

# North Henderson Area Combined Sewer Overflow Reduction Projects

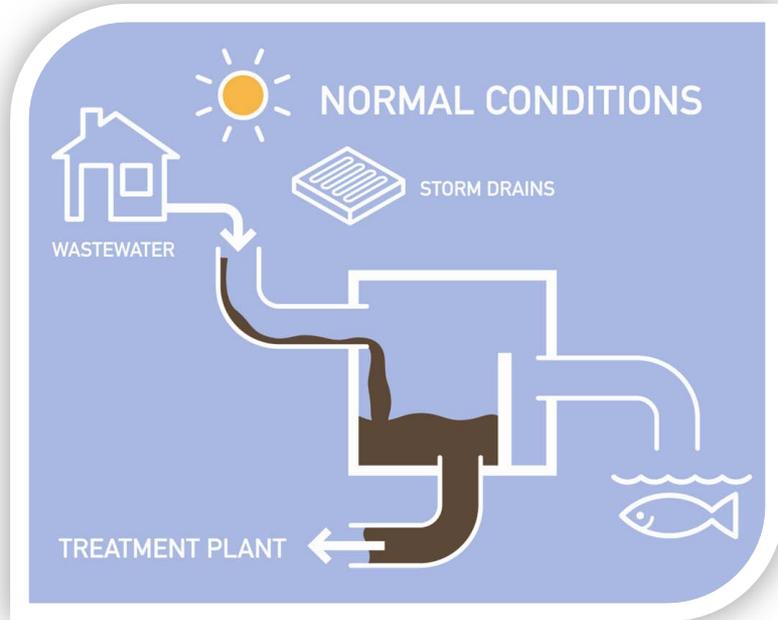


**COMBINED SEWER  
OVERFLOW REDUCTION**

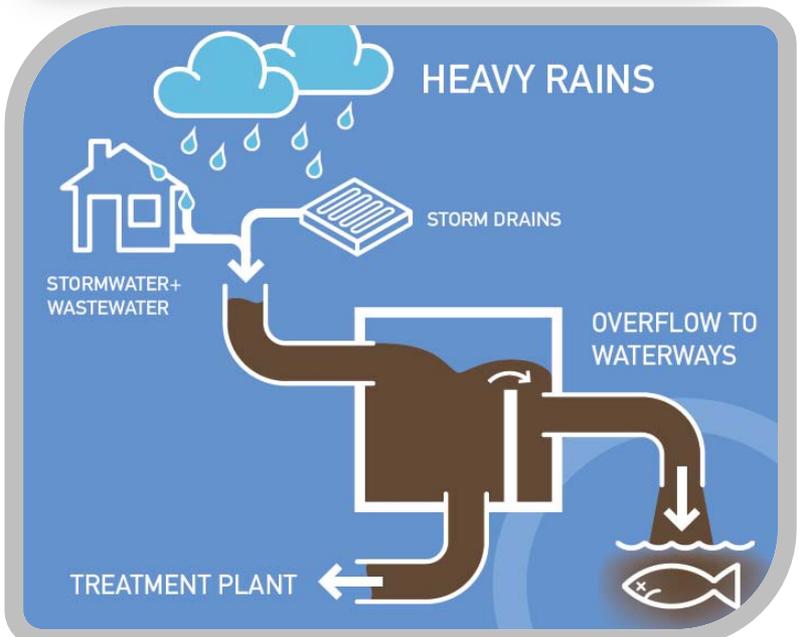
**Friends of Seward Park  
Meeting**

**October 2, 2010**

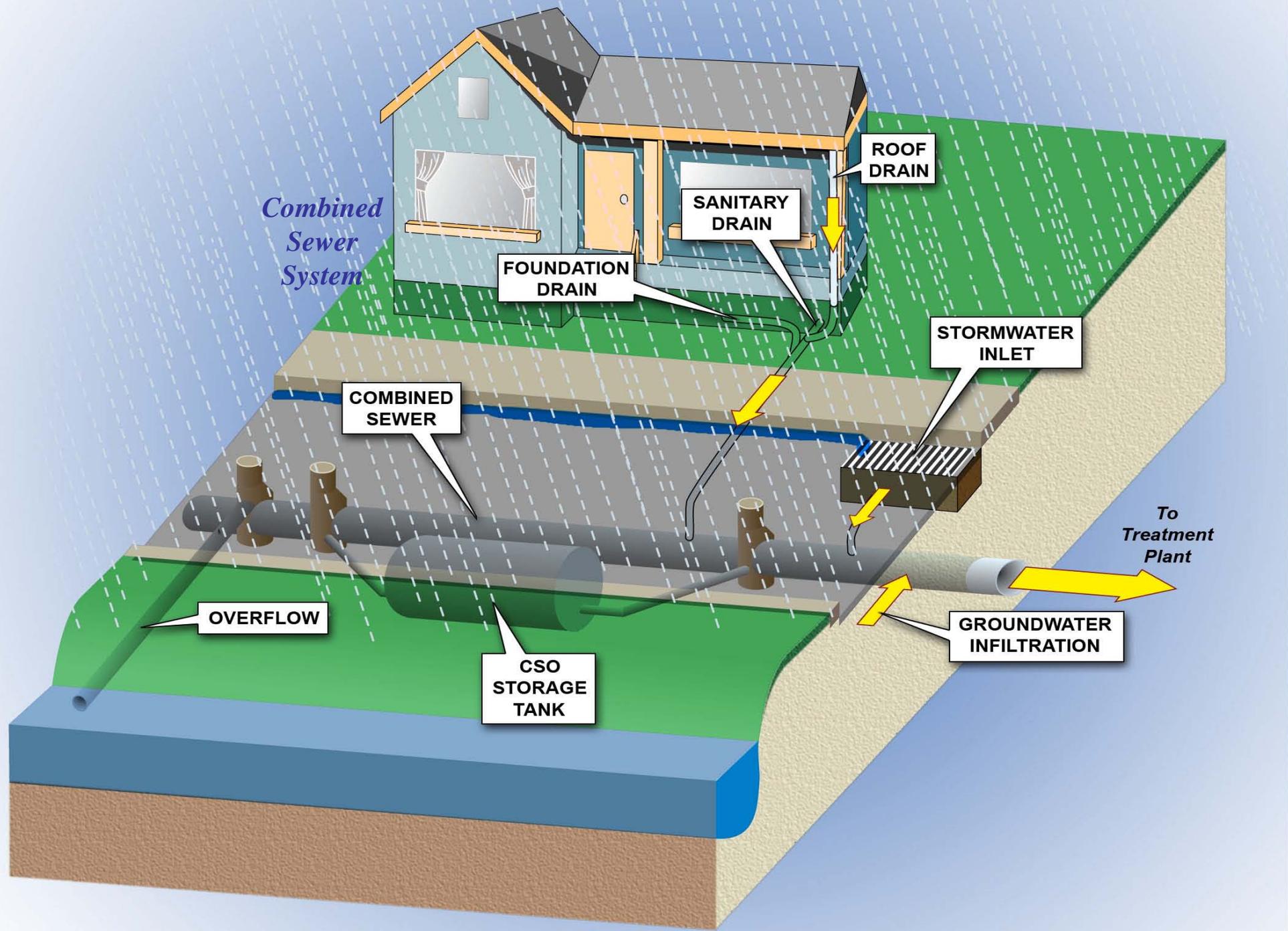
# What is a Combined Sewer Overflow?



- 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 Overflows (CSOs)

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



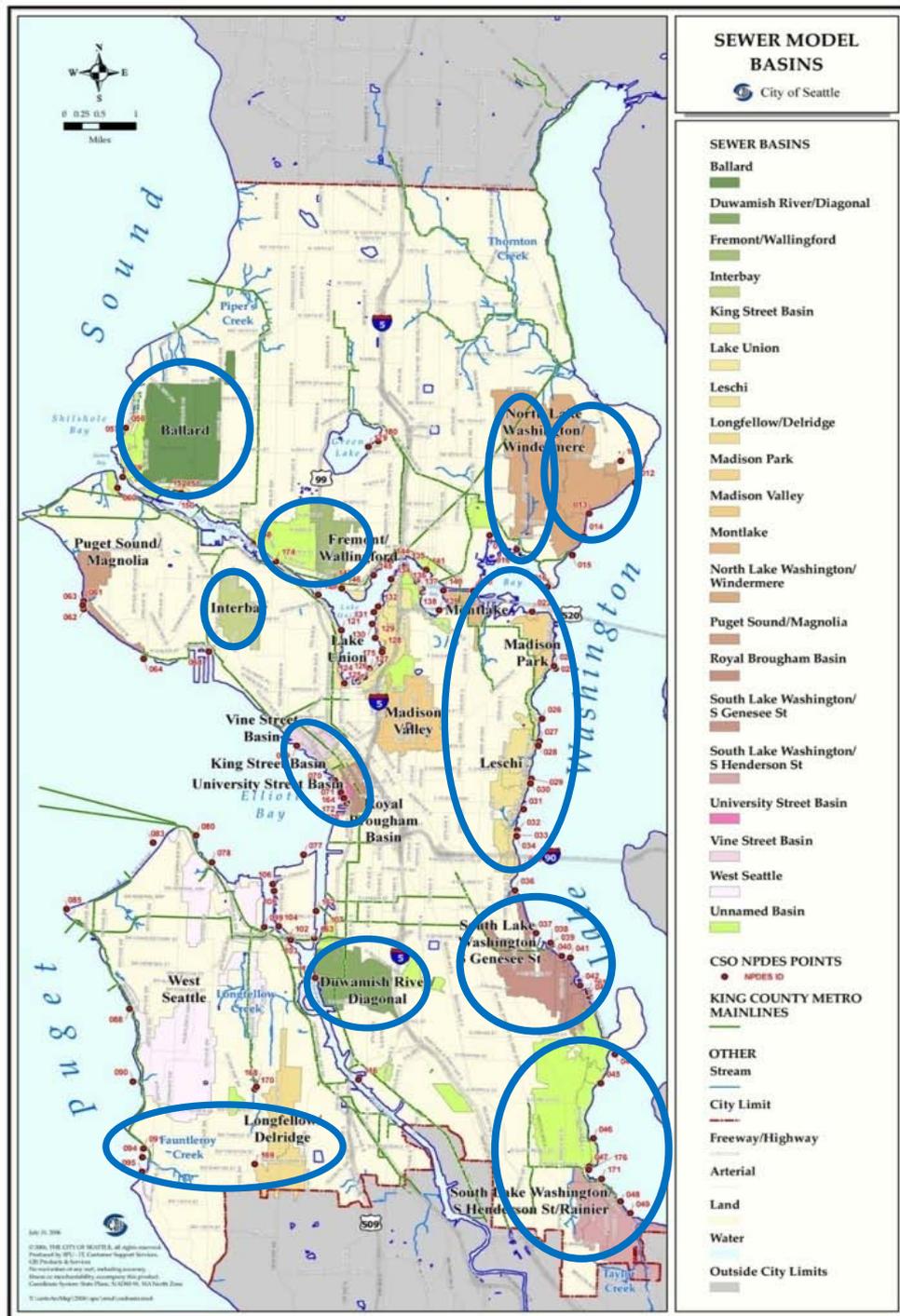
# CSO Reduction Program Goals

- 💧 Comply with Clean Water Act, state/federal regulations
- 💧 Improve water quality
- 💧 Finish historic effort
- 💧 Minimize rate impacts
- 💧 Partner for cost-effective solutions

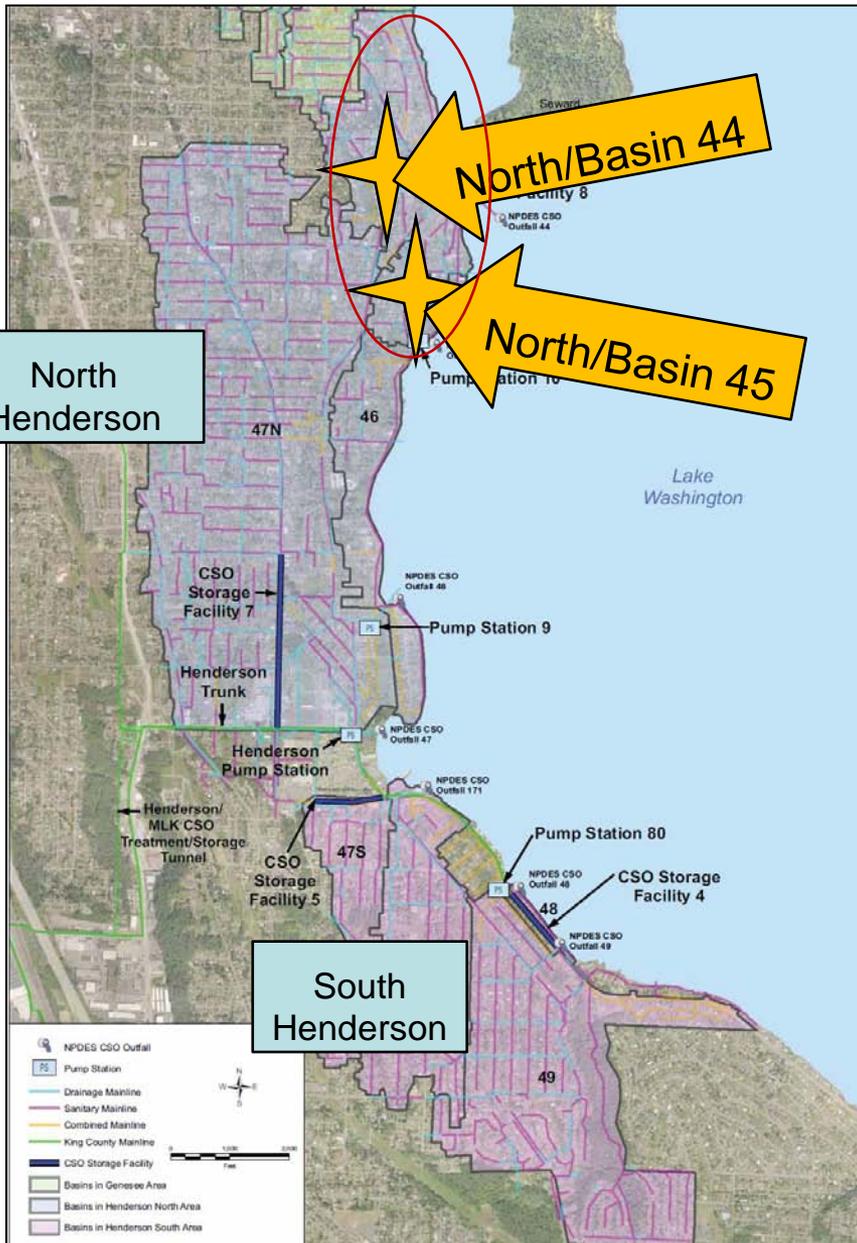


# Focus on Next 5 Years

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

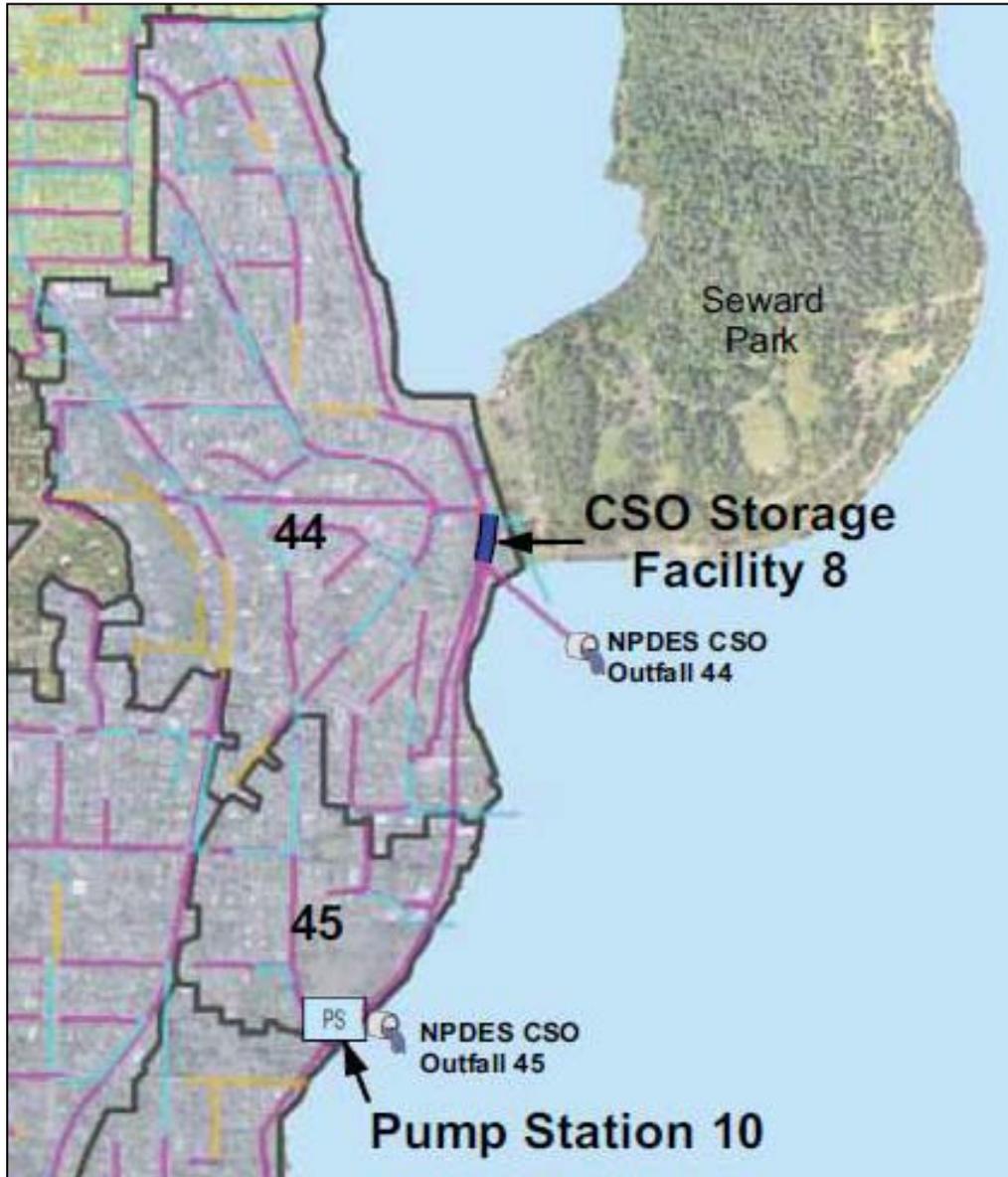


# Henderson CSO Basins



- 💧 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.

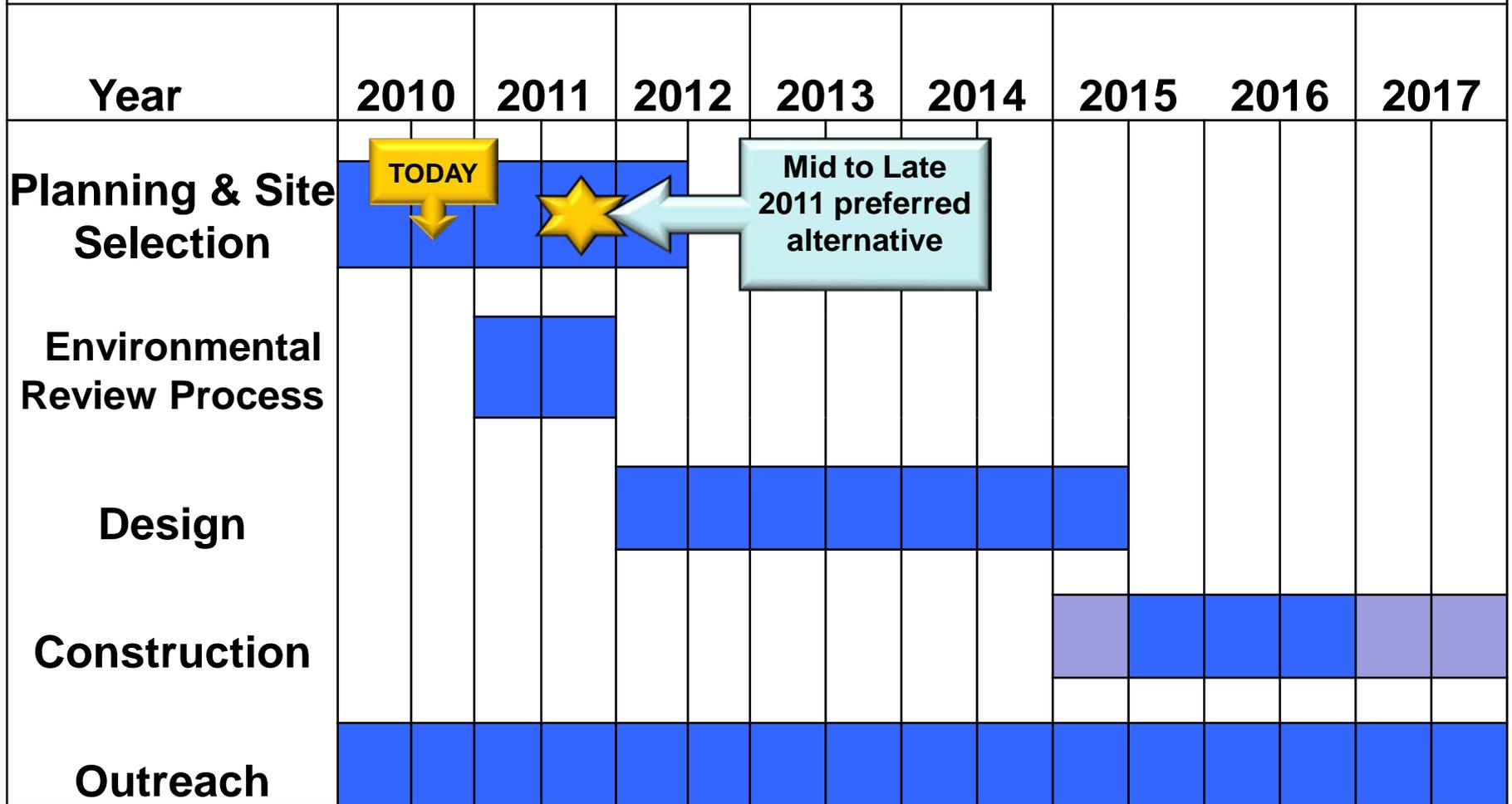
# North Henderson (Basins 44 and 45)



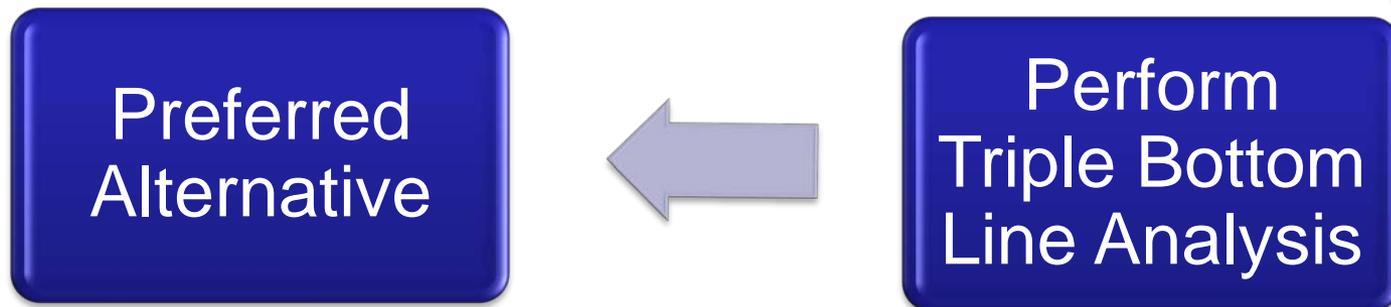
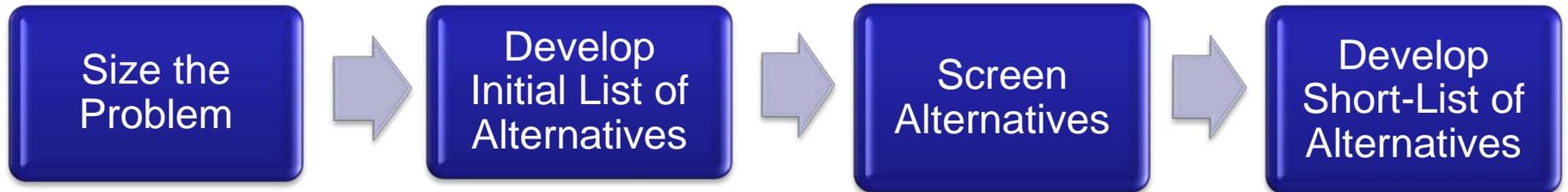
- 1910s to 1950s: Combined sewer system built; raw sewage discharged to Lake Washington
- 1930s: installed 15-inch lake line interceptor and pump stations
- 1970s: partial separation (removed street drainage from combined sewers)

# Preliminary Project Schedule

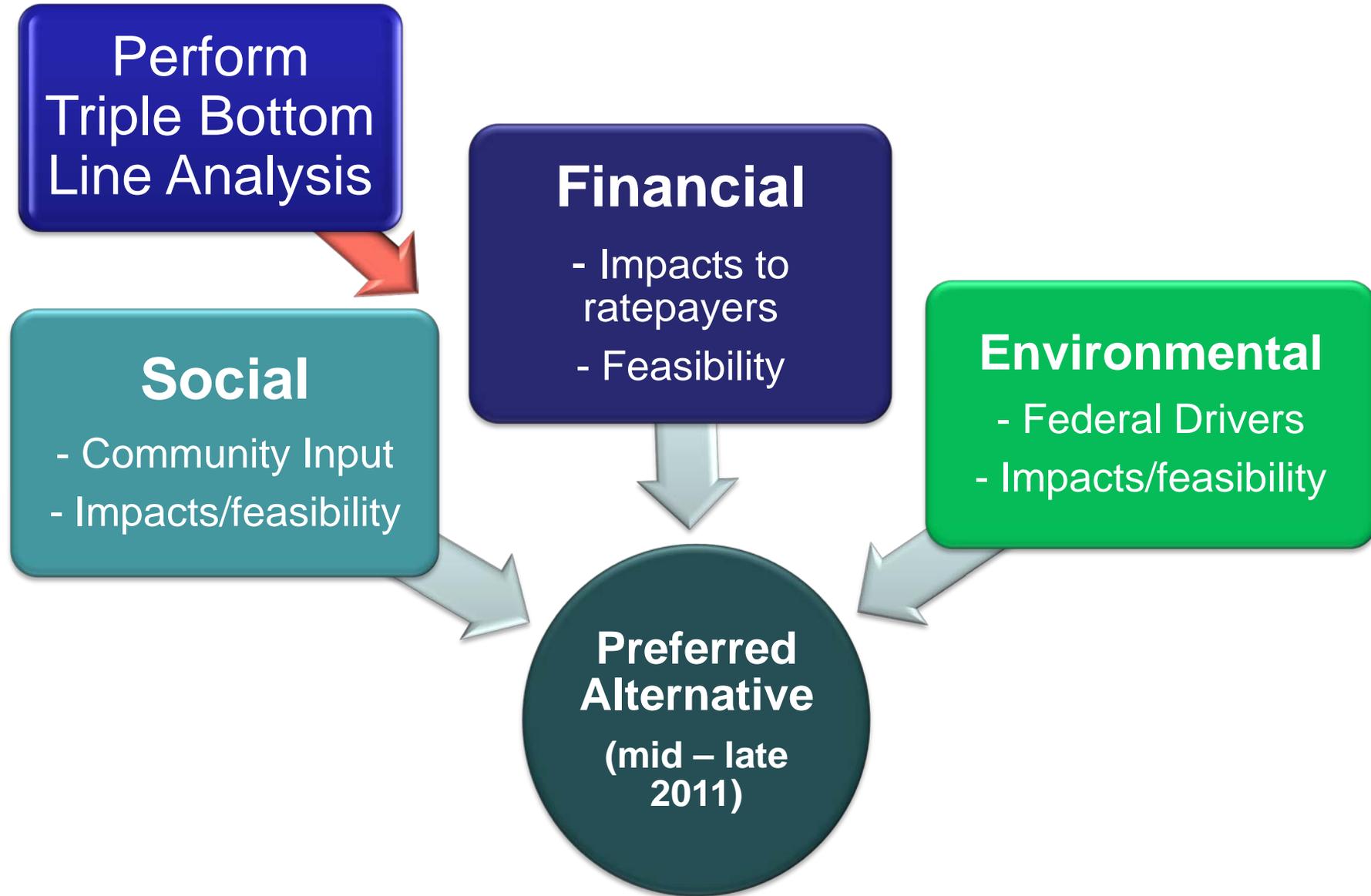
## North Henderson CSO Reduction Projects (Basins 44 & 45)



# North Henderson CSO Reduction Planning & Site Selection Process



# North Henderson CSO Reduction Planning & Site Selection Process



# Community Involvement

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- ❑ **Technical Workshops – Fall 2010 / Winter 2011**
  - Sizing the CSO Problem – Modeling & Monitoring
  - Solutions to Controlling CSOs
  - Site-specific Alternatives to Controlling CSOs
- ❑ **Short-Listing Alternatives – Winter 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 rain gardens not applicable

-  Street drainage disconnected from combined sewer; roadside rain gardens and green alleys not effective at reducing CSOs

## RainWise is applicable

-  Reimbursements offered to private property owners (2012 – 2015) to disconnect roof drains 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 (regulation)
- Storage Volumes:  
(Approximate)
  - Basin 44: 2.4 million gallons
  - Basin 45: 200,000 gal



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

# North Henderson Possible CSO Reduction Projects

## 2 TANK ALTERNATIVE

Basin 44 - 2.4 million gallon underground storage tank (Seward Park)

Basin 45 - 200,000 gallon underground storage tank (Martha Washington Park)

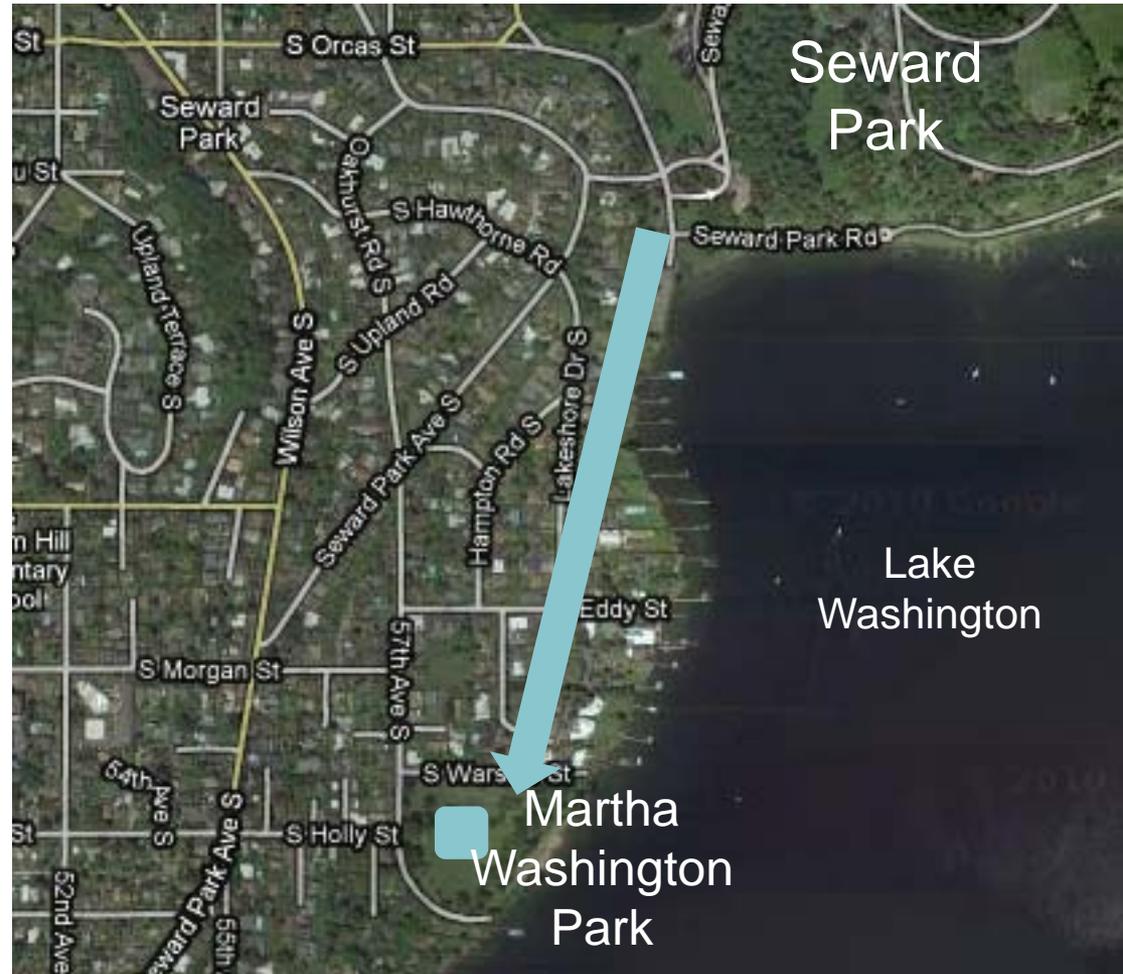


# North Henderson Possible CSO Reduction Projects

## 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

Other Basin 44 (Seward Park) Storage Locations Considered:



Along Lake WA Blvd



Near the Beach



In the Seward Park Meadow

# North Henderson Basins

## 2 TANK ALT: SEWARD + MWP



### Includes:

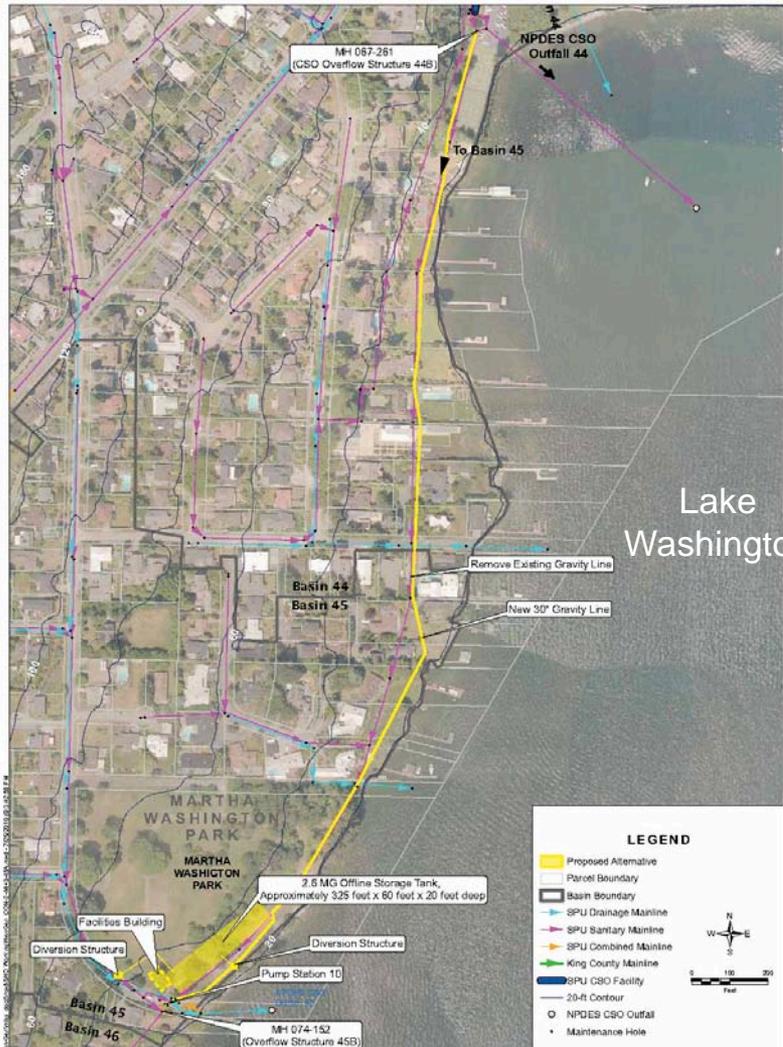
- 200,000 gallon underground storage tank, either
  - In street or
  - In the park  
(approximately 70 ft x 40 ft x 25 ft deep)



Basin 45 Underground Storage Tank in Martha Washington Park and in Street

# North Henderson Basins

## 1 TANK ALT: TRANSFER + MWP



### Includes:

- Replacing/upsizing existing lake line (approx. 3,000 feet) from 15-in diameter to 24-in, 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

# 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:

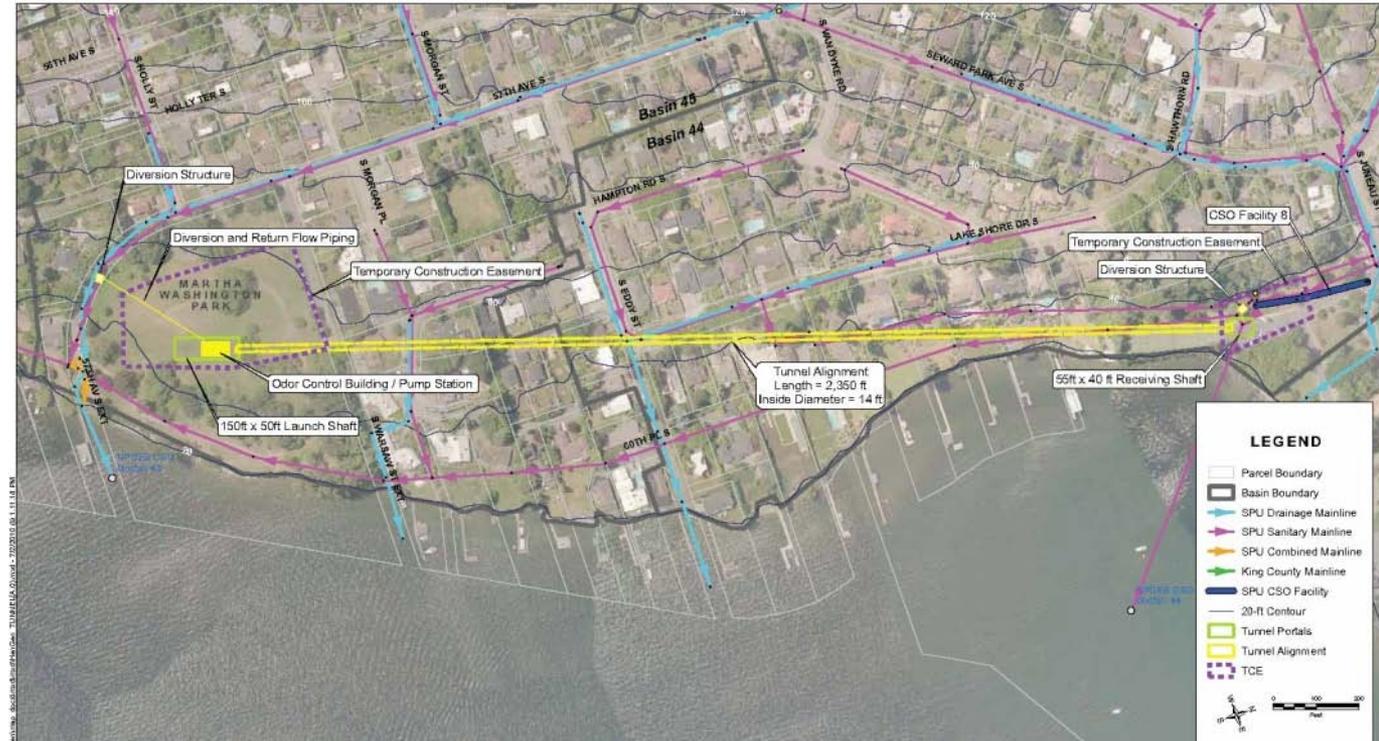
- Approximately 3,000 ft of 72-in diameter pipe (trenchless)
- 2.0 million gallon underground storage tank at Martha Washington Park

# 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

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💧 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

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- Narrow alternatives to a short list – underway
- Geotechnical review (*literature review completed for all sites; test 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

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- ❑ SPU will send out monthly project updates through the e-mail distribution list (sign up here)
- ❑ Presentations, project updates, and other information will be posted to the project website ([www.seattle.gov/cso](http://www.seattle.gov/cso))
- ❑ You can send emails directly to the project team ([SPU\\_HCSO@Seattle.gov](mailto:SPU_HCSO@Seattle.gov))
- ❑ You can call and leave a message for the project team (206-826-4767)

# Community Involvement

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- ❑ **Jun 23** - SE District Council
- ❑ **Sept. 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 Workshops – Fall 2010 / Winter 2011**
  - Sizing the CSO Problem – Modeling & Monitoring
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- ❑ **Preferred Alternative – Mid to Late 2011**
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(2 - 4 months before submission to Ecology)

# Contact Information

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Project updates will be sent ongoing to those that signed up to be on the listserv  
([sign-up here](#))

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

[SPU\\_HCSO@Seattle.gov](mailto:SPU_HCSO@Seattle.gov)

206-826-4767

[www.seattle.gov/CSO](http://www.seattle.gov/CSO)