

North Henderson Area Combined Sewer Overflow Reduction Projects



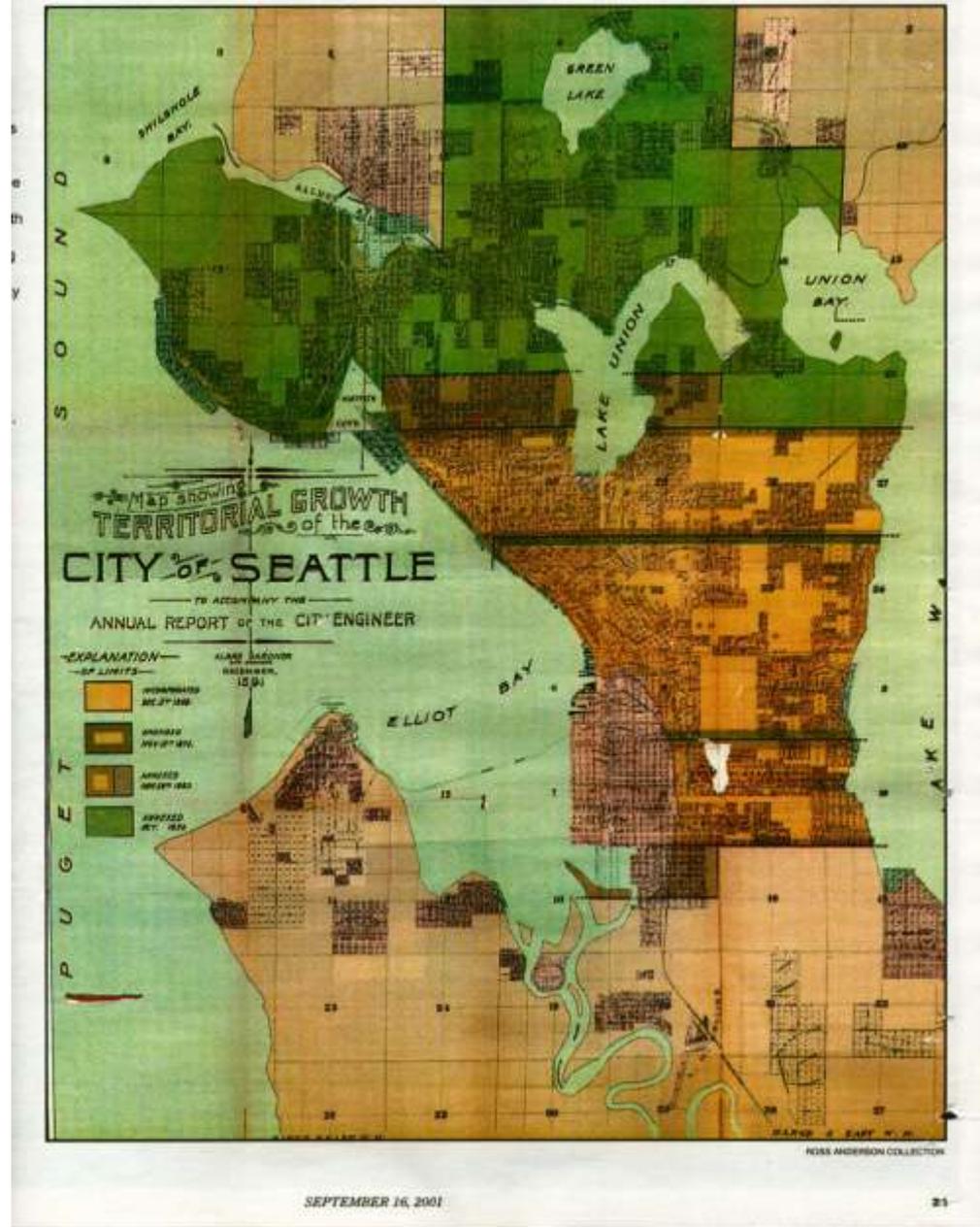
**North Henderson
Community Meeting**

September 16, 2010

AGENDA:

- I. History of Seattle's sewer system**
- II. Background – What is a CSO?**
- III. CSO Reduction Program**
- IV. North Henderson Basins – CSO Reduction Projects**
 - I. Basin Overview
 - II. Solutions and Screening Process
 - III. Project Schedule
 - IV. Current list of Alternatives
 - V. Concerns
 - VI. Next steps
- V. Community Input/Q&A/Comments**

Seattle is
nearly
160 years old



1890-1940 = Construction

Denny Way sewer, 1913



Early drainage on Roosevelt, 1921



Lake Washington sewer, 1914



Lake Union sewer, 1914

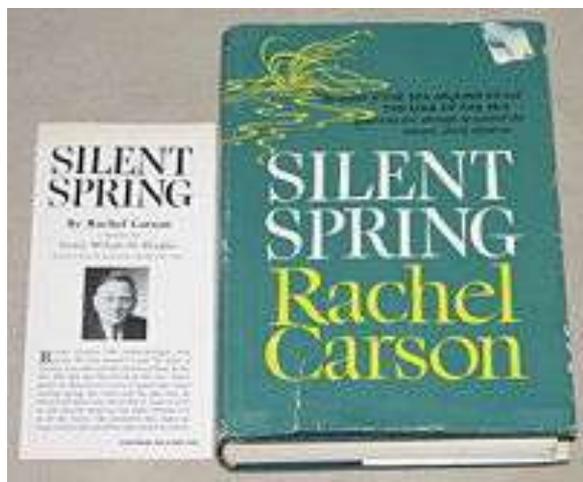
Combined drainage and wastewater system first constructed in 1890s- discharged directly to waterways.



Wastewater treatment facilities were developed in the 1950s-60s.

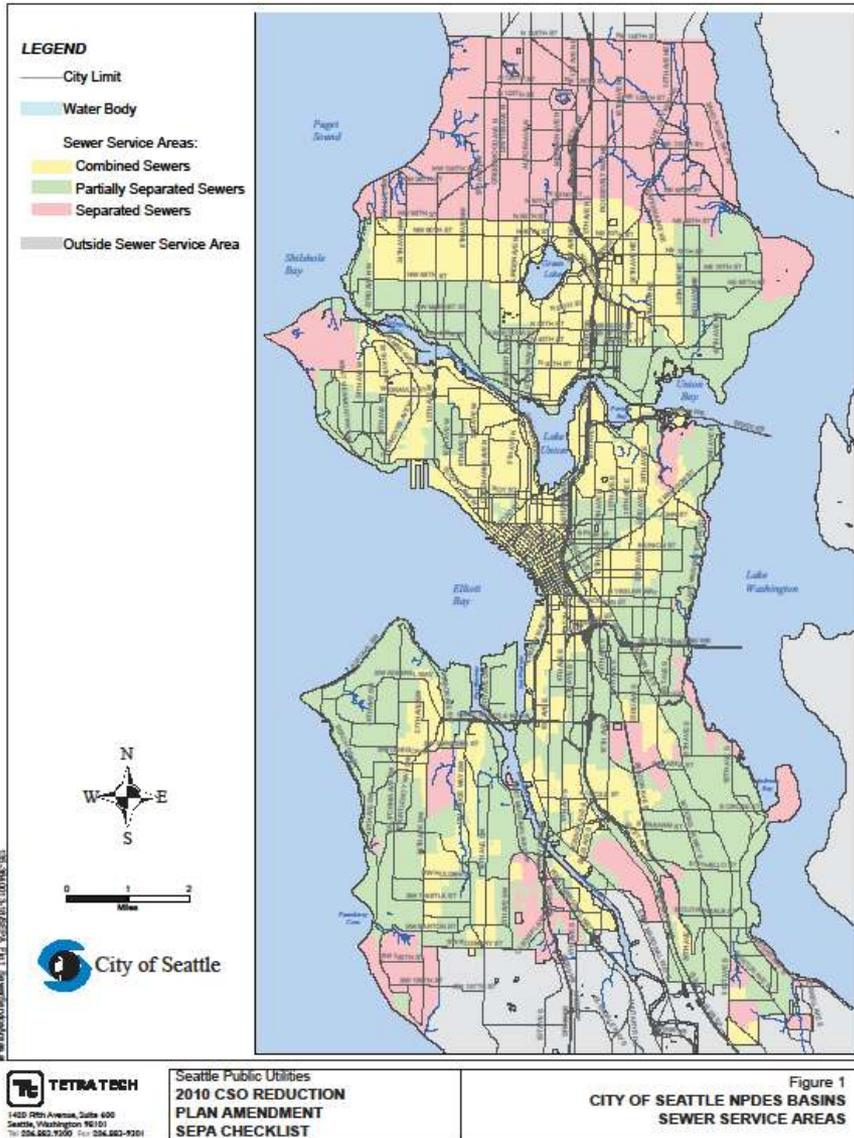


The Federal Clean Water Act

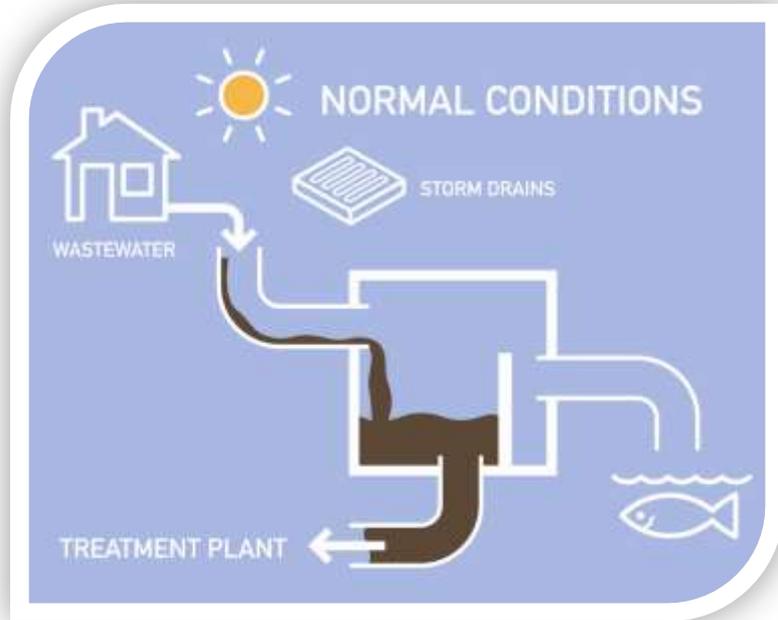


City Sewer System

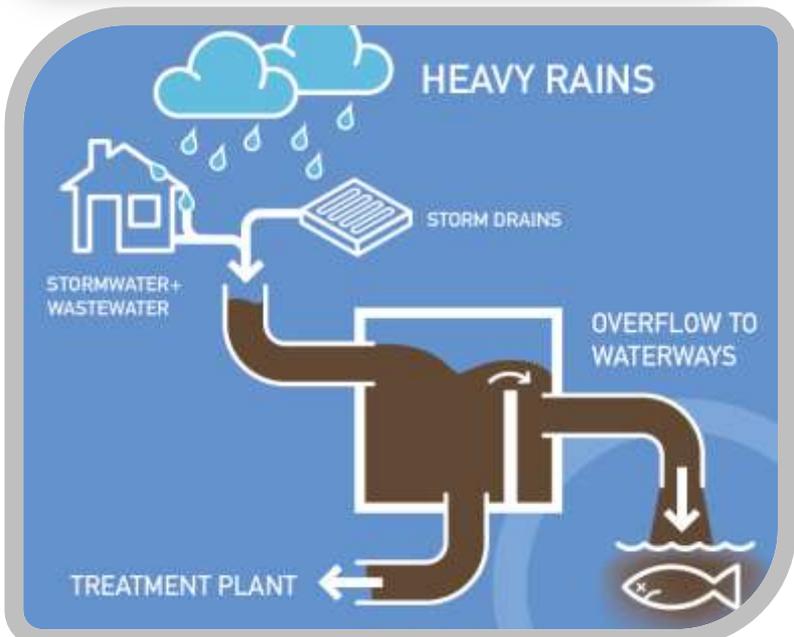
- Combined and Partial Separated (2/3 of City)
- Separated (1/3 of City)



What is a Combined Sewer Overflow?

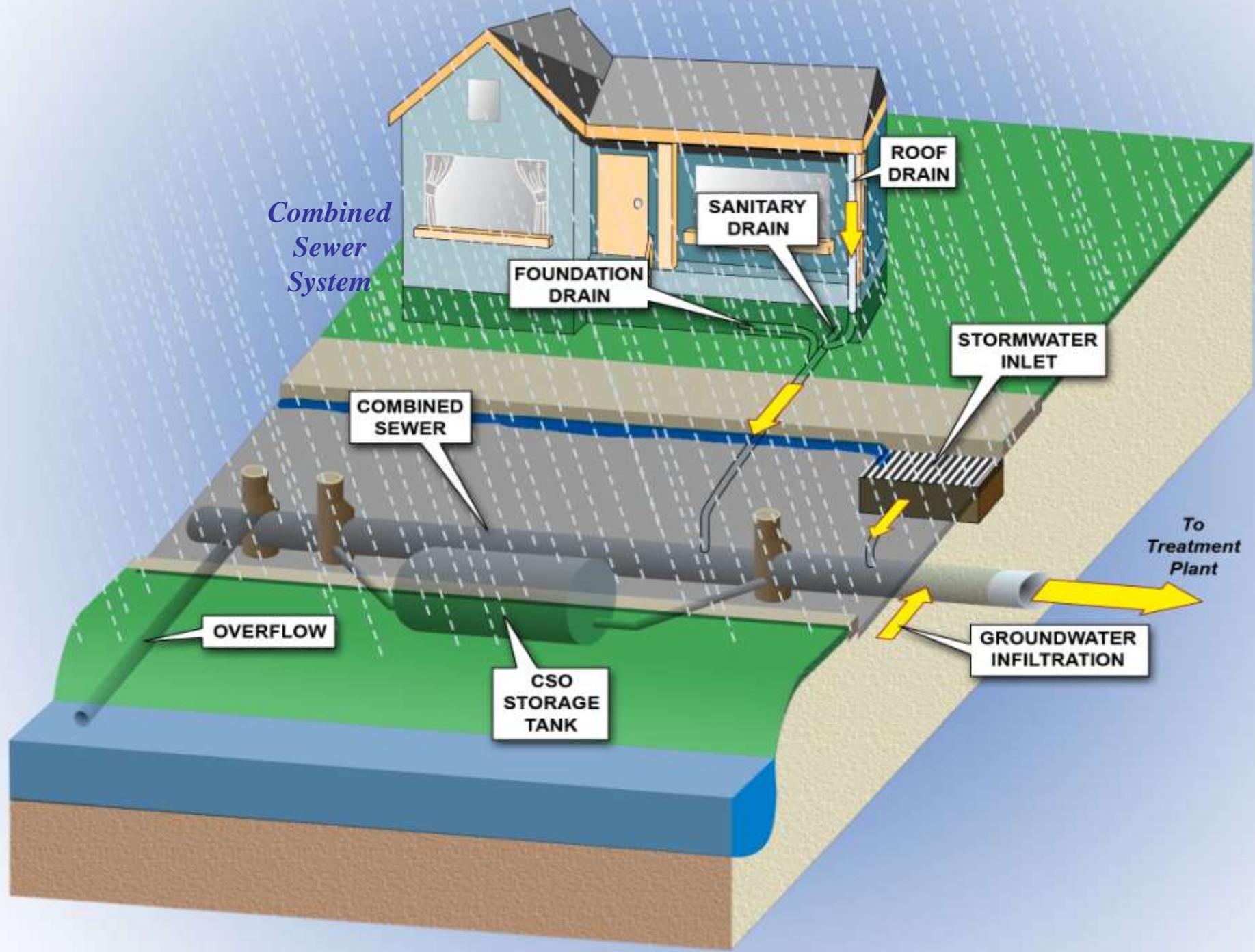


- *Wastewater* (from homes) and *stormwater* (from rooftops, streets) flow in a single pipe - a “combined sewer.”



- During heavy rains, stormwater (~90%) and sewage (~10%) exceed the system, causing a combined sewer overflow (CSO) into nearest waterway.

*Combined
Sewer
System*



Combined Sewer Overflows (CSOs)

- 90 permitted CSO outfalls
- 100 million gallons CSO discharge annually
- About 200 CSO discharge events annually



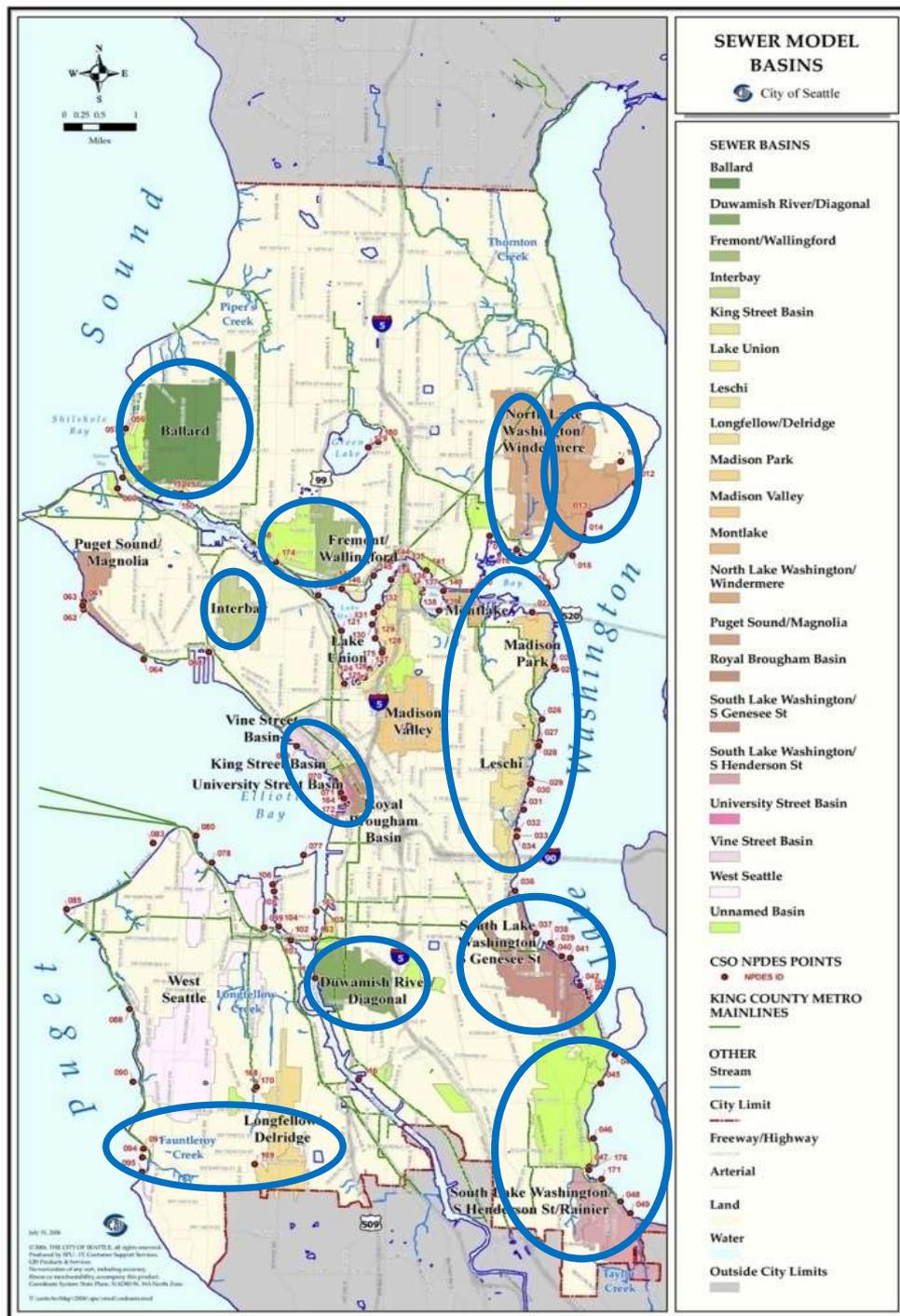
CSO Reduction Program Goals

- 💧 Comply with Clean Water Act, state/federal regulations
 - 💧 *Goal is to reduce CSOs to no more than an average of one overflow per site per year.*
- 💧 Improve water quality
- 💧 Finish historic effort
- 💧 Minimize rate impacts
- 💧 Partner for cost-effective solutions



Focus on Next 5 Years

- Improve existing system through retrofits
- Construct CSO reduction projects
 - Windermere, Genesee, and Henderson basins
- Pilot green infrastructure projects
- Complete Long-term Control Plan



Questions?



North Henderson Basins

Overview

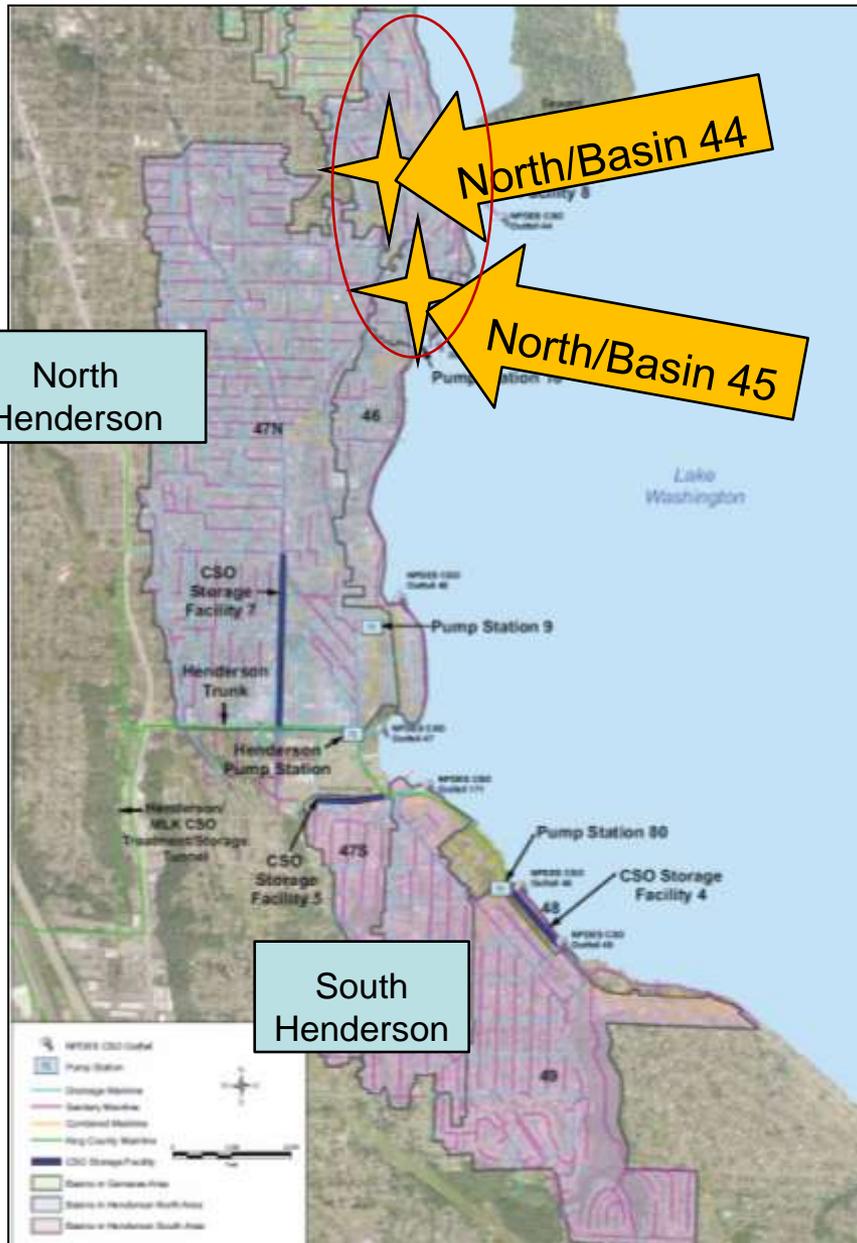
Project Schedule

The Planning & Site Selection Process

Current Alternatives

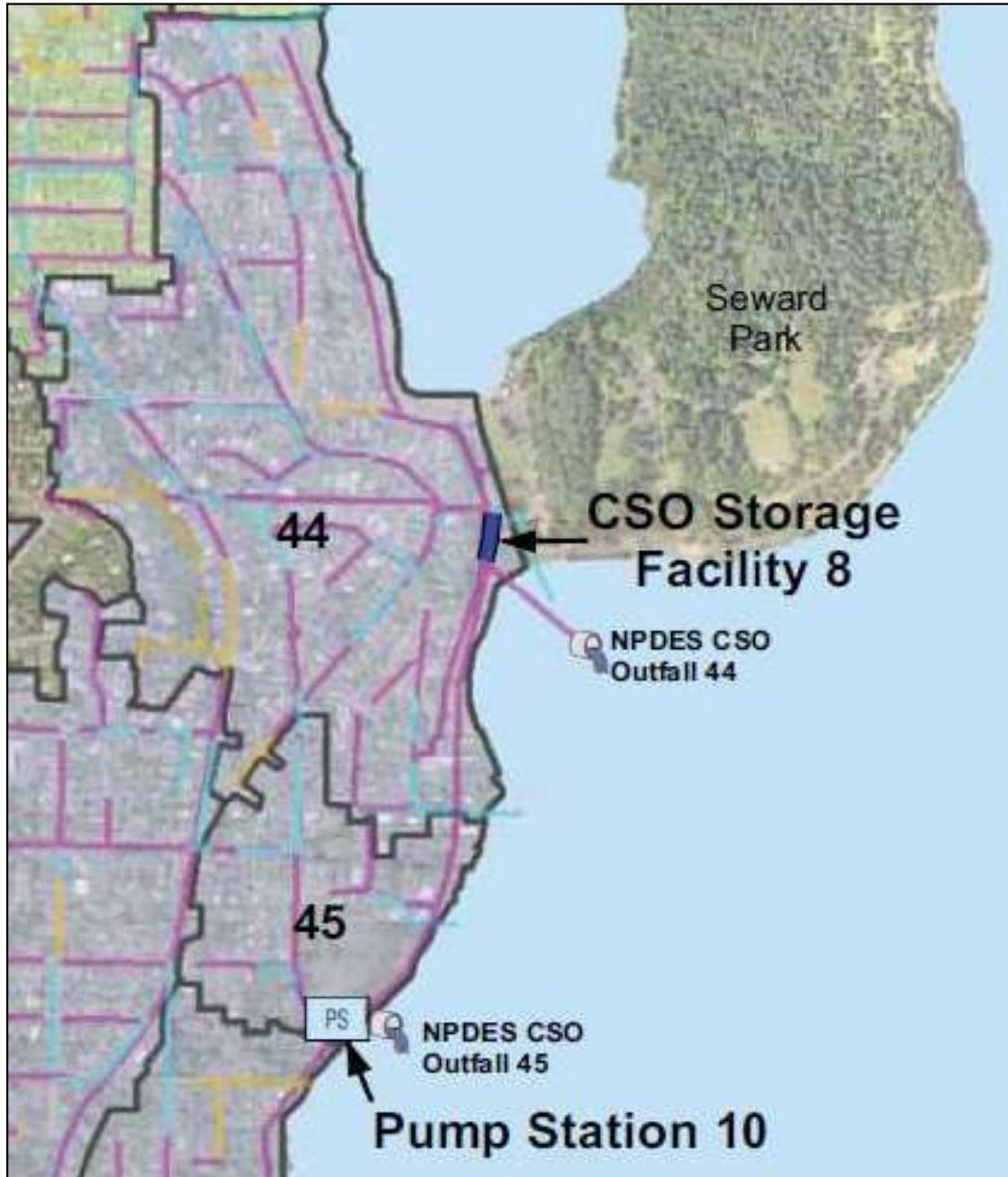
Next Steps

Henderson CSO Basins



- 💧 Top-Priority for CSO reduction
- 💧 1,800 Acres
- 💧 Seven basins
- 💧 CSOs discharge from the basins approximately 17 times per year
- 💧 Construction projects to reduce CSOs in North Henderson must begin in 2015.

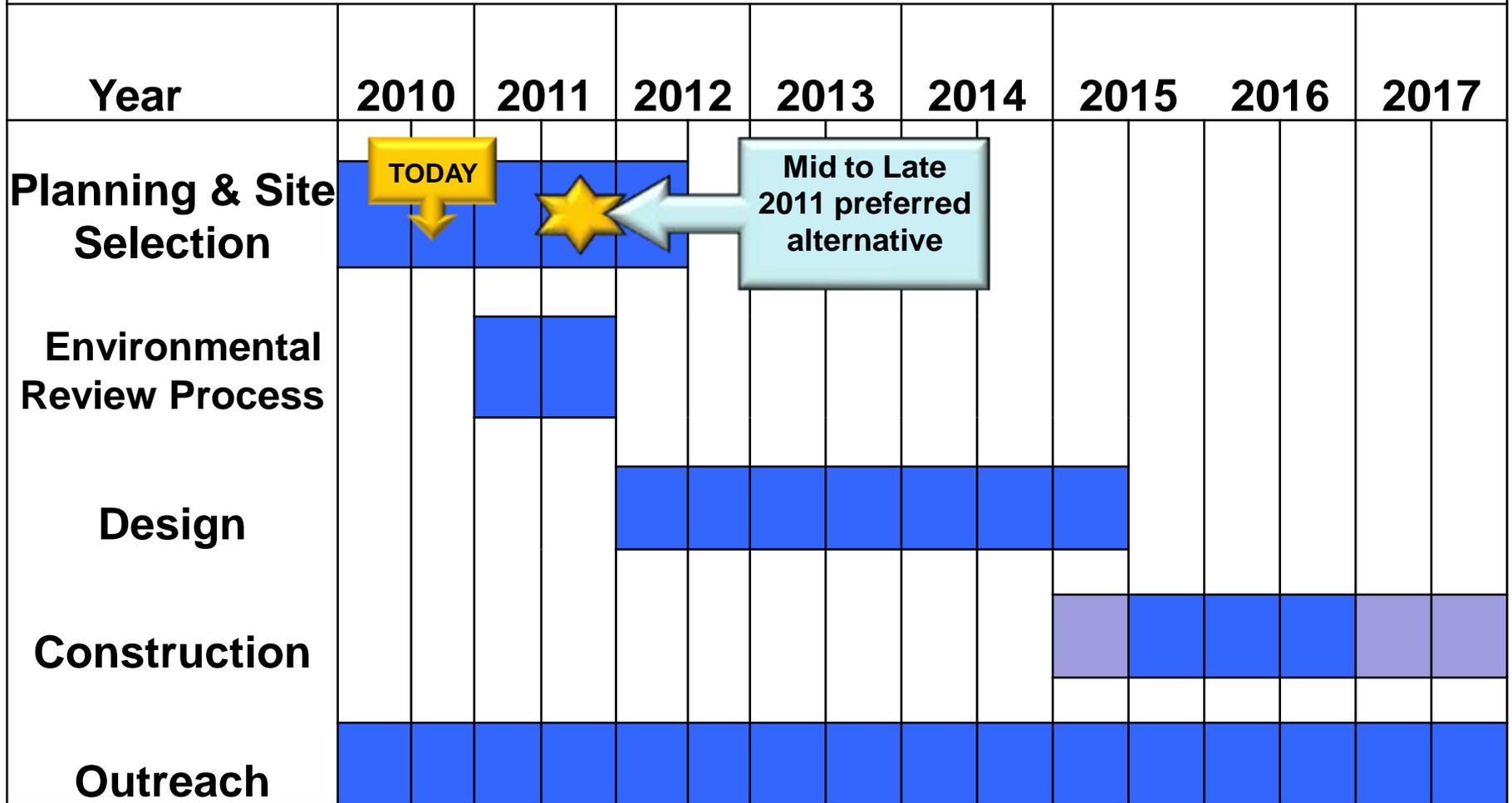
North Henderson (Basins 44 and 45)



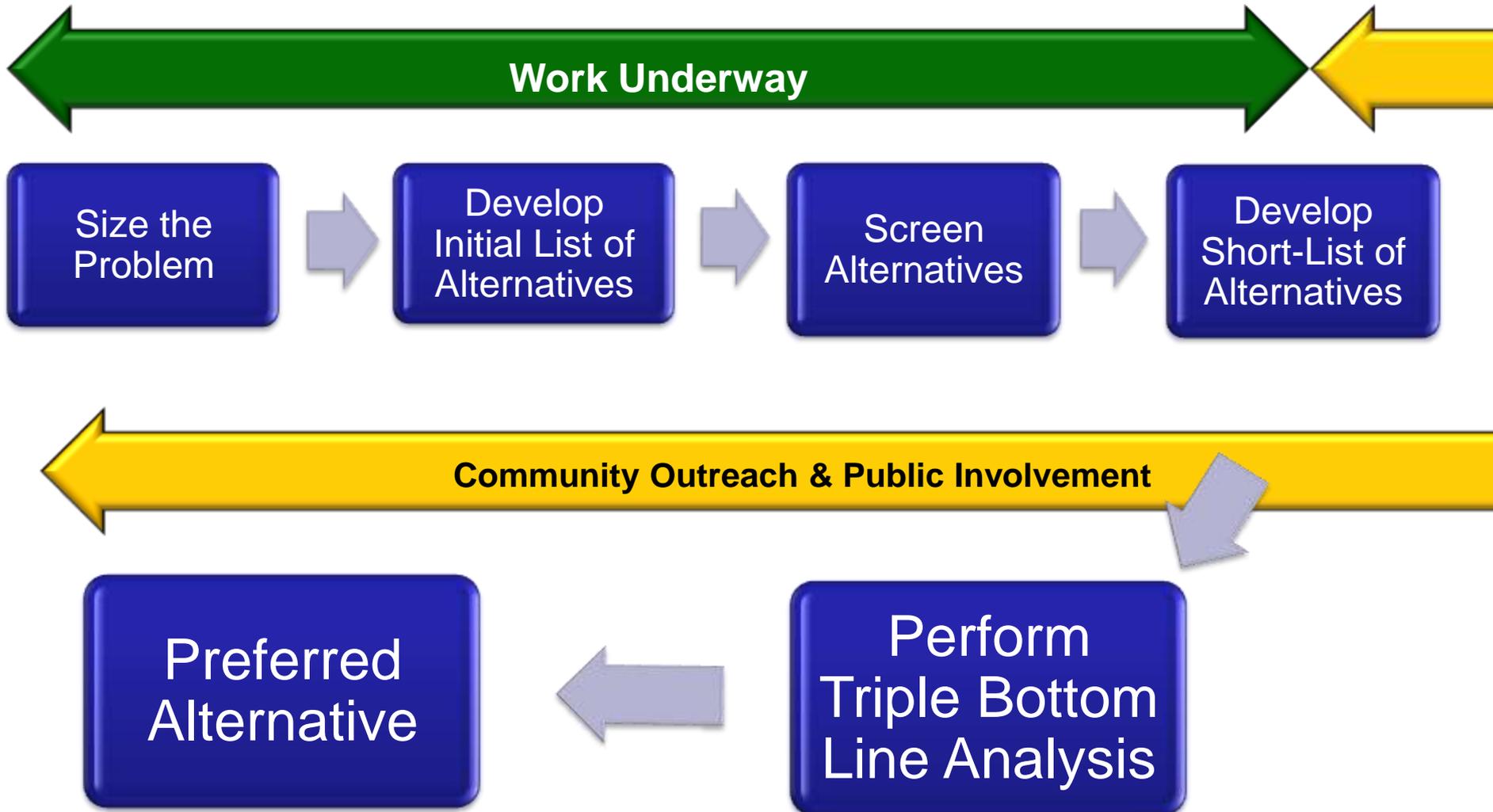
- Majority of sewer lines in Basins 44 and 45 were constructed in 1910s and 1920s, and raw sewage originally discharged directly to Lake Washington
- Seward Park Trunk Sewer (i.e., 15" Lake line), Pump Station #10 and #9 were constructed in the 1930s.
- Partial separation (i.e., installation of new storm drains to collect street drainage) was done in the 1970s.
- Sewage from both basins (44 and 45) currently flows southwards to a King County pump station on Henderson St.

Preliminary Project Schedule

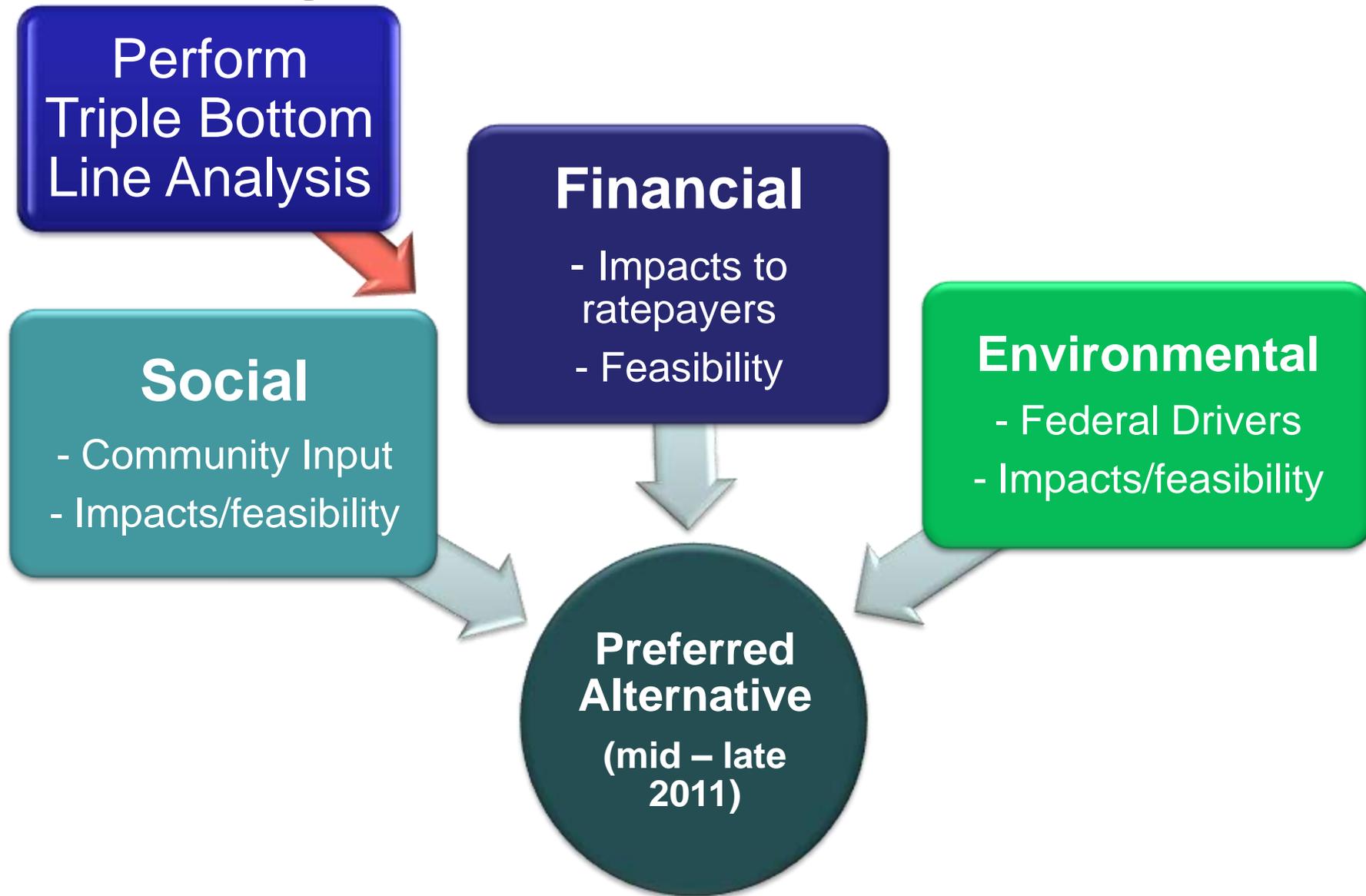
North Henderson CSO Reduction Projects (Basins 44 & 45)



North Henderson CSO Reduction Planning & Site Selection Process



North Henderson CSO Reduction Planning & Site Selection Process



Community Involvement

□ **Technical Information Sessions – Fall 2010**

- Sizing the CSO Problem – Modeling & Monitoring
- Relationship between SPU and King County
- Alternatives to Controlling CSOs

□ **Short-Listing Alternatives – Winter 2010/2011**

- Incorporating financial, environmental and community input = short list of alts determined; Feasibility analysis

□ **Preferred Alternative – Mid to Late 2011**

- Present preferred alternative to community

North Henderson CSO Reduction Solutions



Retrofits

Repaired 44 control structure & new weir plate at Basin 45 control structure.



Green

Allows stormwater to slowly filter into ground, keeping it out of sewer system



Storage

Increase capacity of underground pipes and tanks.

Green Stormwater Infrastructure (GSI)



💧 **Roadside Raingardens are not applicable**

- 💧 **Street drainage in the Henderson Basin does not enter the combined sewer; therefore, roadside rain gardens and green alleys are not effective at reducing CSOs**

💧 **RainWise is applicable**

- ❖ **Reimbursements will be offered to private property owners between 2012 – 2015 to disconnect roof leaders and install rain gardens or cisterns**

North Henderson CSO Reduction Solution



Storage

Increase capacity of underground pipes and tanks.

- Reduces CSOs from 17 times to 1 time per year (EPA mandate)
- Storage Volumes:
(Approximate)
 - Basin 44: 2.4 Mgal
 - Basin 45: 200,000 gal



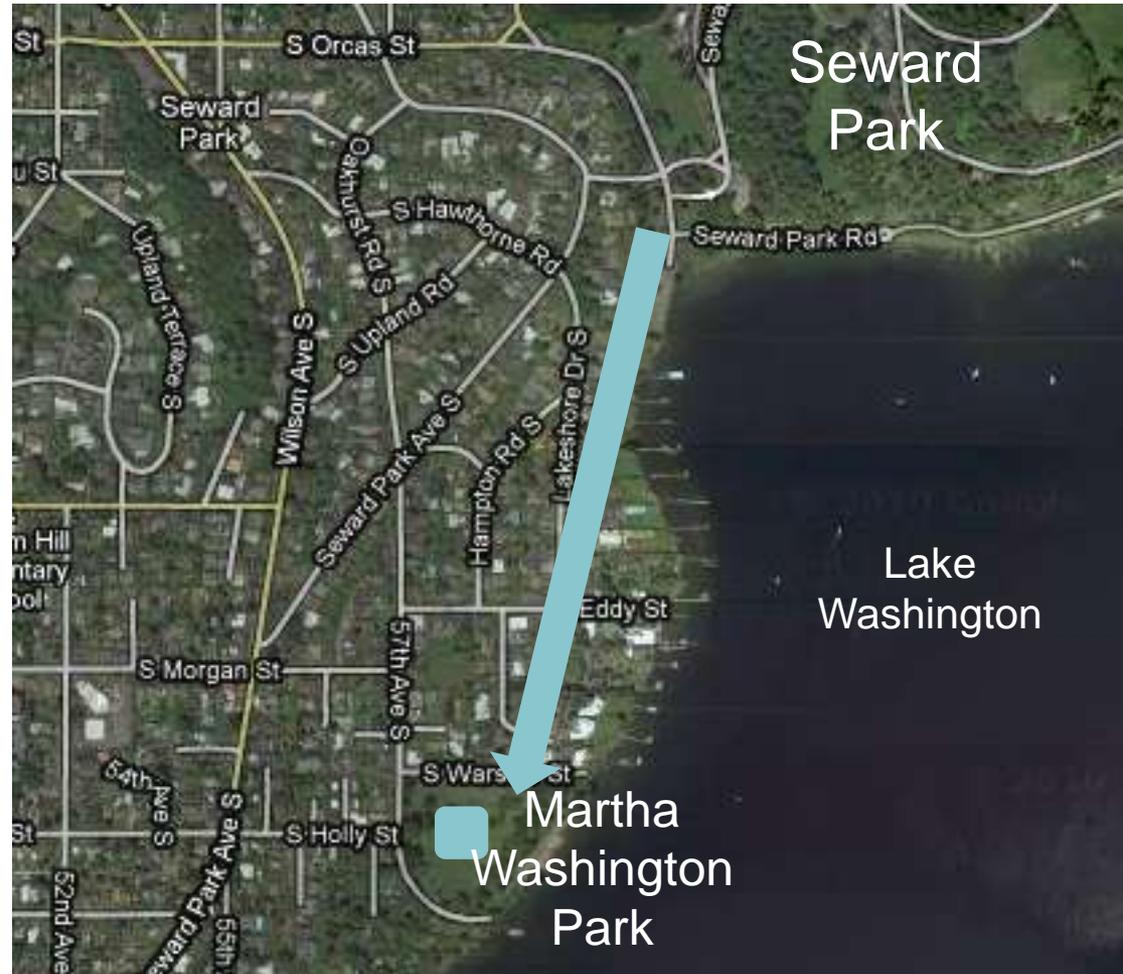
**King Co. North Creek Storage Facility
(Underground 6 MG tank)**

North Henderson Possible CSO Reduction Projects

1 TANK ALTERNATIVE

Convey flows through pipeline (and/or pipeline and pump station) from Seward Park to Martha Washington Park

Store combined sewage in 2.6 million gallon underground storage tank in Martha Washington Park



North Henderson Possible CSO Reduction Projects

TUNNEL ALTERNATIVE

2.6 million gallon
underground storage
tunnel under both
basins



North Henderson Basins

2 TANK ALT: SEWARD + MWP

Includes:

- Approx. 2.4 million gallons underground storage tank in parking lot in Seward Park (approximately 350 ft x 70 ft x 30 ft)



Basin 44 Underground Storage Tank in Seward Park

North Henderson Basins

2 TANK ALT: SEWARD + MWP



Includes:

- 200,000 gallon underground storage tank, either
 - In street

(approximately 530 feet long and 8-foot diameter)

or

- In the park

(approximately 70 ft x 40 ft x 25 ft deep)



North Henderson Basins

1 TANK ALT: TRANSFER + MWP



Includes:

- Replacing/upsizing existing lake line (approx. 3,000 feet) from 15-inch diameter to **30-inch**,[★] crossing 15-20 properties
- 2.6 million gallon underground storage tank (approximately 200 ft x 150 ft x 30 ft deep) in Martha Washington Park

[★] Corrected new pipeline diameter (9/17/2010)

North Henderson Basins

1 TANK ALT: TRANSFER + MWP



Includes:

- Pump Station at Orcas Street
- Approximately 3,000 feet of 24-in pipe (force main) installed mostly in right-of-way (possible private property crossing at south end)
- 2.6 million gallon underground storage tank in Martha Washington Park

North Henderson Basins

1 TANK ALT: TRANSFER + MWP



Includes:

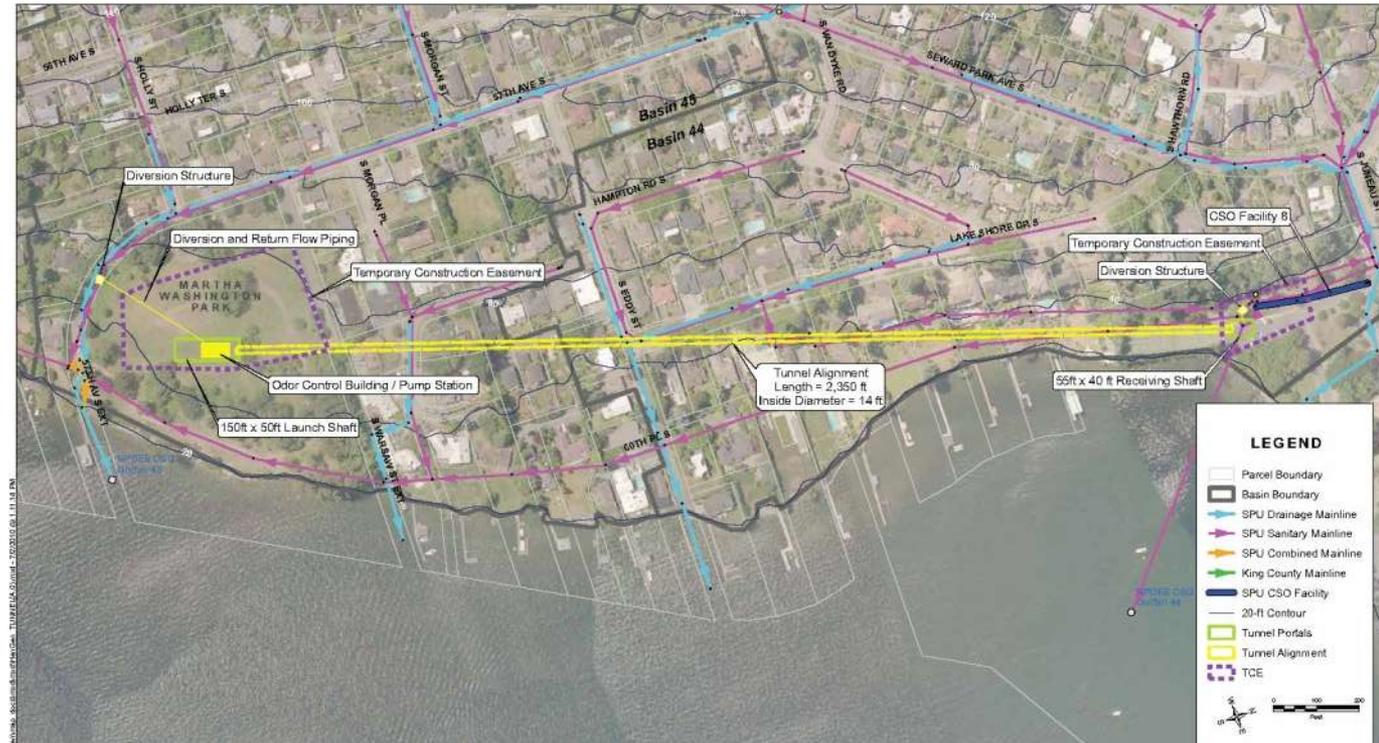
- Approximately 3,000 ft of 72-in diameter pipe (trenchless)
- 2.0 million gallon underground storage tank at Martha Washington Park

North Henderson Basins

TUNNEL ALTERNATIVES

Includes:

- 2,400 ft of 14 foot diameter underground tunnel (2.6 million gallon capacity), pump station and odor control
- Two tunnel portals:
 - Launch Portal (150 ft x 50 ft)
 - Receiving Portal (55 ft x 40 ft)(Portals would be in Seward and Martha Washington Parks)



Project Considerations

💧 Traffic & Park Access

💧 Workplace Expectations

💧 Parking

💧 Noise

💧 Odors

💧 Maintenance

💧 Structural Integrity

💧 Site Restoration

💧 Expectations around community events:

💧 Seafair

💧 Furry 5K

💧 Bicycle Sundays

💧 Live Strong Challenge

💧 Danskin Triathlon

💧 STP

Others?

Progress on Evaluating Alternatives

- Narrow alternatives to a short list – underway
- Geotechnical review (*literature review completed for all sites; drilling for tunnel option completed*)
- Engineering activities – ongoing
- Cost estimates - underway
- Historical/cultural research –underway
- Environmental review – underway
- Continued public outreach - ongoing

On-going Project Communications

- ❑ SPU will send out monthly project updates through the e-mail distribution list (list-serv)
- ❑ Presentations, project updates, and other information will be posted to the project website (www.seattle.gov/cso)
- ❑ You can send emails directly to the project team (SPU_HCSO@Seattle.gov)
- ❑ You can call and leave a message for the project team (206-826-4767)
- ❑ SPU will hold additional community meetings and technical information sessions between Fall 2010 and Spring 2011.

Community Involvement

- ❑ **Jun 23** - SE District Council
- ❑ **Sep 16** – Friends of Martha Washington Park and Community
- ❑ **Oct. 2** – Friends of Seward Park Briefing
- ❑ **Oct. 4** – Friends of Seattle’s Olmsted Parks Briefing
- ❑ **Technical Information Sessions – Fall 2010**
 - Sizing the CSO Problem – Modeling & Monitoring
 - Relationship between SPU and King County
 - Alternatives to Controlling CSOs
- ❑ **Short-Listing Alternatives – Winter 2010/2011**
 - Incorporating financial, environmental and community input = short list of alts determined; Feasibility analysis
- ❑ **Preferred Alternative – Mid to Late 2011**
 - Present preferred alternative to community
(2 - 4 months before submission to Ecology)

Contact Information

Project updates will be sent ongoing to those that signed up to be on the listserv
(sign-up in back)

**PLEASE SEND US YOUR COMMENTS
AND QUESTIONS:**

SPU_HCSO@Seattle.gov

206-826-4767

www.seattle.gov/CSO