

McAleer Creek and Lyon Creek Basin Plans Discussion

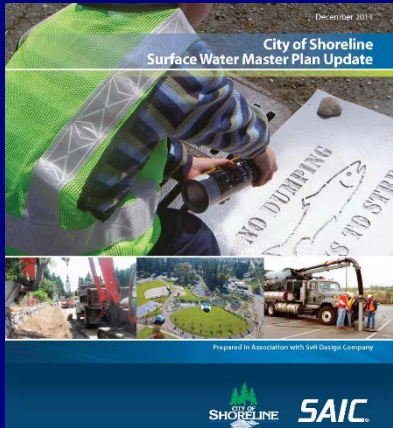
February 8, 2016



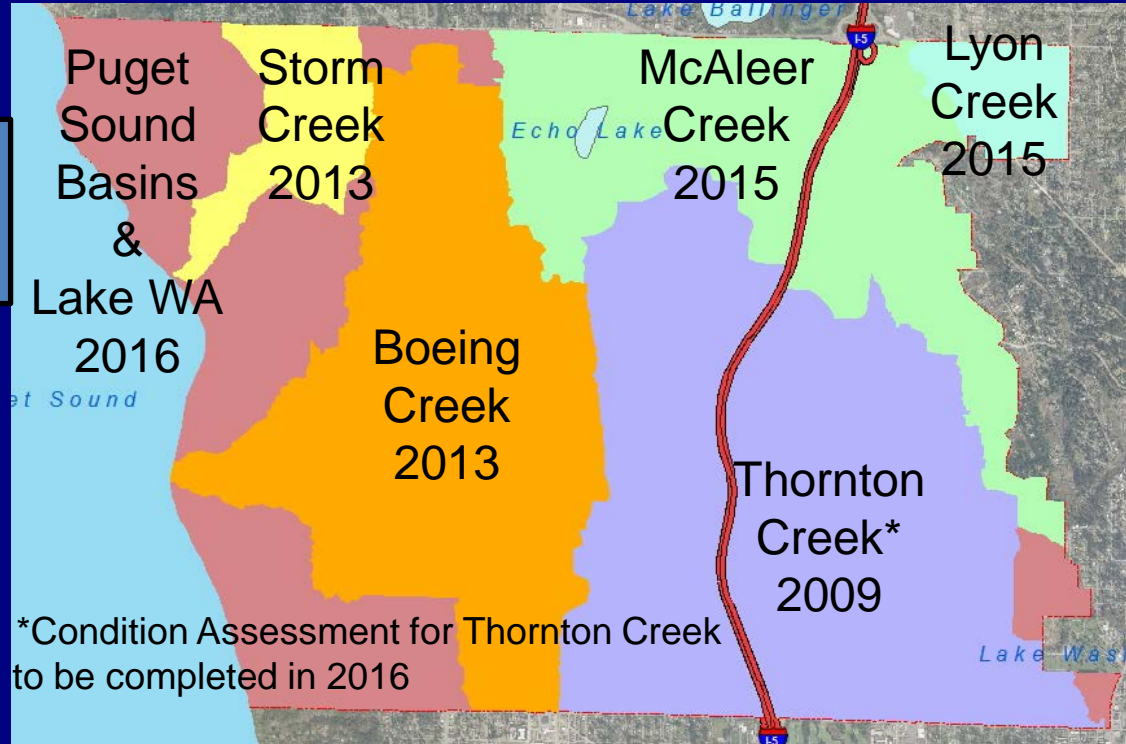
Purpose

- Provide Overview of Basin Planning
- Summarize Results of McAleer and Lyon Basin Planning Efforts
- Discuss Recommendations

Planning Overview



Basin Plans & Condition Assessment



2011 Surface Water Master Plan
(to be updated 2016)



Timeline

2009	2010	2011	2012	2013	2014	2015	2016	2017
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Thornton Creek
Basin Plan

Surface Water
Master Plan

Storm Creek
Basin Plan

McAleer Creek
Basin Plan

Puget Sound
Drainages
Basin Plan*

Pipe Condition
Assessment Starts in
2012



Boeing Creek
Basin Plan

Lyon Creek
Basin Plan

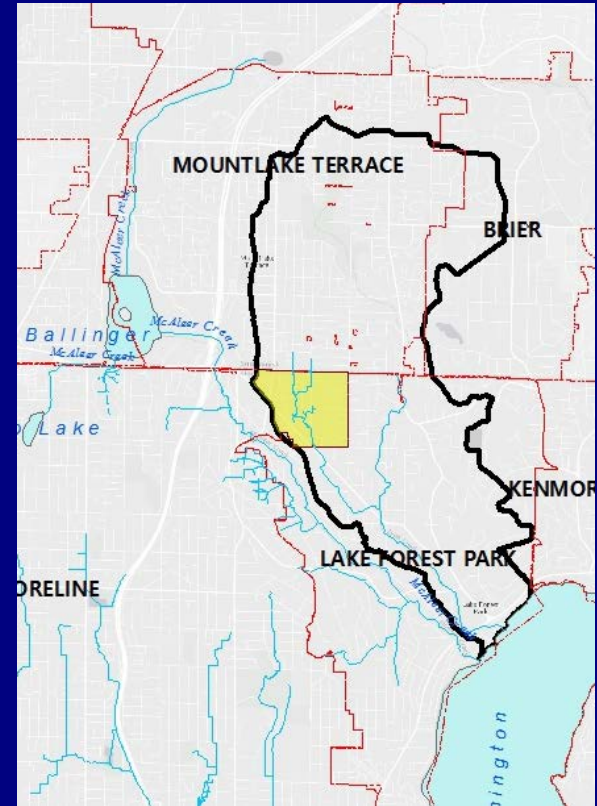
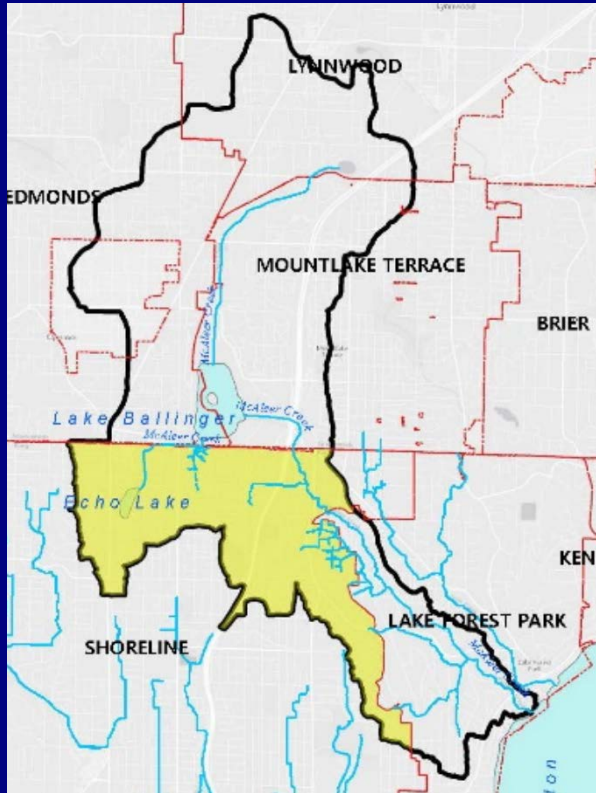
Surface Water
Master Plan
Update

Thornton Creek
Condition Assessment



*Pipe condition assessment included structure assessment

Lyon Basin (Shoreline = 6%)



McAleer Basin (Shoreline = 26%)

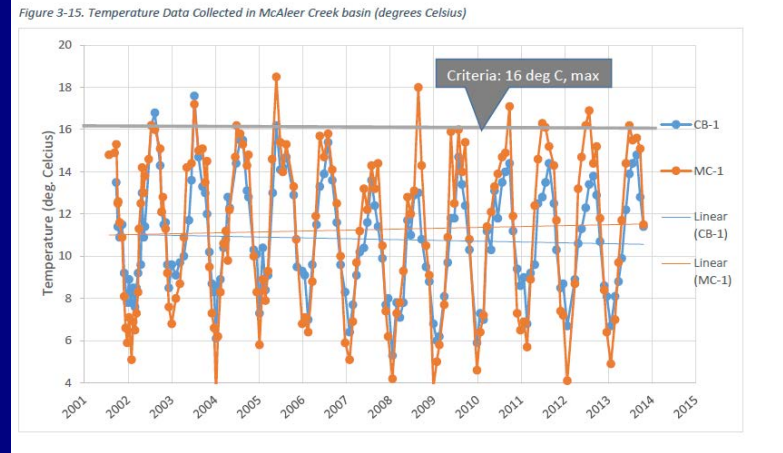
Basin Planning Elements

- Research Historical Issues & Synthesize Data
- Hydraulic Analysis
- Stormwater Pipe Condition Assessment
- Water Quality Assessment
- Stream Assessment



Stream Assessment

Water Quality Data Review



Pipe Videos and Condition Ratings

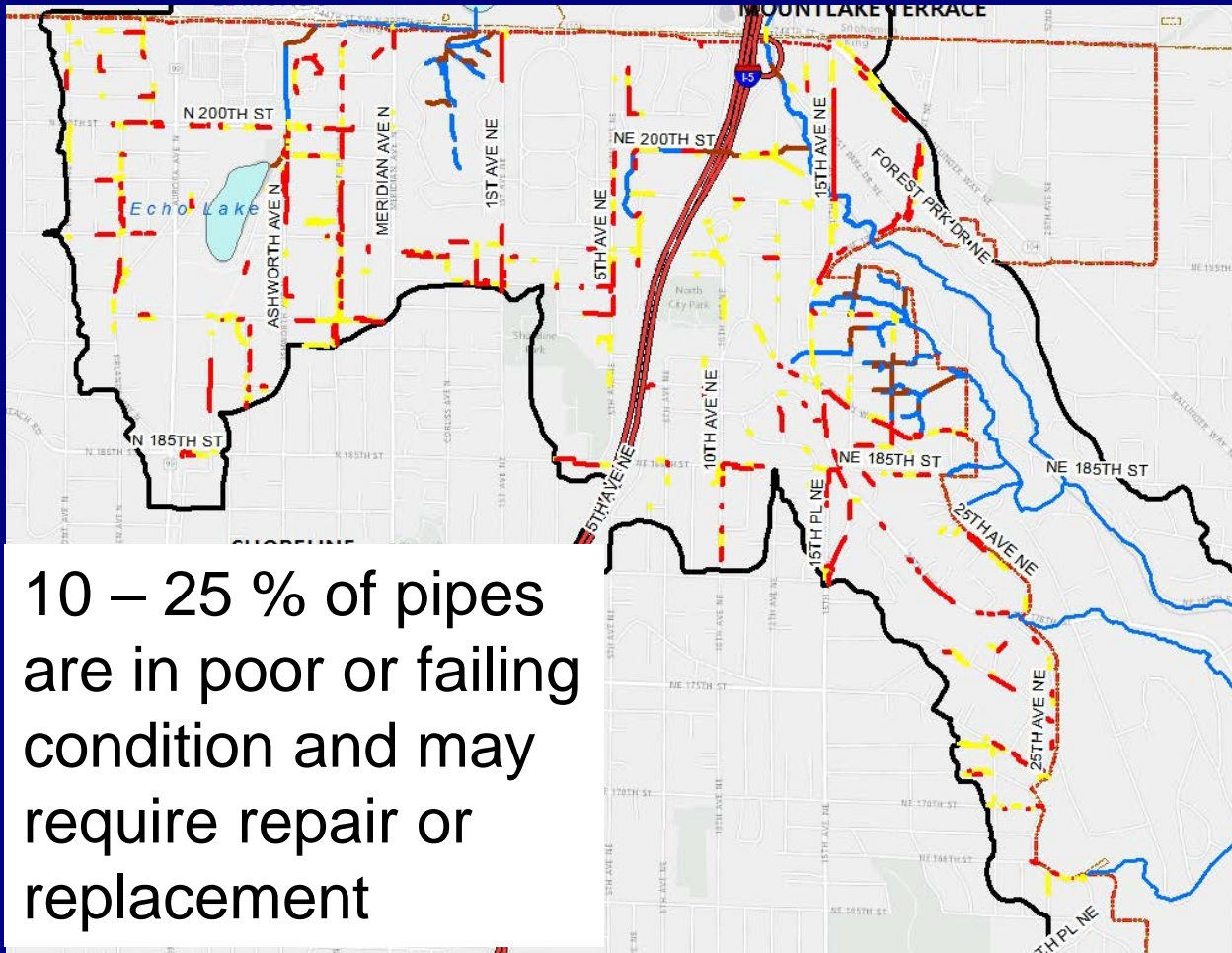
Contractor:	Innovac
Date:	11/3/2015
City:	Shoreline
Street name and Number:	NW 196TH ST & RICHMOND BEACH D
Purpose of Survey:	Maintenance Related
Diameter / height:	12
Material:	Concrete Pipe (non-reinforced)
Shape:	Circular
Asset ID:	SP-15323
Upstream MH:	CB-9333
Direction of Survey:	Downstream
Downstream MH:	CB-11783

0.00 ft

2015-11-03

Primary Basin Issues (both basins)

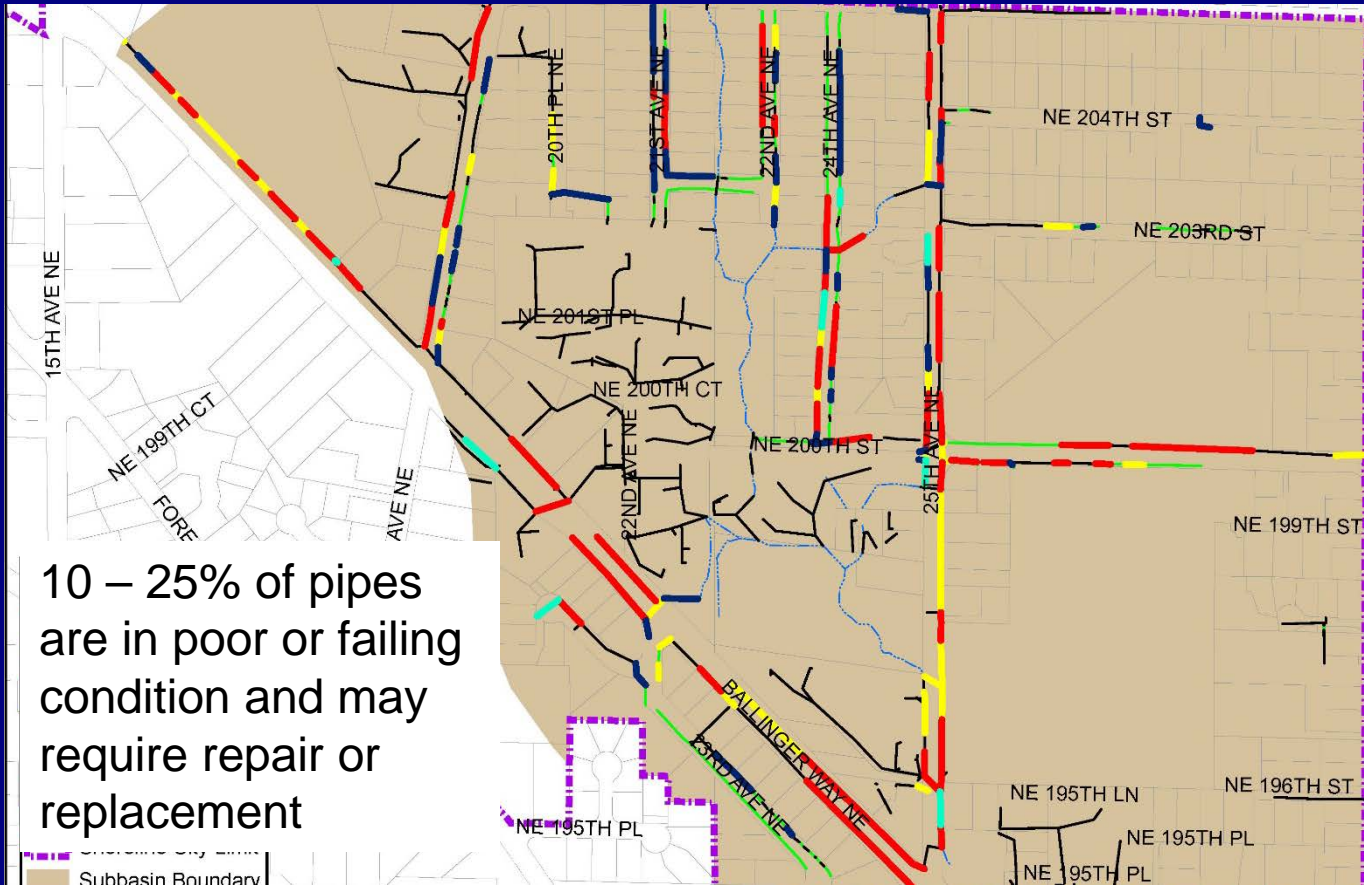
- Stormwater pipes in poor or failing condition
- Flooding and drainage problems due to undersized conveyance infrastructure
- Groundwater seepage and resulting drainage issues



10 – 25 % of pipes are in poor or failing condition and may require repair or replacement



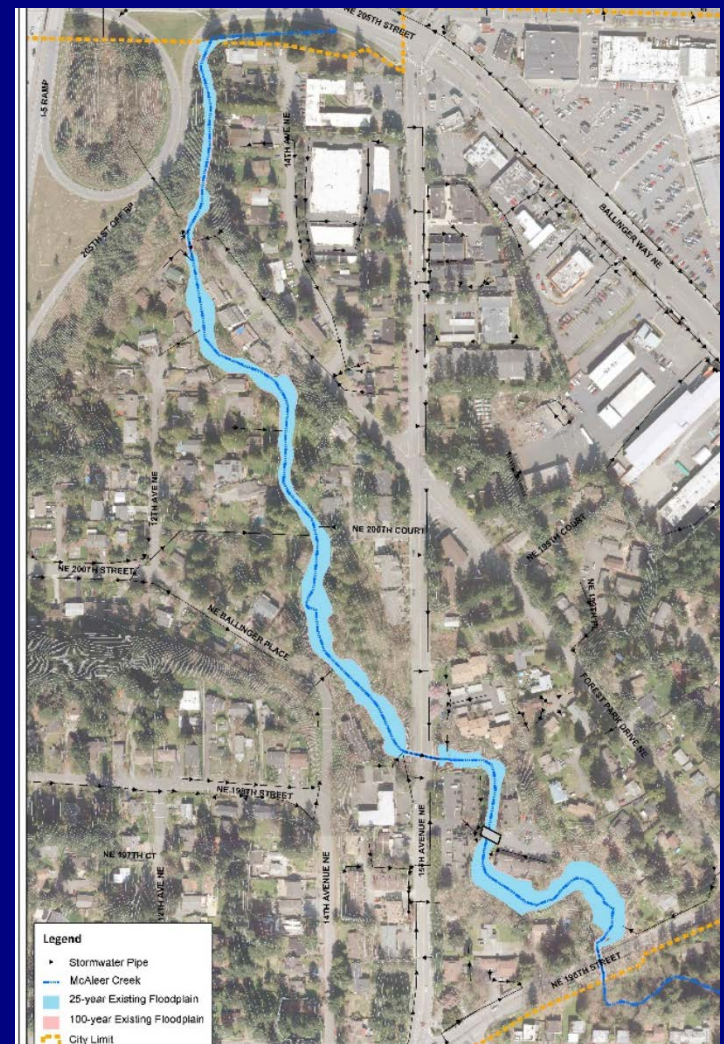
McAlier Condition Assessment Results



Lyon Condition Assessment Results

Hydraulic Analysis McAlear Creek

- No culvert crossings overtop at the 2-, 25- or 100-yr flood events
- Main stem creek flows are contained within the channel during 100-year flood event



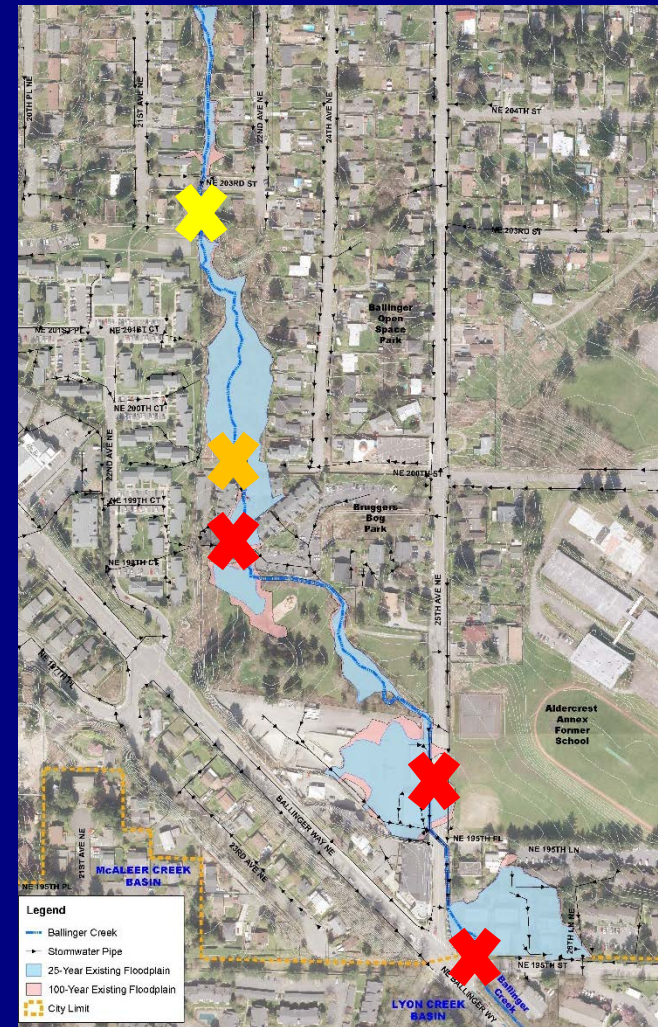
Hydraulic Analysis- Ballinger Creek (Lyon Basin)

- ✘ Location overtops in 2-, 25- and 100-yr flood events
- ✘ Location overtops in 25- and 100-yr flood events
- ✘ Location overtops in 100-yr flood events



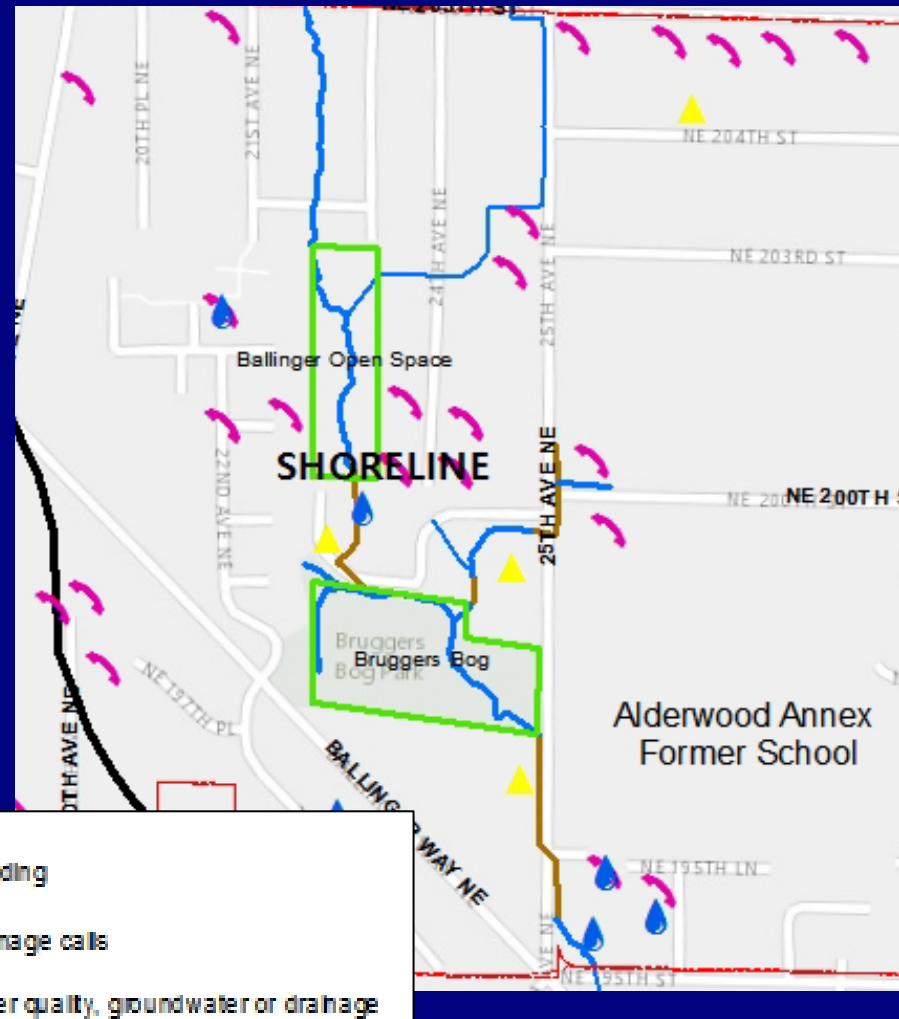
Ballinger Creek (Lyon Basin) 100-yr Floodplain

- ✘ Location overtops in 2-, 25- and 100-yr flood events
- ✘ Location overtops in 25- and 100-yr flood events
- ✘ Location overtops in 100-yr flood events



10-yr Service Call History Lyon Basin

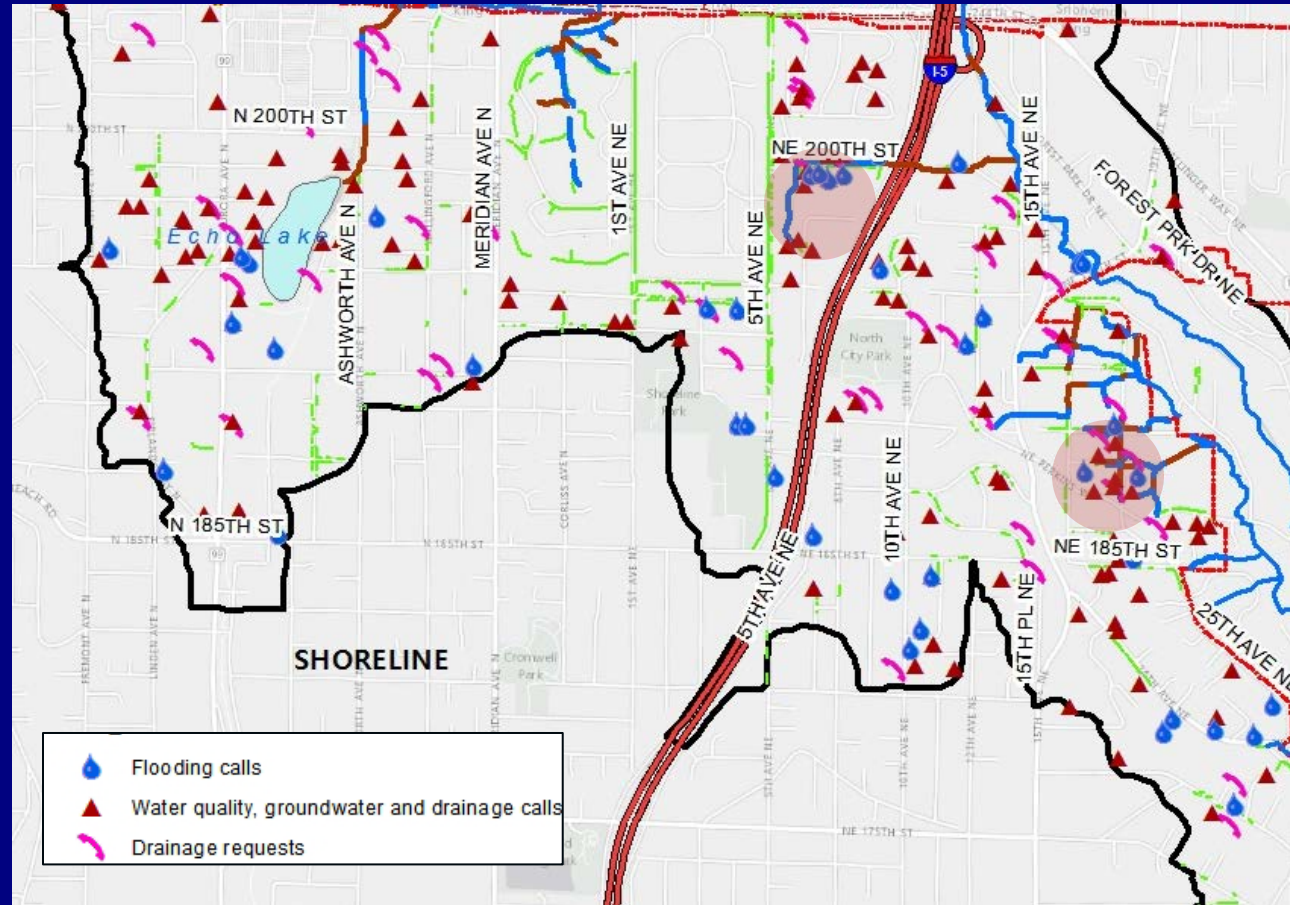
- Confirms flooding on 25th Avenue NE, upstream of NE 195th Street culvert



10-yr Service Call History McAleer Basin

Problem Drainage Areas:

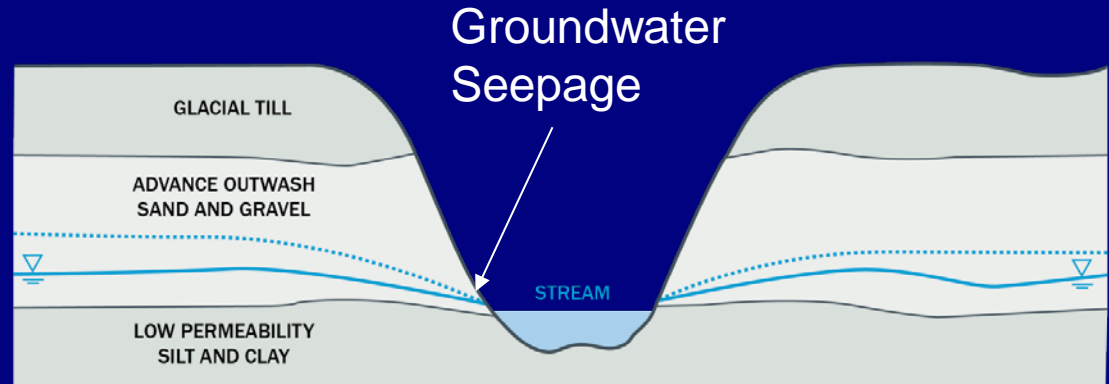
- 6th Ave NE and NE 200th Street
- East of 15th Ave NE between NE 185th and NE 195th Streets



Location of Groundwater Seepage in Lyon Basin

Qva = Advance Outwash (sand and gravel)

Qtb = Transitional Beds (low permeability silt and clay)



Simplified Geologic Cross Section

Other Issues (both basins)

- Water Quality
- Invasive vegetation in riparian corridors
- Operational (i.e., pipes outside of ROW, lack or no drainage infrastructure)

Non-Capital Recommendations

Lyon Basin

- Coordination with bordering jurisdictions and other entities for shared interests and responsibilities in Lyon Basin
- Evaluate new ROW acquisitions

McAleer Basin

- Studies to evaluate:
 - Groundwater issues
 - NE 185th Subarea stormwater improvements
 - Eastern boundary drainage systems
 - Echo Lake water quality improvement options
 - Lateral stormwater connections
- Evaluate new surface water easement acquisitions and policies



Capital Project Recommendations

Lyon Basin

- 25th Avenue NE Flood Reduction (Design 2016)
- Stormwater Pipe Repair and Replacement Program Projects

McAleer Basin

- Two Flood Reduction Projects (6th Ave NE @ NE 200th St & NE 190th St)
- Stormwater Pipe Repair and Replacement Program Projects
- Three Bioretention/biofiltration projects
- Various Drainage Improvements

Stormwater Pipe Repair and Replacement Program

Projects types include:

- Priority open-cut pipe replacement
- Priority trenchless pipe repair
- Repair of improper storm drain connections
- Removal of other utility crossings (list of crossings to be removed at cost of other utility)
- Second tier pipe repair
- Relocation of high priority pipes to City ROW

Cost Breakdown- Lyon Basin

Total Cost of Recommended Projects =
\$6.7M

- 25th Avenue NE flood reduction = \$5.3M
- High priority pipe repairs = \$710K
- Second tier pipe repairs = \$258K
- Relocate conveyance to ROW = \$330K
- Programmatic projects = \$70K

Cost Breakdown- McAleer Basin

Total Cost of Recommended Projects =
\$11.5M – \$12.5M

- High priority pipe repairs = \$1.5M
- Second tier pipe repairs = \$5.2M
- Five drainage improvement CIPs = \$1.6M - \$2.6M
- Three low impact stormwater retrofit CIPs = \$1.2M
- Relocate conveyance to ROW = \$1.7M
- Programmatic projects = \$200K

Next Steps

- 25th Avenue NE Project- design in 2016 CIP
- Pipe Repair Program—on-going
- Other recommendations to be prioritized under 2016 Surface Water Master Plan Update

Questions?

