South Fork Snoqualmie Corridor Plan
July 2015
Levee overtopping and seepage

Road flooding

Neighborhood flooding

Flooding near I-90: Potential for interstate closure

Channel migration: Circle River Ranch
Key Issues

- 1960s levees overtop and have structural problems
- Different flood protection levels on left & right banks
- Potential for I-90 flooding
- Channel migration hazards in Circle River Ranch (30 structures)
- Gravel build up between levees
- Poor ecological conditions

<table>
<thead>
<tr>
<th>Flood Impacts</th>
<th>100-yr</th>
<th>500-yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow (cfs)</td>
<td>15,650</td>
<td>19,120</td>
</tr>
<tr>
<td>Structures</td>
<td>144</td>
<td>778</td>
</tr>
<tr>
<td>AV ($million)</td>
<td>53.8</td>
<td>147.9</td>
</tr>
<tr>
<td>Roads (mi.)</td>
<td>5.4</td>
<td>14.8</td>
</tr>
<tr>
<td>Acres</td>
<td>368</td>
<td>778</td>
</tr>
</tbody>
</table>
November 2006 Flood Event

Hydraulic Model Calibration
Existing Conditions

100-yr Flow

500-yr Flow
Adopted Corridor Plan Goals

**Goal 1: Reduce Risks**
- 500 year flood protection if feasible
- Eliminate high and moderate geotechnical problems
- Mitigate channel migration risk over 50 years

**Goal 2: Improve natural environment**
- Improve instream aquatic habitat
- Improve riparian habitat

**Goal 3: Reduce long-term costs**
- Sustainable cost-effective solutions
- Reduce long-term maintenance & repair costs by 30%

**Goal 4: Incorporate stakeholder and community values**
- Provide equitable outcomes
- Incorporate multiple objectives through involvement
Adopted Tools

- Levee Removal
- Setback Levee
- Bridge/Culvert Replacement
- Levee Repair
- Elevated Structure
- Gravel Removal
- Raised Levee
- Maintain Existing Management Practices
Adopted Corridor Approaches to Evaluate

Evaluated each approach based on metrics derived from the adopted corridor goals

Conclusions:
- Each has advantages and drawbacks
- A hybrid approach can use the best features of each and best combination of tools at each site
Blue areas represent new areas of flooding over time.
Hashed area represents areas that flood now.
Red area represents areas no longer flooded.

Maintain Existing Management Practices
Blue areas represent new areas of flooding over time.
Hashed area represents areas that flood now.
Red area represents areas no longer flooded.
Raise Levees In Place

Blue areas represent new areas of flooding over time
Hashed area represents areas that flood now
Red area represents areas no longer flooded

500-year Flood
Hybrid Approach

Blue areas represent new areas of flooding over time.
Hashed area represents areas that flood now.
Red area represents areas no longer flooded.
Comparing Approaches

Evaluation Metrics

- **Ability to reduce risks**
  - Solve geotechnical problems
  - Solve hydraulic problems
  - Manage or accommodate sediment

- **Ability to improve ecological conditions**
  - Increases in floodplain connectivity
  - Increase in velocity refuges for fish

- **Cost effectiveness**
  - Implementation costs
  - Projected maintenance and repair costs

- **Consistency with stakeholder interests**
  - Multi-objective benefits
  - Limit downstream impacts
  - Gravel management
  - Effects on recreation/ trails access
Comparison of Benefits

- Maintain Existing Management Practices
- Corridor Wide Levee Setbacks
- Raise Levees In Place
- Hybrid Approach
Comparison of Costs

![Cost Comparison Chart]

- Maintain Existing Management Practices
- Corridor Wide Levee Setbacks
- Raise Levees In Place
- Hybrid Approach
Comparison of Property Impacts

- Maintain Existing Management Practices
- Corridor Wide Levee Setbacks
- Raise Levees In Place
- Hybrid Approach

Home Buyouts: 20
Undeveloped Property Buyout: 10
Easements Needed: 30
Home Elevations: 200

![Bar Chart](chart.png)
Next Steps on Corridor Plan

Community input

Executive Committee and Board decision on corridor approach

Finalize and approve corridor plan
- Flood Control District Approval (4th quarter 2015)
- County Council adoption (1st quarter 2016?)
I-90 Flood Risk Reduction (Early Action Project)

January 2009 – Water close to overtopping I-90
I-90 Flood Risk Reduction Project

Predicted flood waters to overtop Interstate 90

Project initiated through Flood Control District Resolution 2013-14 with no scope definition

Scope has been refined by evaluating several concepts as precursor to alternatives analysis

Preliminary finding is Si View Levee Setback is likely a necessary core element of a successful alternative
Questions? Comments?