

## Meeting Purpose

- Present new sewer and drainage alternatives being evaluated; new sewer alternative would include construction in Broadview and the Greenwood/Crown Hill area; new drainage alternative in 12th Ave basin would include a mix of green and gray storage in the right-of-way
- Share information about remaining leading sewer and drainage alternatives and explain how we narrowed alternatives
- Gather community feedback and discuss tradeoffs between alternatives
- Provide updates on project schedule and future public involvement opportunities

## Project Goals

- Reduce the frequency and quantity of sewer backups into homes, properties, streets and creeks in Broadview
- Reduce the frequency and quantity of stormwater flooding to areas most impacted, especially building structures

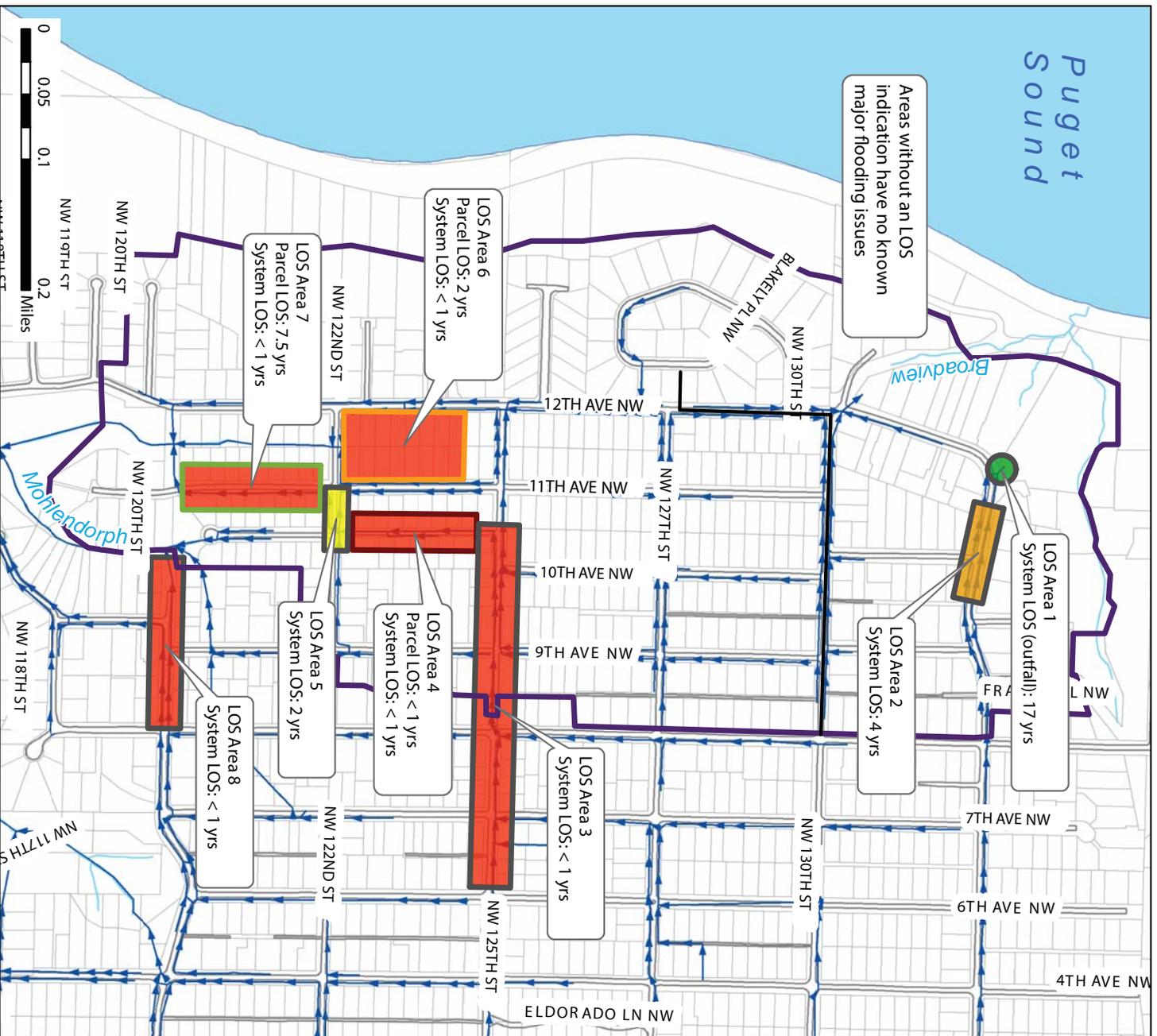
## How does SPU evaluate project options?



## Evaluation criteria for alternatives analysis

- **Performance** — complexity and certainty of improvements, as well as future adaptability and impact during extreme events
- **Stakeholders** — support from City, agency and community stakeholders (includes input from community meetings)
- **Construction Impacts** — impacts to streets and private property
- **Environmental** — impacts and benefits to creeks, Puget Sound, and other resources
- **Operations and Maintenance** — need for specialized or frequent operations and maintenance; accessibility
- **Schedule** — length of time and permitting complexity
- **Cost** — project cost for alternatives
- **Build to Budget** — ability to phase construction

# Broadview Sewer and Drainage Improvement Project

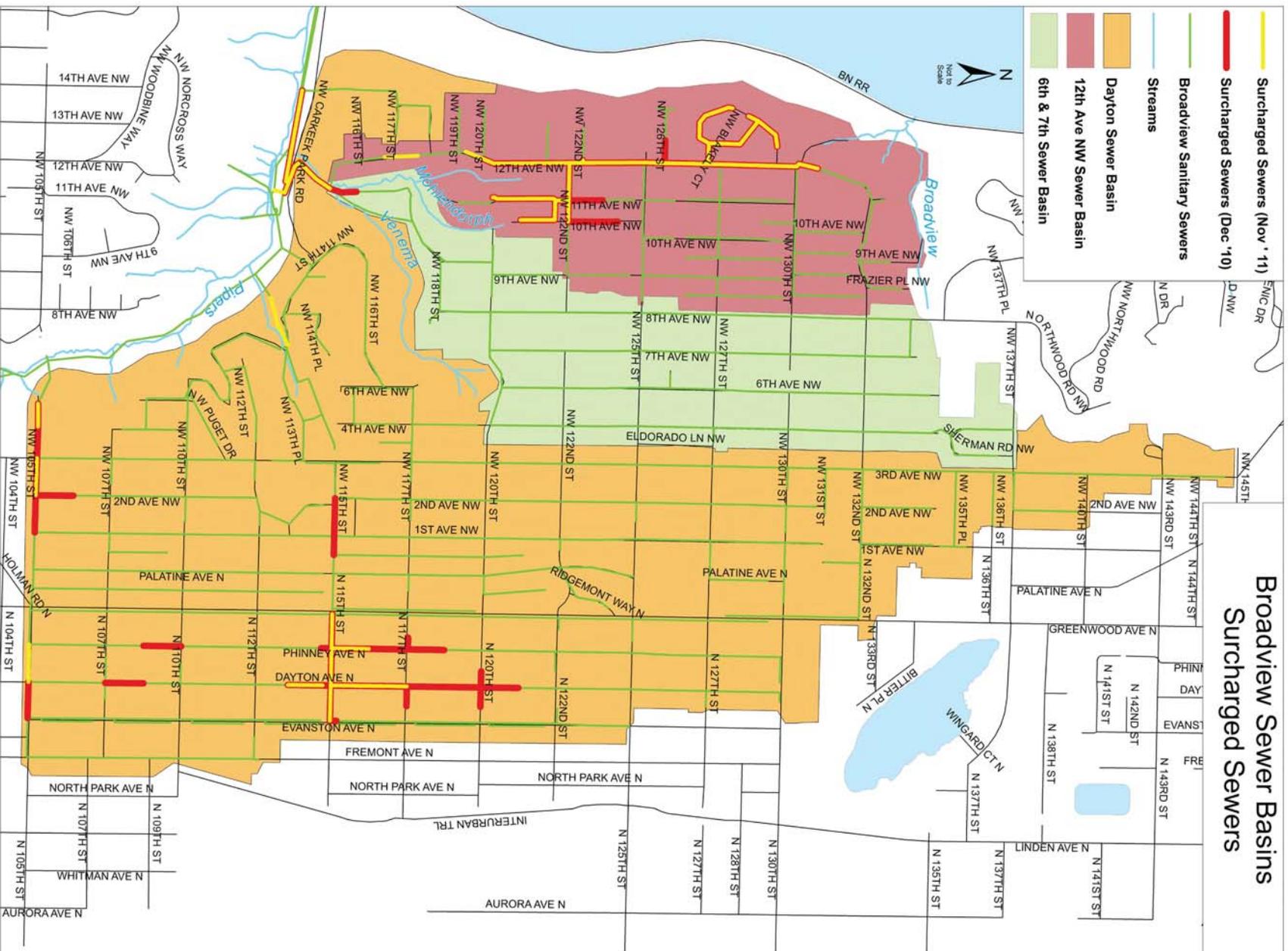


\*Level of Service (LOS) is a descriptor of the average frequency of flooding from the system into the right-of-way (System LOS) or into a yard or private structure from the public right-of-way (Parcel LOS). As an example, a 25 year LOS means that in any given year there is a 4 percent chance of flooding.

Modeled with SPU 158 Year Timeseries

Published 6/17/2014

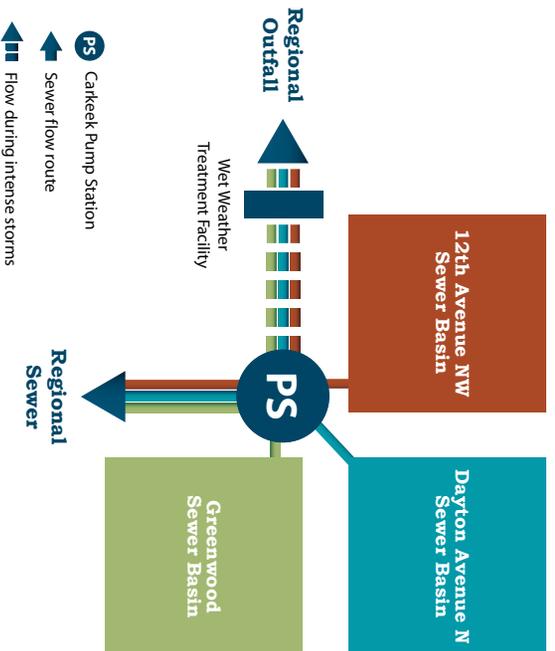
# Broadview Sewer and Drainage Improvement Project



# Broadview Sewer and Drainage Improvement Project

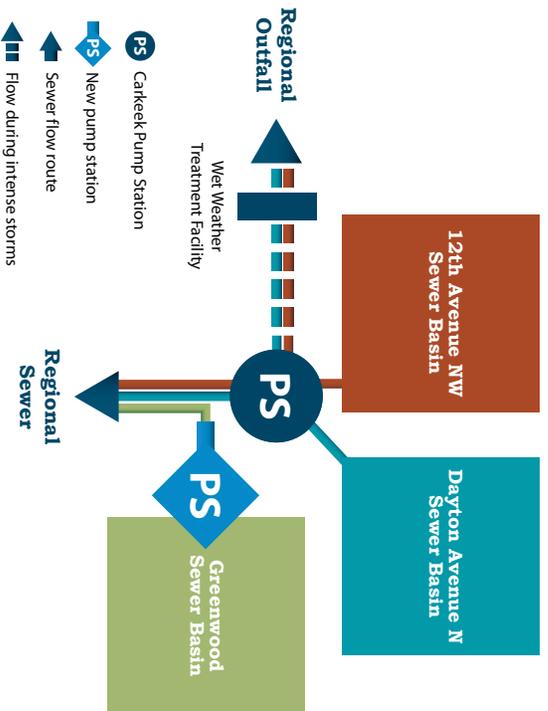
## New sewer alternative: Broadview Regional Sewer Alternative

The new regional sewer alternative would serve both the 12th Avenue NW and Dayton Avenue N basins.



**Broadview Existing Condition**

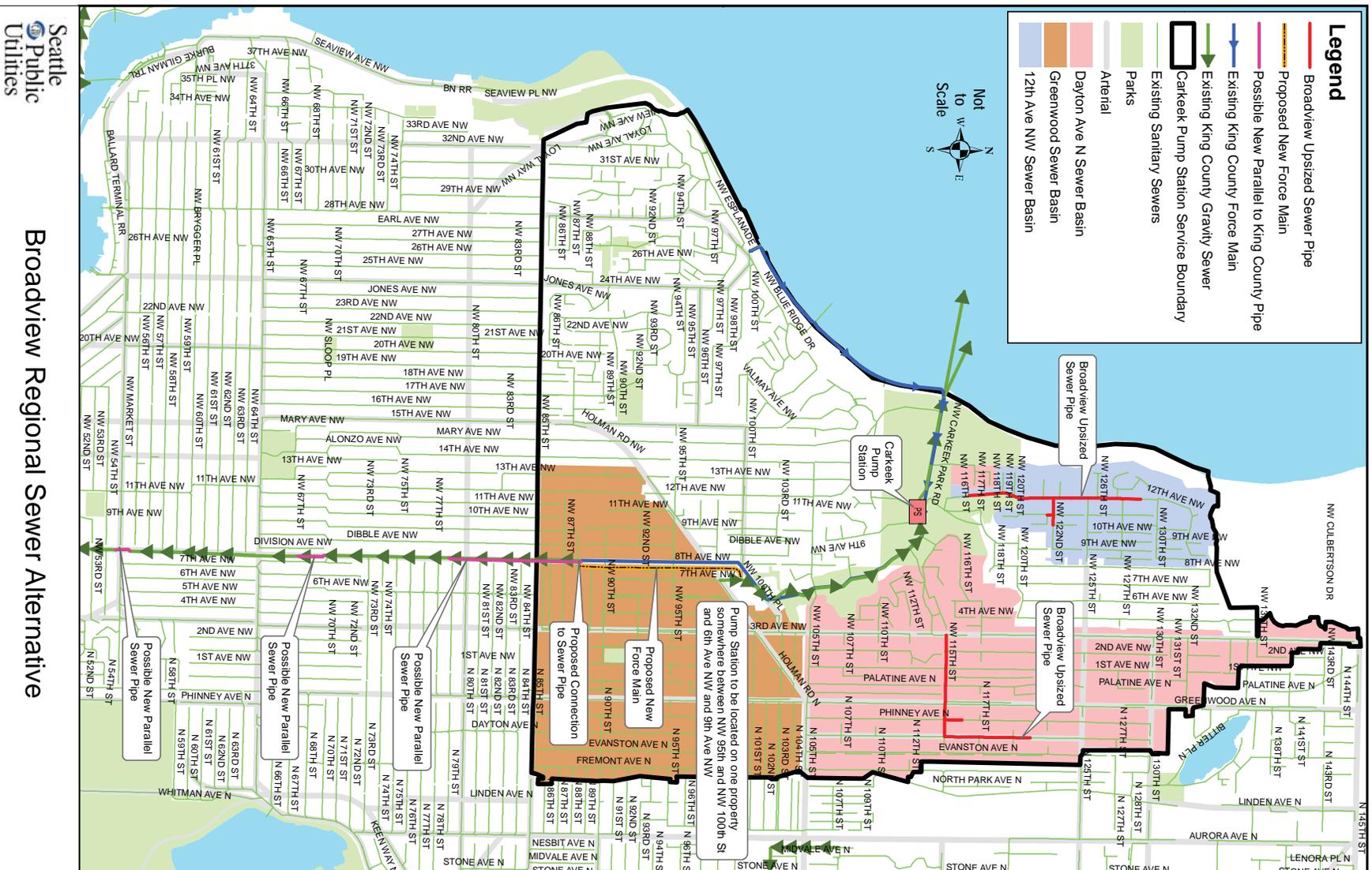
Currently, sewage from several basins collects at the Carkeek Pump station before being discharged into the King County sewer system. In a very large storm, the flows are diverted to a wet weather facility for treatment. During heavy storms, flows of stormwater and sewage can overwhelm the system and overflow into Puget Sound.



### Broadview Regional Sewer Alternative

- The Broadview Regional Sewer Alternative would reroute existing sewer flows from Greenwood away from the Carkeek Pump Station to a different point in the King County mainline.
- Rerouting flows would free up capacity at the Carkeek Park Pump Station to handle increased Broadview sewer flows. It would not increase the frequency of sewage overflows.
- In order to reroute these flows, preliminary plans would require a new pump station built on one property in or near the Greenwood neighborhood.

# Broadview Sewer and Drainage Improvement Project



## 12th Avenue NW and Dayton N Avenue Basin Sewer Alternatives

Alternatives	Considerations
Broadview Regional Sewer Alternative (New)	<ul style="list-style-type: none"> <li>• Potential for significant cost savings to project (currently estimated at \$20 million)</li> <li>• Reduced overall construction impacts</li> <li>• Construction in roadway to upsize pipes along 8th Ave NW and new pump station needed near 8th Ave NW; limited code-related drainage improvements may also be required that could displace some parking</li> <li>• Construction in the Dayton area in the right-of-way along Dayton Ave N and N 115th Street</li> <li>• Construction in the 12th Avenue NW basin will occur in right-of-way along 12th Avenue NW between NW 130th Street and NW 117th Street</li> <li>• Potential benefits to Carkeek Park (fewer sewer overflows to Piper’s Creek)</li> <li>• Construction schedule dependent on completion of large CSO storage project (Ship Canal Water Quality Project)</li> <li>• Requires agreement with King County</li> </ul>
Reduce Sewer Flows	<ul style="list-style-type: none"> <li>• Addresses flows at source and extends sewer life span</li> <li>• Possible small underground sewer storage in the 12th Avenue NW basin; however, a sewer storage tank is required for the Dayton Avenue N basin</li> <li>• Construction on 950-1050 private properties (sealing side sewers) in both the 12th Avenue NW and Dayton Avenue N basins</li> <li>• Would require 10,000 linear feet of perforated drainage pipe in Broadview causing significant construction impacts</li> <li>• For the estimated 100 private properties where disconnections of drain flow going to sewer are needed, residents may be taxed on a portion of improvements.</li> <li>• Potential for localized drainage issues</li> <li>• Ability to phase construction</li> </ul>
Alternatives that scored lower in the evaluation process	<ul style="list-style-type: none"> <li>• Sewer storage in large pipes under the road in Broadview – provides less operational flexibility and does not address problems at source.</li> <li>• Sewer storage in underground tank in Broadview neighborhood – requires greater property acquisition and does not address problems at source.</li> </ul>

## New 12th Ave NW Drainage Alternative: Right-of-Way Green and Grey Storage

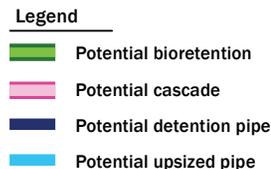
### Drainage improvements:

- Upsized conveyance to reduce flooding
- In-line detention pipe
- Lined roadside bioretention
- Lined roadside cascades
- Cost is same as pond alternative
- Final modeling results are not yet available; level of service for this alternative will be provided at the Open House on 5/28/15

### Extent of improvements:

- Varies by sewer alternative (figure corresponds to Broadview Regional Sewer Alternative)

As of October 2015, SPU is no longer considering the pond alternative.



## 12th Avenue NW Basin Drainage Alternatives

Alternatives Evaluated	Considerations
Right-of-Way Green and Grey Storage	<ul style="list-style-type: none"> <li>• Costs the same as the pond</li> <li>• Some displaced parking</li> <li>• Final modeling results are not yet available; level of service for flooding of structures is approximately 8 years (based on initial modeling)*</li> <li>• Extensive construction work would be required in the right-of-way</li> </ul>
Stormwater Pond  <i>As of October 2015, SPU is no longer considering the pond alternative.</i>	<ul style="list-style-type: none"> <li>• Stormwater pond is \$14 million less expensive to construct than stormwater pipe alternative</li> <li>• Stormwater pond would require acquisition of four private properties</li> <li>• Level of service for flooding of structures is approximately 25 years*</li> </ul>
Other alternatives that scored lower in the evaluation process	The following two alternatives would cost at least \$12 million more than the right-of-way and pond alternatives, which lowered their rank in the list of options. <ul style="list-style-type: none"> <li>• Stormwater storage in pipes</li> <li>• Stormwater storage in vault</li> </ul>

\*Level of Service (LOS) is a descriptor of the average frequency of flooding into a private structure from the public right-of-way (ROW). As an example, a 25 year LOS means that culverts and ditches in some ROW areas are expected to overtop and flood structures about once every 25 years (on average).



Inline storage (in construction)



Roadside bioretention



Broadview cascade on NW 107th St.



Madison Valley Stormwater Pond

## Dayton Avenue N Basin Drainage Improvements Triggered by Sewer Alternatives

Potential improvements to offset sewer work	Considerations
Right-of-Way Green Storage and Infiltration	<ul style="list-style-type: none"> <li>• Unlike 12th Ave NW basin, no flooding from the right-of-way into structures has been identified in Dayton basin.</li> <li>• Drainage improvements will be limited to stormwater code requirements triggered by the the selected sewer alternative</li> <li>• Stormwater code-related drainage improvements in the right-of-way to be determined during project design. Concepts developed to date include bioretention and cascades in the right-of-way. The extent and location of facilities will be determined based on the sewer alternative selected.</li> <li>• Some construction in the right-of-way and parking impacts expected.</li> </ul>
Other approaches considered	<ul style="list-style-type: none"> <li>• Stormwater storage in pipes</li> <li>• Stormwater storage in vault</li> <li>• Underground Injection Control (UIC) wells</li> </ul>



Roadside bioretention



Broadview cascade

## Next steps

- SPU project team will evaluate feedback and continue technical work on alternatives
- Continue to work with King County on Broadview Regional Sewer Alternative
- SPU will prepare detailed alternatives analysis to evaluate community benefits/impacts, environmental benefits/impacts, and project cost
- SPU Management will select drainage and sewer improvement alternatives based on project team's analysis and available funding
- SPU will announce decision on selected alternatives
- SPU project team will develop and share a plan for implementation, including information on project funding and phasing