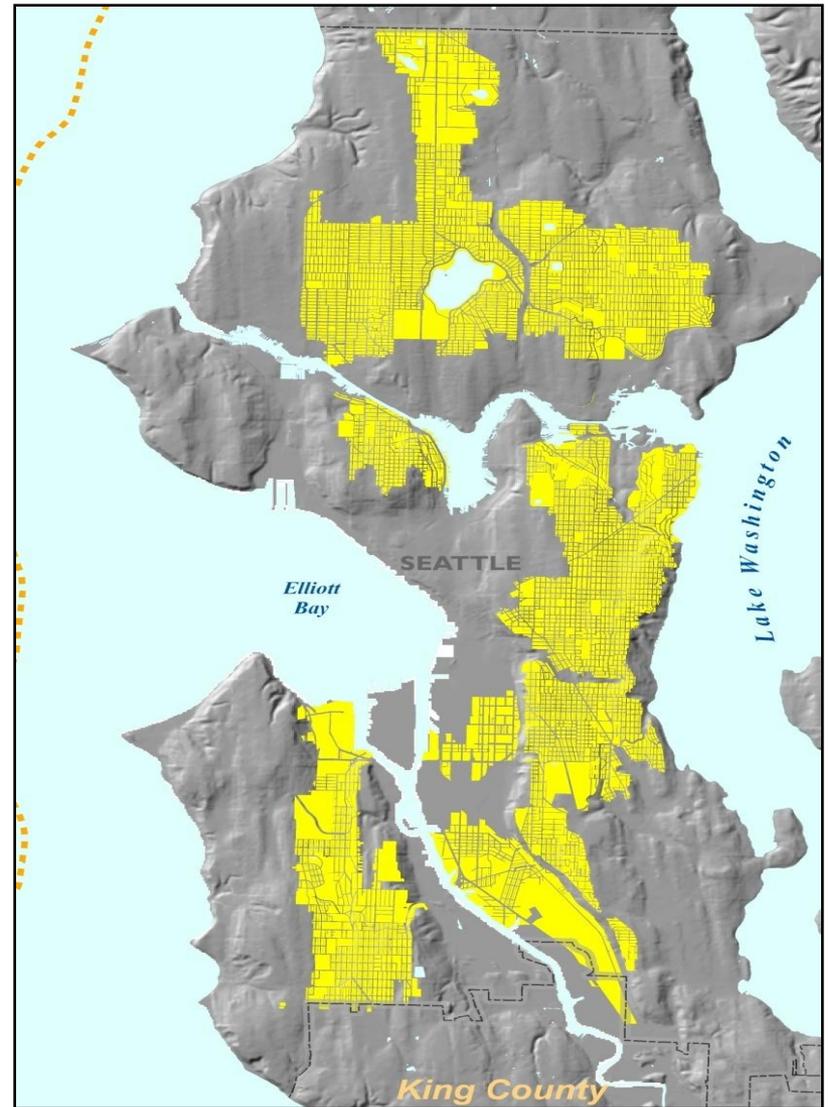
Treatment

Duamish

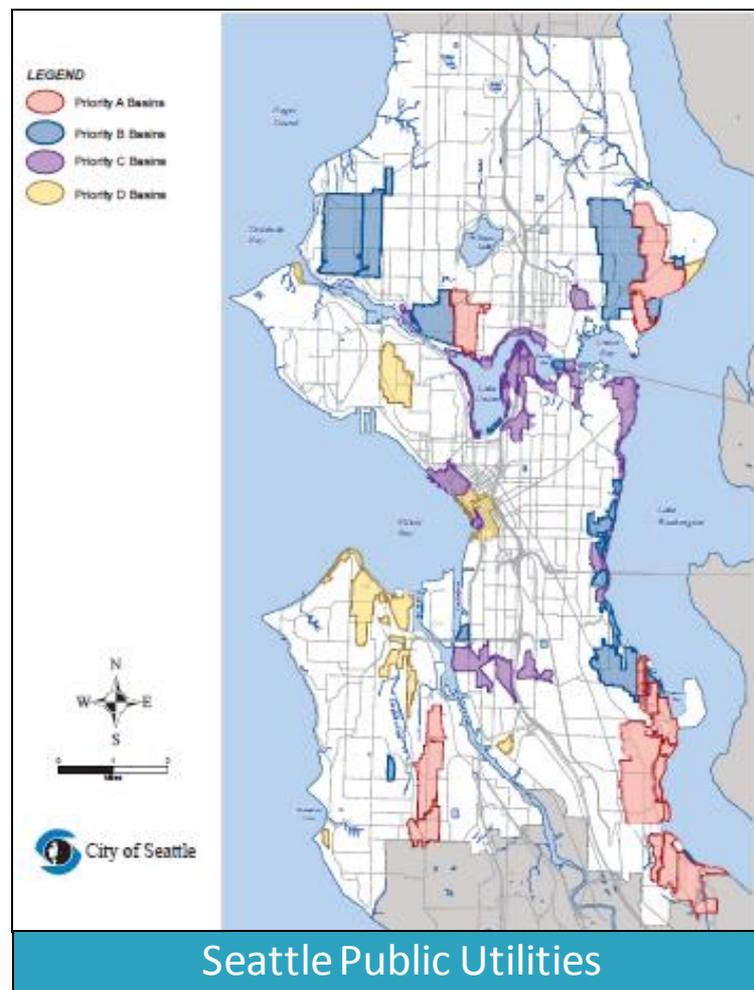


# GSI Evaluation

- ◆ King County basins to be analyzed for GSI potential
- ◆ Collaboration with SPU GSI evaluations
- ◆ Roadside Raingardens
- ◆ Green Alleys
- ◆ RainWise Potential
  - ◆ Commercial
  - ◆ Residential

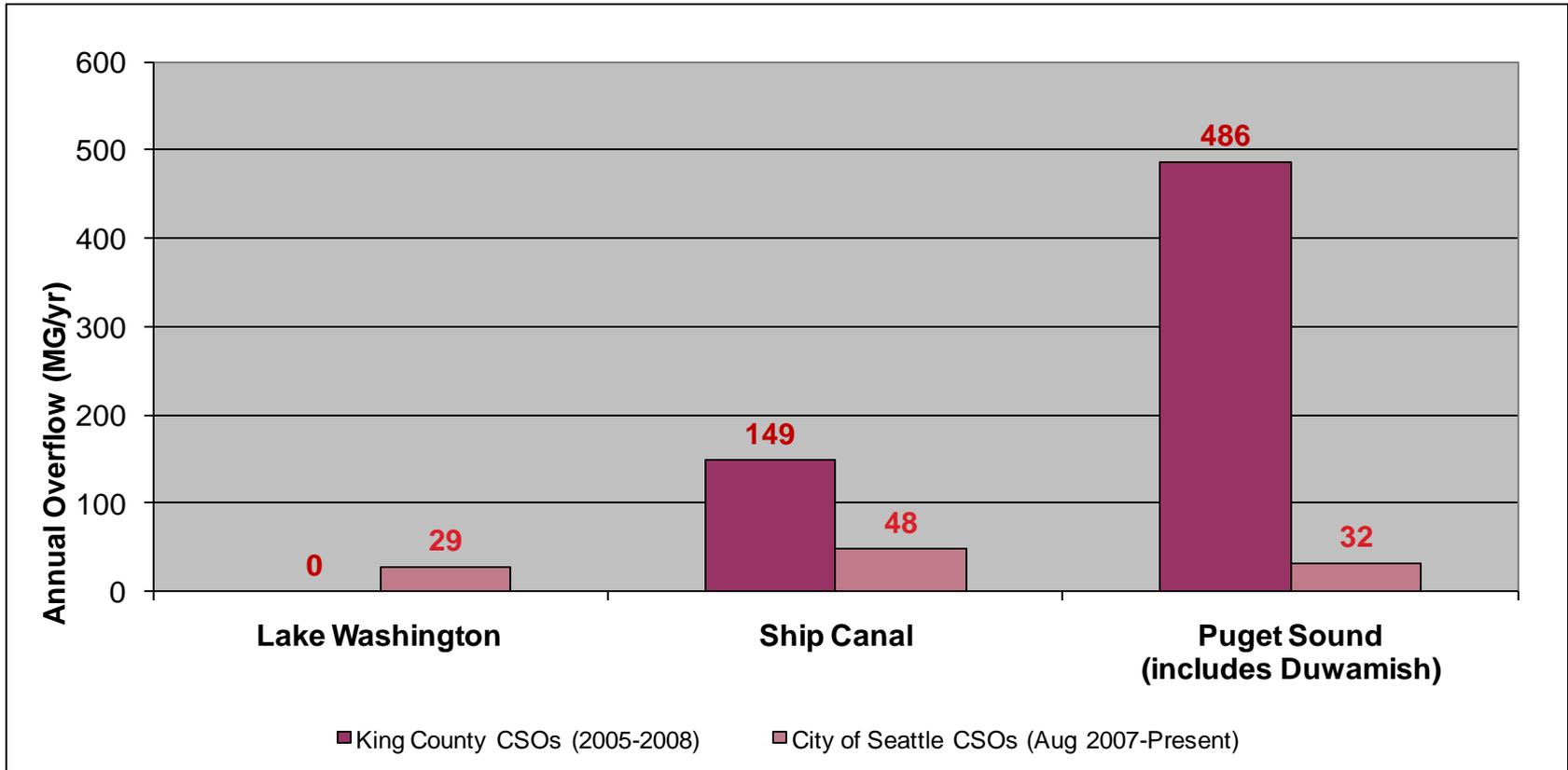


# How do Seattle's Priorities Differ from King County's?



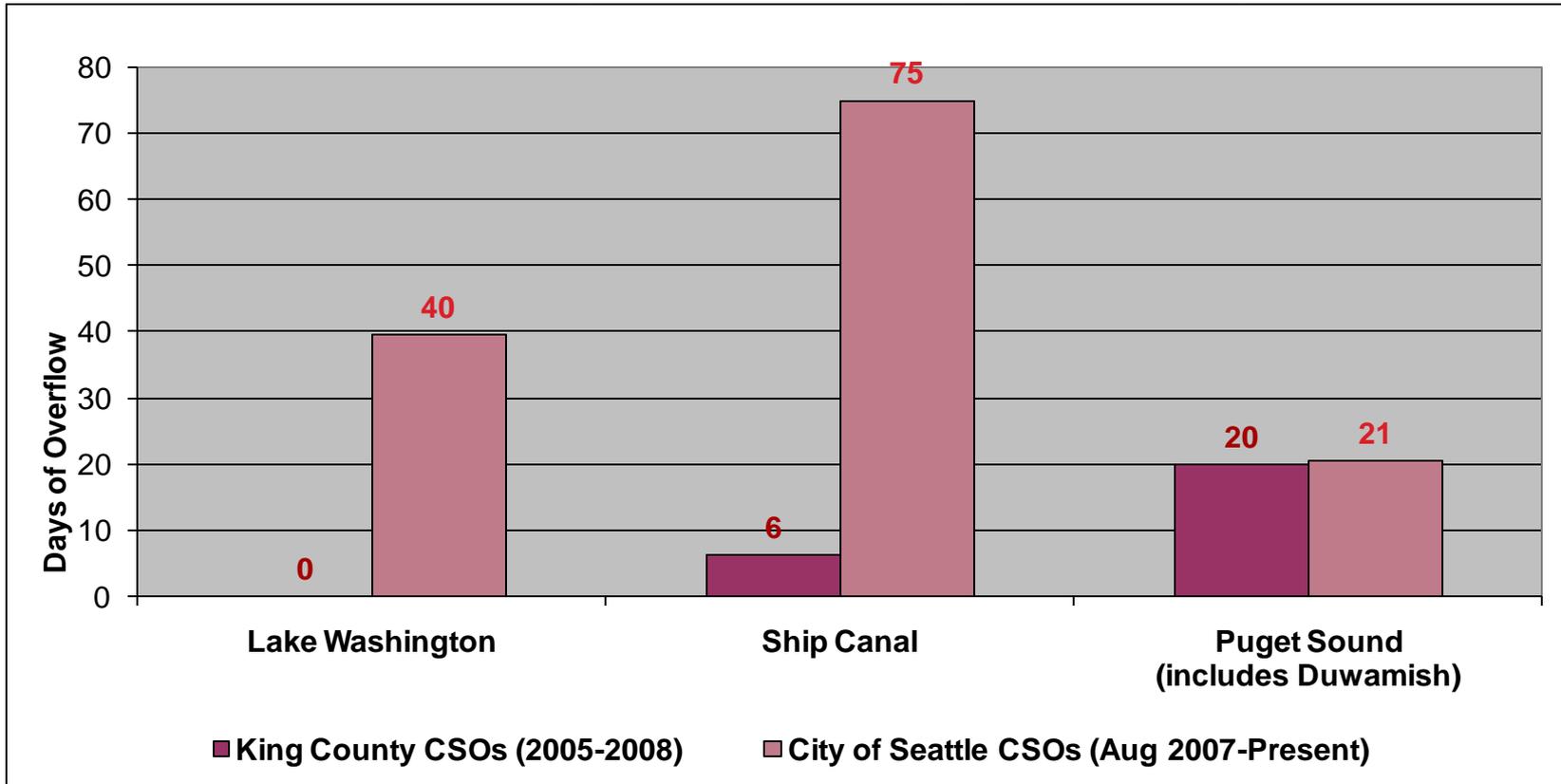
# King County and City of Seattle Annual CSO Volumes (MG)

Source: KC Daily Rainfall and Sewage Diversion Reports



# King County and City of Seattle Annual CSO Frequencies

Source: KC Daily Rainfall and Sewage Diversion Reports



# Why is Collaboration Between the City & County Important?

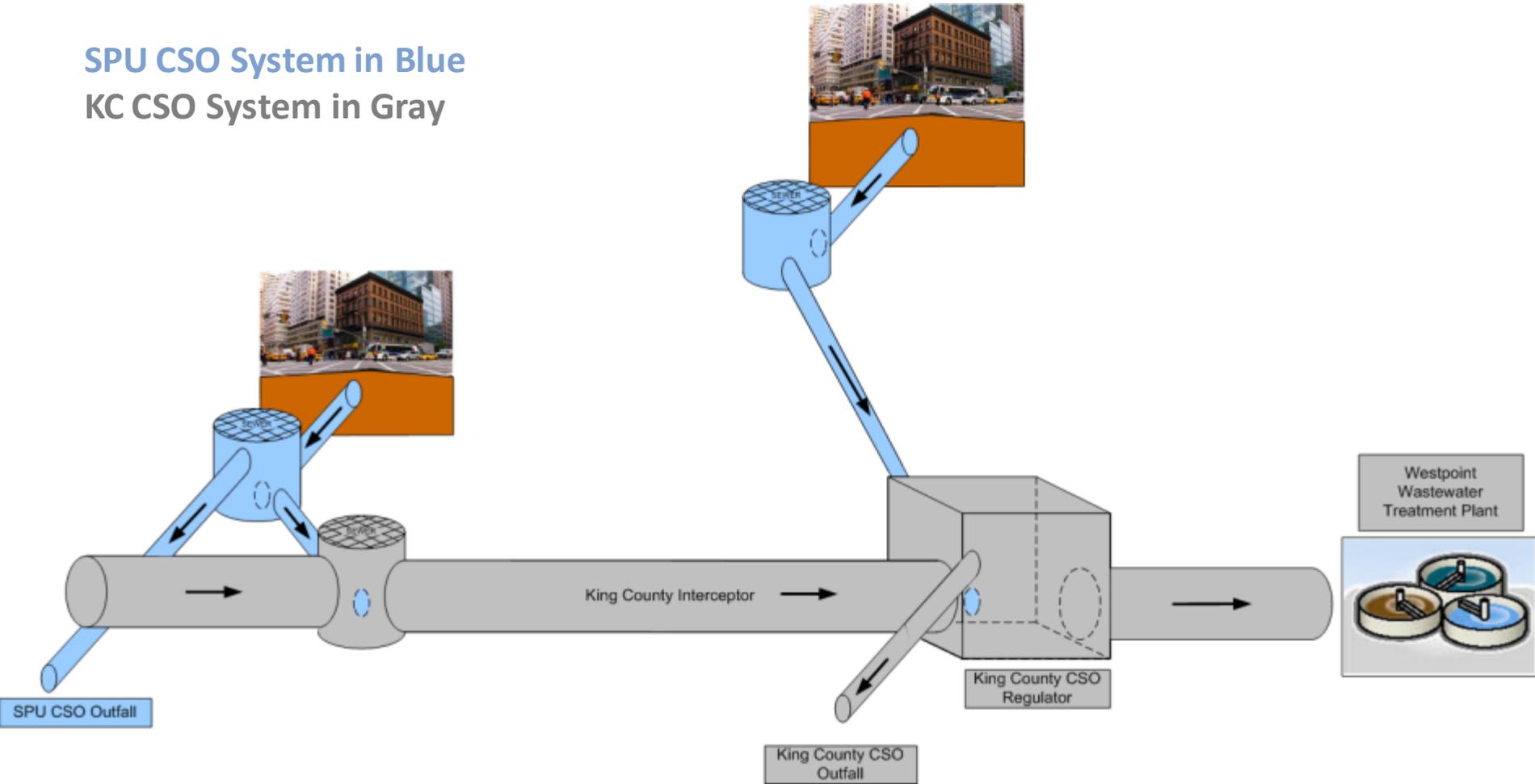
- The two systems are hydraulically linked
  - Operations & maintenance practices of each agency can affect the other.
  - Each agency's capital improvement projects can affect the other.
- Collaborative projects can provide opportunity for significant cost savings.
- Public does not differentiate between City and County CSO Control Programs.

# History of Collaboration with Seattle

- Past: Joint projects, team participation, sharing data
- Now: King County and Seattle are collaborating in many ways:
  - Frequent communication
  - Joint system model development
    - SPU has loaned KC staff & consultant support
  - Joint Real-time CSO Notification Website
    - Target to incorporate SPU data into County site by end of year
  - Green Stormwater process & projects
  - Collaborative control project alternative development for Plans

# Current CSO Systems – King County & SPU

SPU CSO System in Blue  
 KC CSO System in Gray

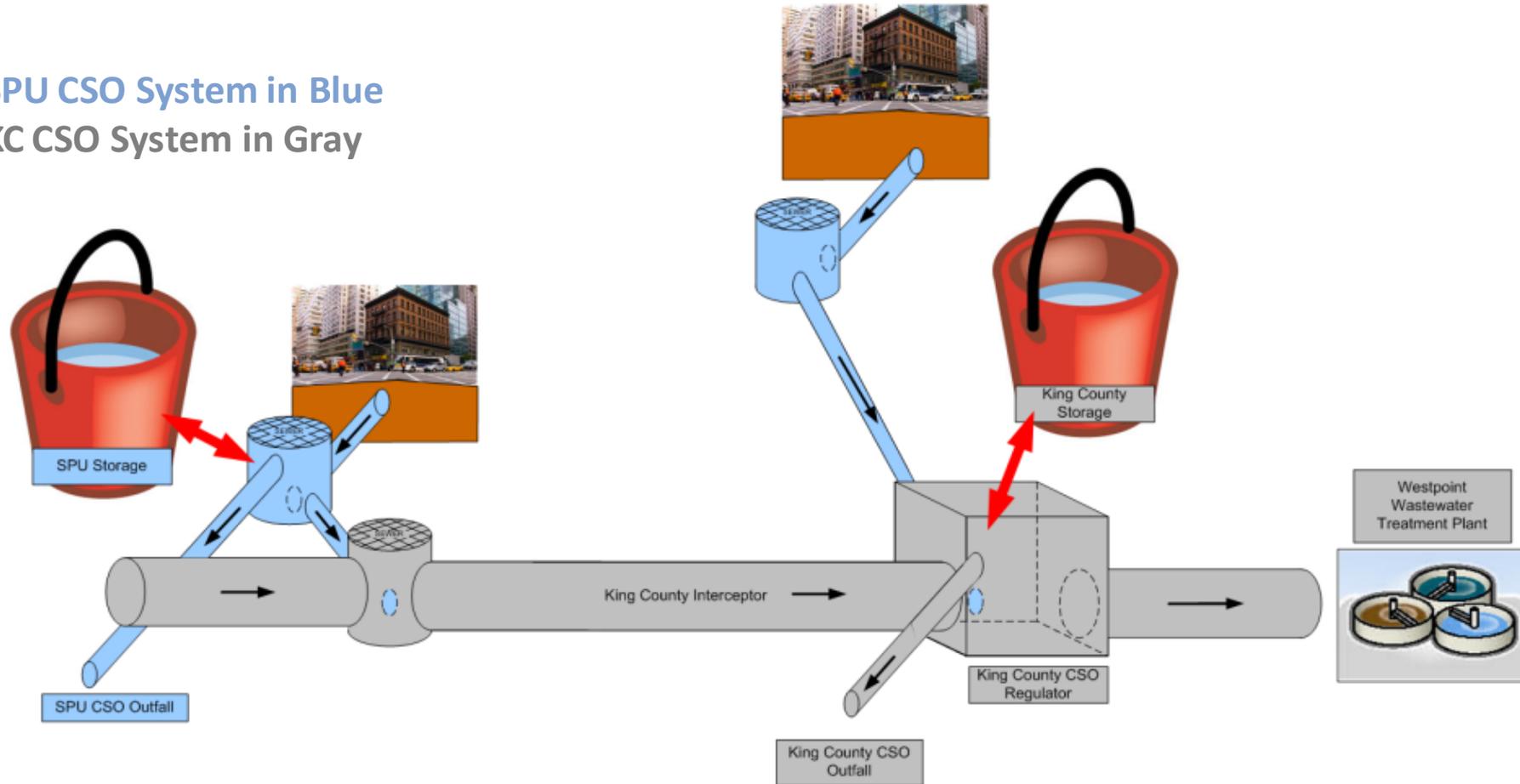


-   
**Retrofit**  
 Optimize and repair the existing system to increase capacity
-   
**Green**  
 Increase the capacity of soil and slow the flow
-   
**Prevent**  
 Prevent pollution from entering the system
-   
**Store**  
 Increase the capacity of underground pipes and tanks
-   
**Treat**  
 Convey runoff to a treatment facility before discharging into waterway
-   
**Transfer**  
 Convey flows to part of the system that has available capacity.



# Independent Alternatives – King County & SPU

SPU CSO System in Blue  
 KC CSO System in Gray



- 

**Retrofit**  
Optimize and repair the existing system to increase capacity
- 

**Green**  
Increase the capacity of soil and slow the flow
- 

**Prevent**  
Prevent pollution from entering the system
- 

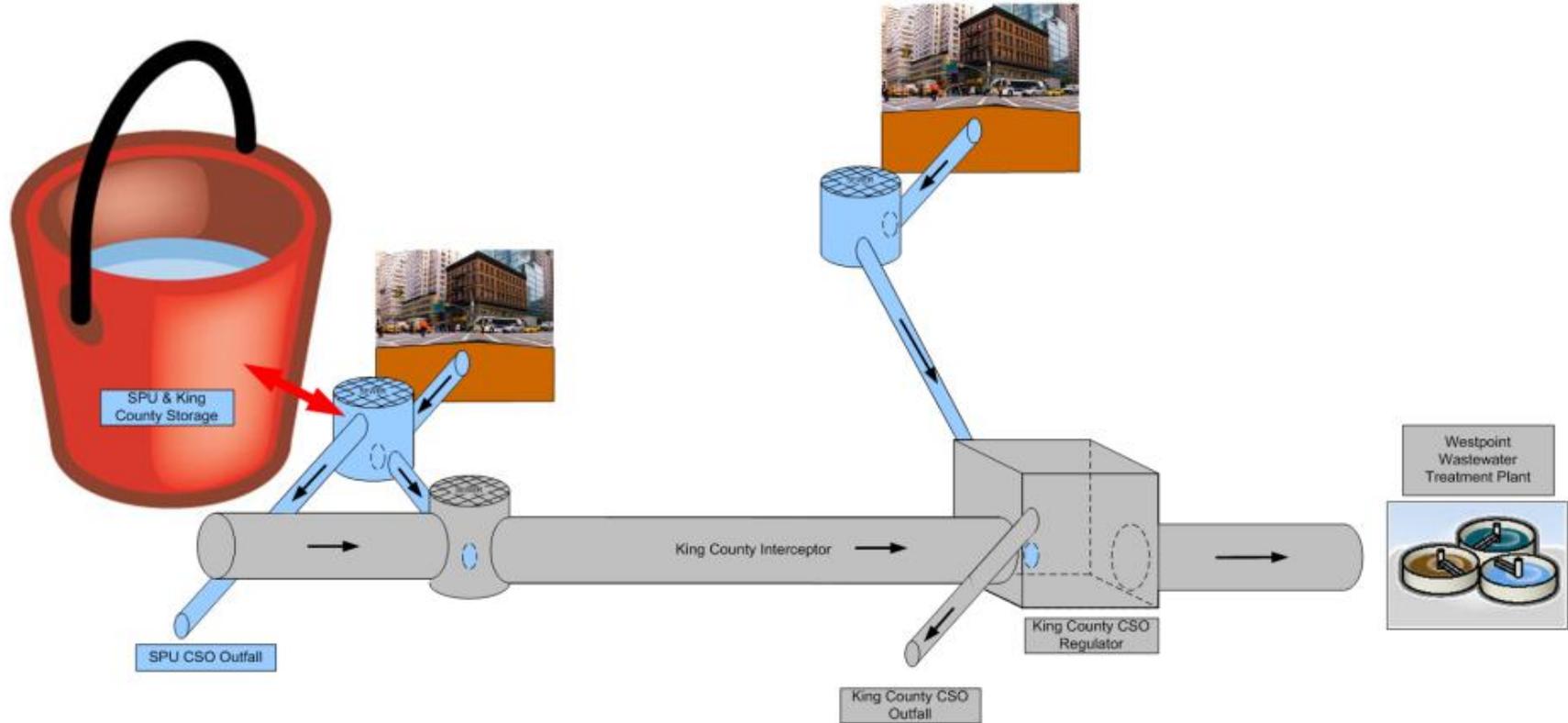
**Store**  
Increase the capacity of underground pipes and tanks
- 

**Treat**  
Convey runoff to a treatment facility before discharging into waterway
- 

**Transfer**  
Convey flows to part of the system that has available capacity.

# Joint Concept #1: SPU Storage

## SPU/King County Collaborative Alternatives



SPU CSO System in Blue

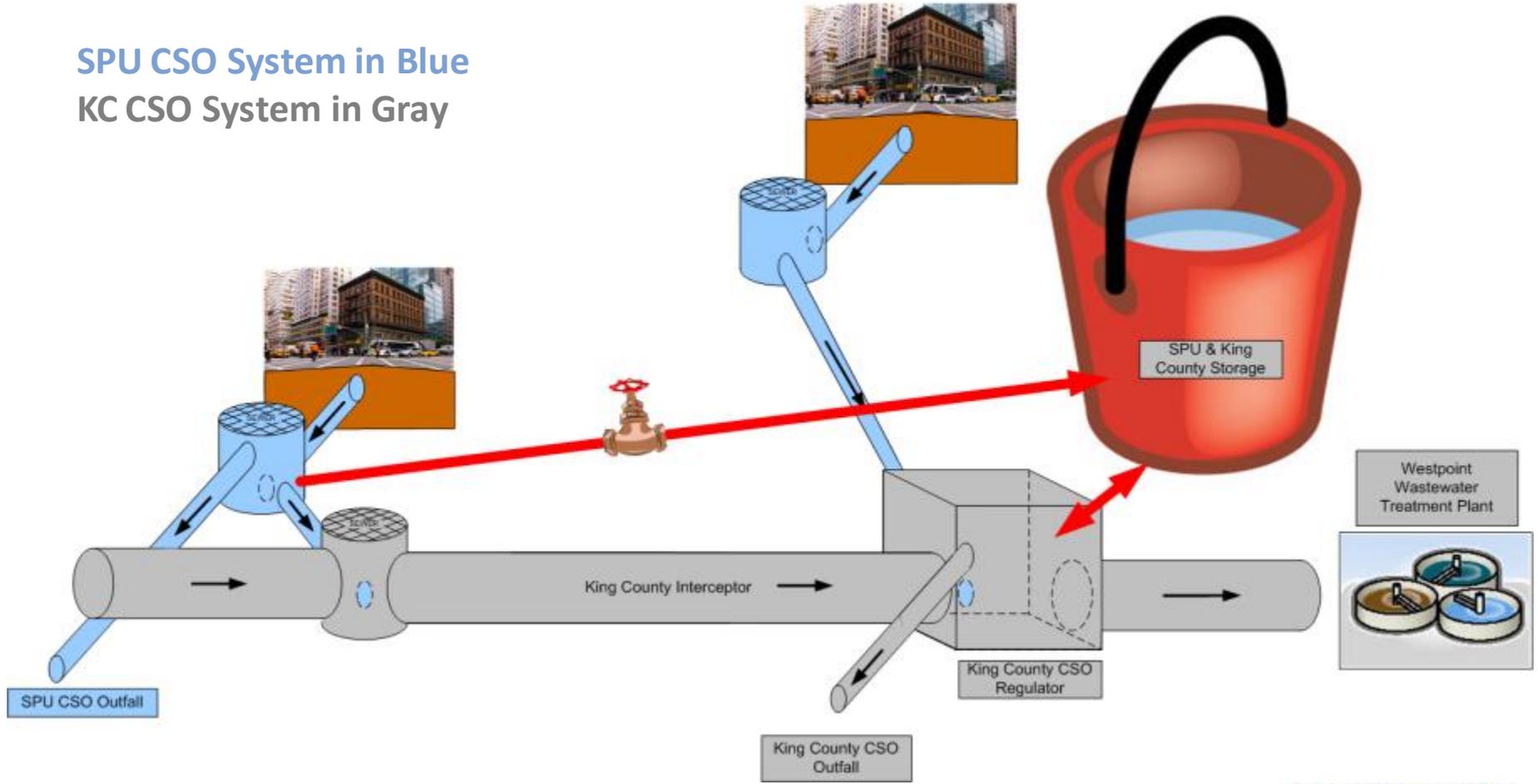
KC CSO System in Gray

 <p><b>Retrofit</b> Optimize and repair the existing system to increase capacity</p>	 <p><b>Green</b> Increase the capacity of soil and slow the flow</p>	 <p><b>Prevent</b> Prevent pollution from entering the system</p>	 <p><b>Store</b> Increase the capacity of underground pipes and tanks</p>	 <p><b>Treat</b> Convey runoff to a treatment facility before discharging into waterway</p>	 <p><b>Transfer</b> Convey flows to part of the system that has available capacity.</p>
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# Joint Concept #2: King County Storage

## SPU/King County Collaborative Alternatives

SPU CSO System in Blue  
 KC CSO System in Gray

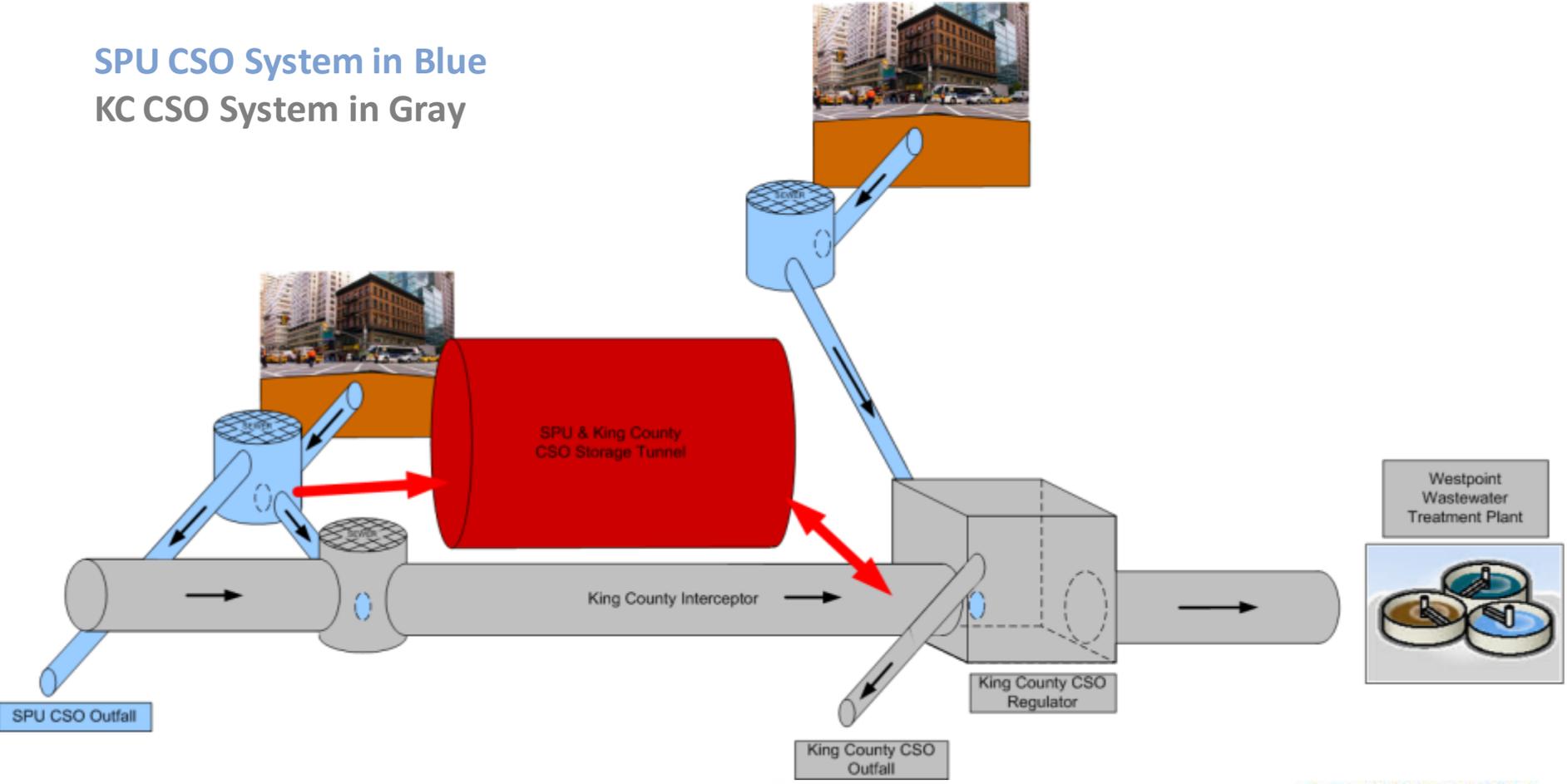


-   
**Retrofit**  
 Optimize and repair the existing system to increase capacity
-   
**Green**  
 Increase the capacity of soil and slow the flow
-   
**Prevent**  
 Prevent pollution from entering the system
-   
**Store**  
 Increase the capacity of underground pipes and tanks
-   
**Treat**  
 Convey runoff to a treatment facility before discharging into waterway
-   
**Transfer**  
 Convey flows to part of the system that has available capacity.

# Joint Concept #3: Joint Storage Tunnel

## SPU/King County Collaborative Alternatives

SPU CSO System in Blue  
 KC CSO System in Gray



-   
**Retrofit**  
 Optimize and repair the existing system to increase capacity
-   
**Green**  
 Increase the capacity of soil and slow the flow
-   
**Prevent**  
 Prevent pollution from entering the system
-   
**Store**  
 Increase the capacity of underground pipes and tanks
-   
**Treat**  
 Convey runoff to a treatment facility before discharging into waterway
-   
**Transfer**  
 Convey flows to part of the system that has available capacity.



# Joint Concept #4: More GSI

## SPU/King County Collaborative Alternatives

SPU CSO System in Blue  
 KC CSO System in Gray

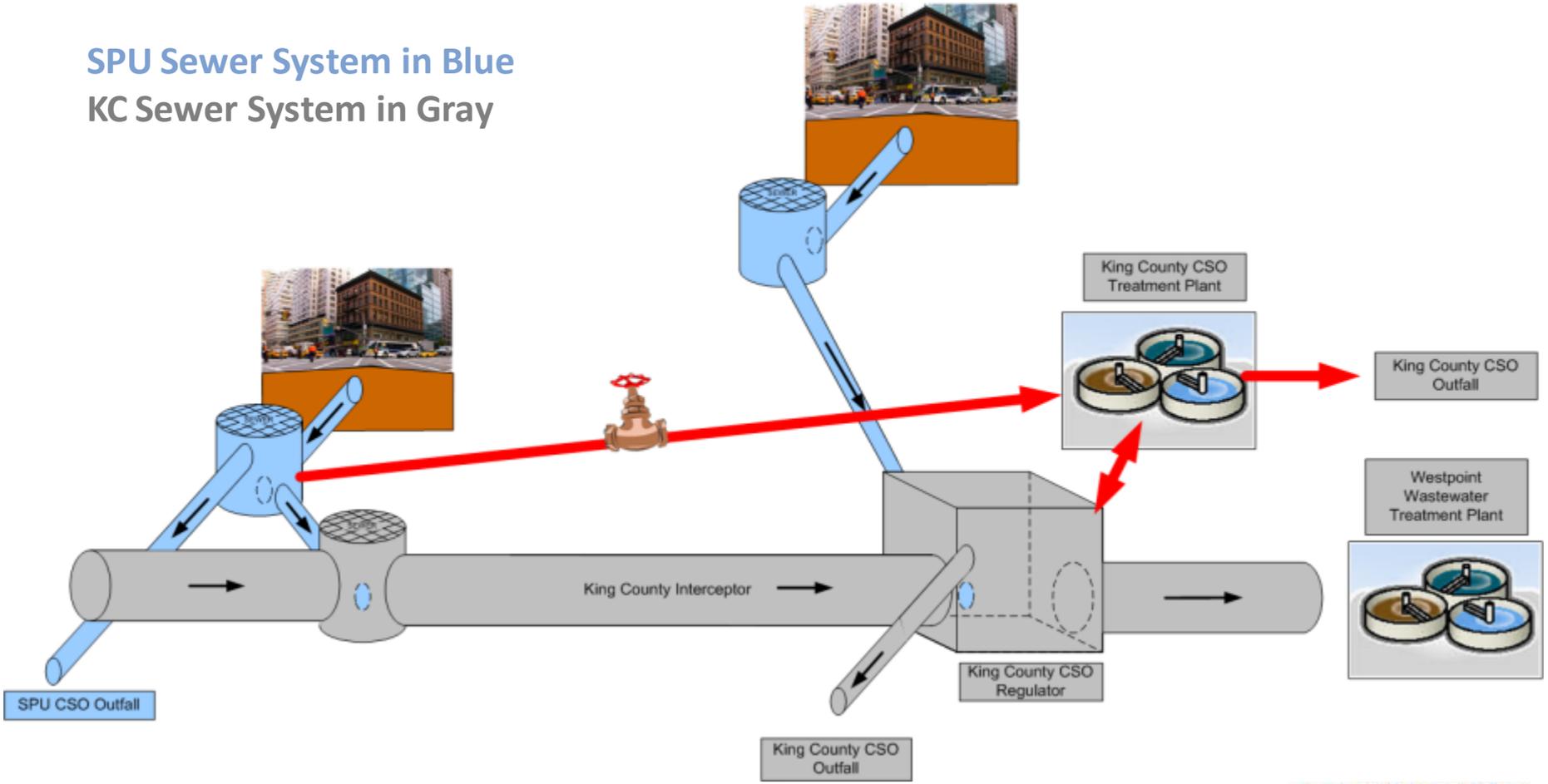


-   
**Retrofit**  
 Optimize and repair the existing system to increase capacity
-   
**Green**  
 Increase the capacity of soil and slow the flow
-   
**Prevent**  
 Prevent pollution from entering the system
-   
**Store**  
 Increase the capacity of underground pipes and tanks
-   
**Treat**  
 Convey runoff to a treatment facility before discharging into waterway
-   
**Transfer**  
 Convey flows to part of the system that has available capacity.

# Joint Concept #5: Flow Transfer/Treatment

## SPU/King County Collaborative Alternatives

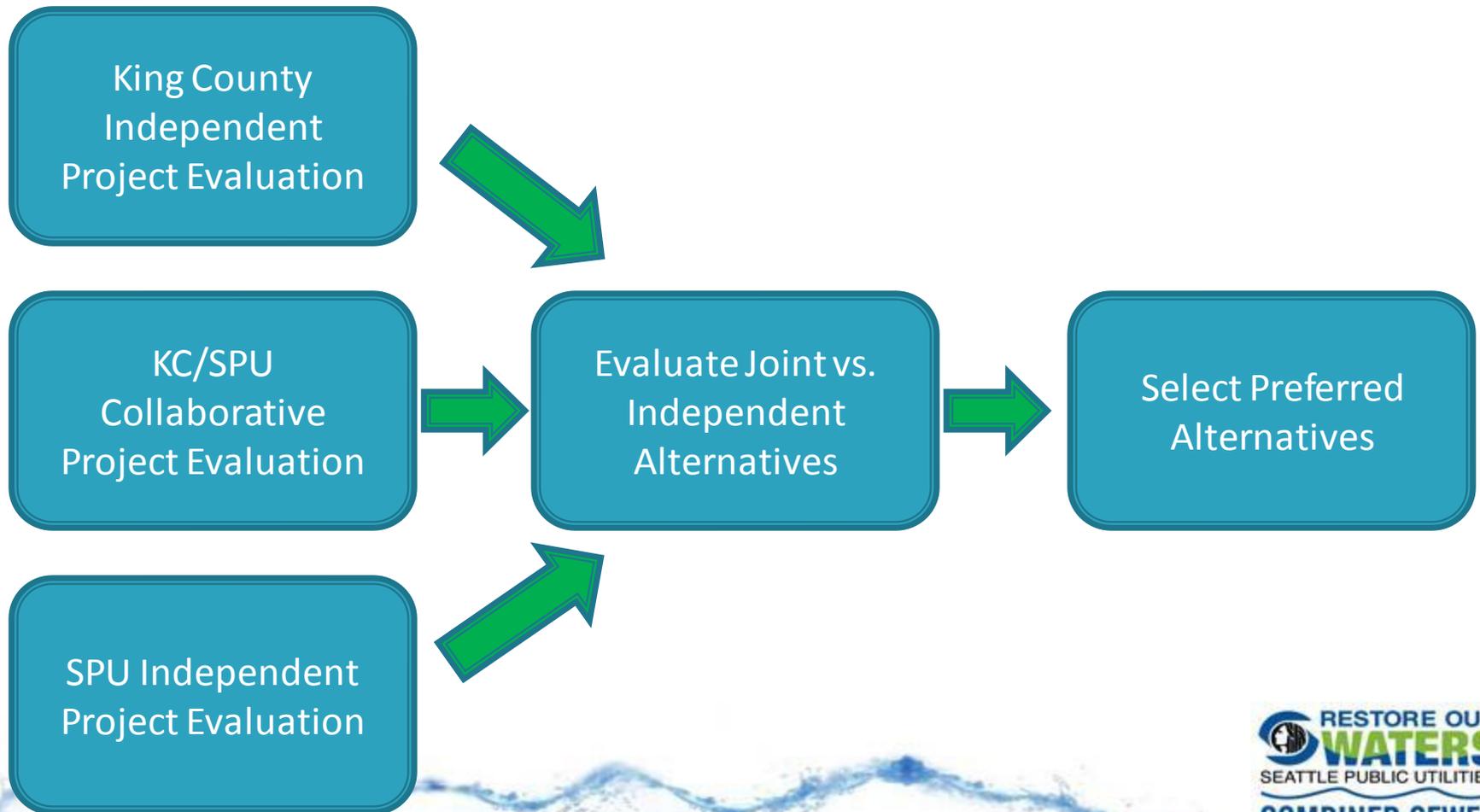
SPU Sewer System in Blue  
 KC Sewer System in Gray



-   
**Retrofit**  
 Optimize and repair the existing system to increase capacity
-   
**Green**  
 Increase the capacity of soil and slow the flow
-   
**Prevent**  
 Prevent pollution from entering the system
-   
**Store**  
 Increase the capacity of underground pipes and tanks
-   
**Treat**  
 Convey runoff to a treatment facility before discharging into waterway
-   
**Transfer**  
 Convey flows to part of the system that has available capacity.



# Joint/Independent Alternatives Evaluation Process



# Public Involvement

- ◆ Part of larger, on-going effort
- ◆ Program Review involvement has begun
- ◆ We will listen to a range of stakeholders
  - ◆ Heard the strong interest in Duwamish schedules
    - ◆ Accelerated Hanford @ Rainier to 2011
    - ◆ RWSP has rest beginning in 2012
  - ◆ Science & Environmental Priorities workshop 9/29
  - ◆ Treatment technology workshop early November
  - ◆ Alternatives workshops Spring 2011
- ◆ Balance input and propose Plan modifications
- ◆ Draft modified Plan
  - ◆ Public review draft
- ◆ EPA process may change scope & schedule

# Questions?

