Salmon Creek Channel Stabilization and Fish Passage Project

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Presentation Overview

- Background and History
- Design
- Performance
History
Design Objectives

1. Remove headcut, stabilize channel
2. Bridge scour protection
3. Improve fish passage
Design Challenges

- Providing channel stability during flood flows
- Meeting fish passage objectives
  - Velocities during high flows
  - Sufficient depth during low flows (concern about loosing surface flow between the rocks)
  - Hydraulic diversity
Plan and Profile

Legend:
- Old Sheetpile
- Old Bridge Foundation
- New Sheetpile
- New Bridge Foundation

- Rock Chutes (Typ.)
- Salmon Creek Centerline

Native Material (Typ.)
- Finished Grade
- Old Headcut
- Bridge Limits
- New Sheetpile
- Rock Chute (Typ.)
- Pre-Project Ground
Plan View of Typical Chute

- 4'-5' Stream Boulders
- 5'-6' Stream Boulders
- Boulder Toe Protection
- Low Flow Channel Through Crest of Rock Chute
- 3'-4' Stream Boulders
- Flow
- Rock Key
Profile View of Typical Chute

- 4'-5' Stream Boulders
- Streambed Gravel and Fines
- Rock Chute Toe 3'-4' Stream Boulders
- Constructed Streambed
- 5'-6' Stream Boulders
- 3'-4' Stream Boulders
- Native Material
- Sheet Pile at 2 Locations
Post Construction Monitoring

- 10-year Monitoring Plan
  - Channel Stability
  - Changes in Pools and Chutes
  - Fish Passage Criteria

- Fish capture and tagging by WDFW
Performance to Date

- Constructed in summer 2008, 10-year event in January 2009
- Some movement and damage to chute structures
- Drops greater than one foot at two locations
- Bank erosion
- Improved fish passage
Changes from Winter 2008/2009 Flood Season

Before

After
Changes from Winter 2008/2009 Flood Season

Before

After
Changes from Winter 2008/2009 Flood Season

Before

After
Lessons Learned

- Involvement of permitting agencies early during the planning stages
- Assumption regarding “waters of the state” for urban creeks
- Uncertainty in design of rock on steep slopes
Conclusions

- Improved fish passage
- Bridge protected from scour
- Some damage and needs for repair