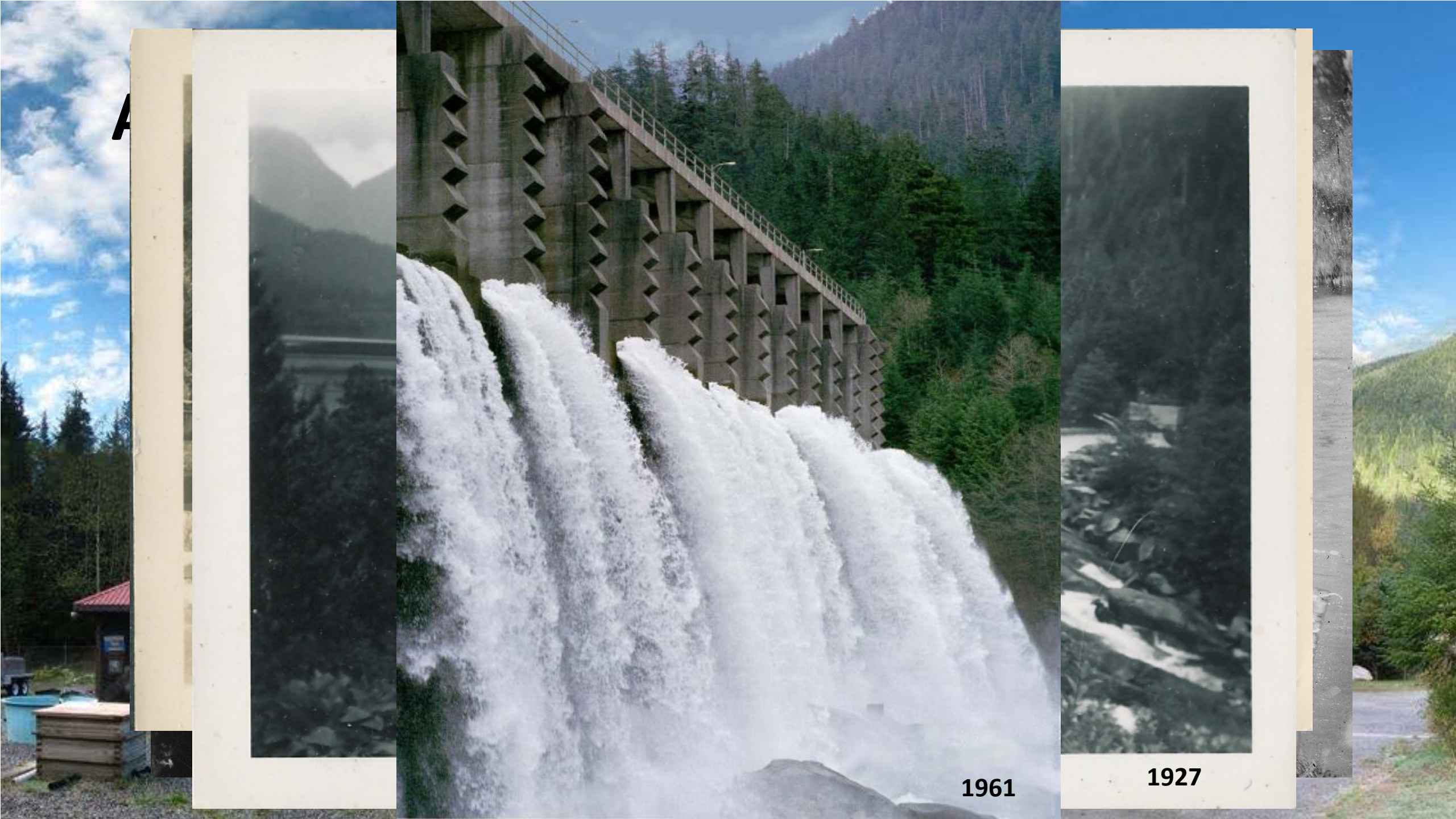




SEYMOUR SALMONID SOCIETY

ENHANCING FISHERIES ON THE NORTH SHORE SINCE 1987





A

1961

1927

From BCIT to the SSS



- Initially run by BCIT in 1977 in response to declining fish stocks
- Seymour Salmonid Society was formed in 1987 and took over fish production

We are a non-profit society run by 3 full-time staff, 1 seasonal staff and a lot of community volunteers



Volunteering



Habitat Enhancement and Restoration



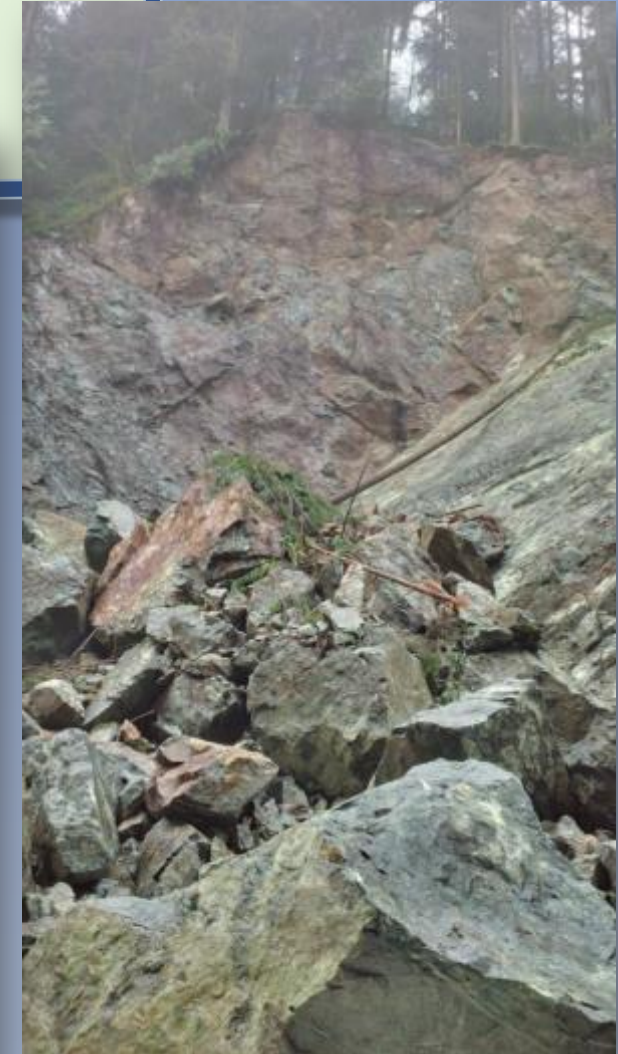
Education



Salmonid Enhancement

Seymour River Rock Fall

On December 7, 2014 approx. 50,000 cubic metres of rock at the upstream end of the lower canyon fell during a catastrophic slope failure into the canyon



Seymour River Rock Fall Location

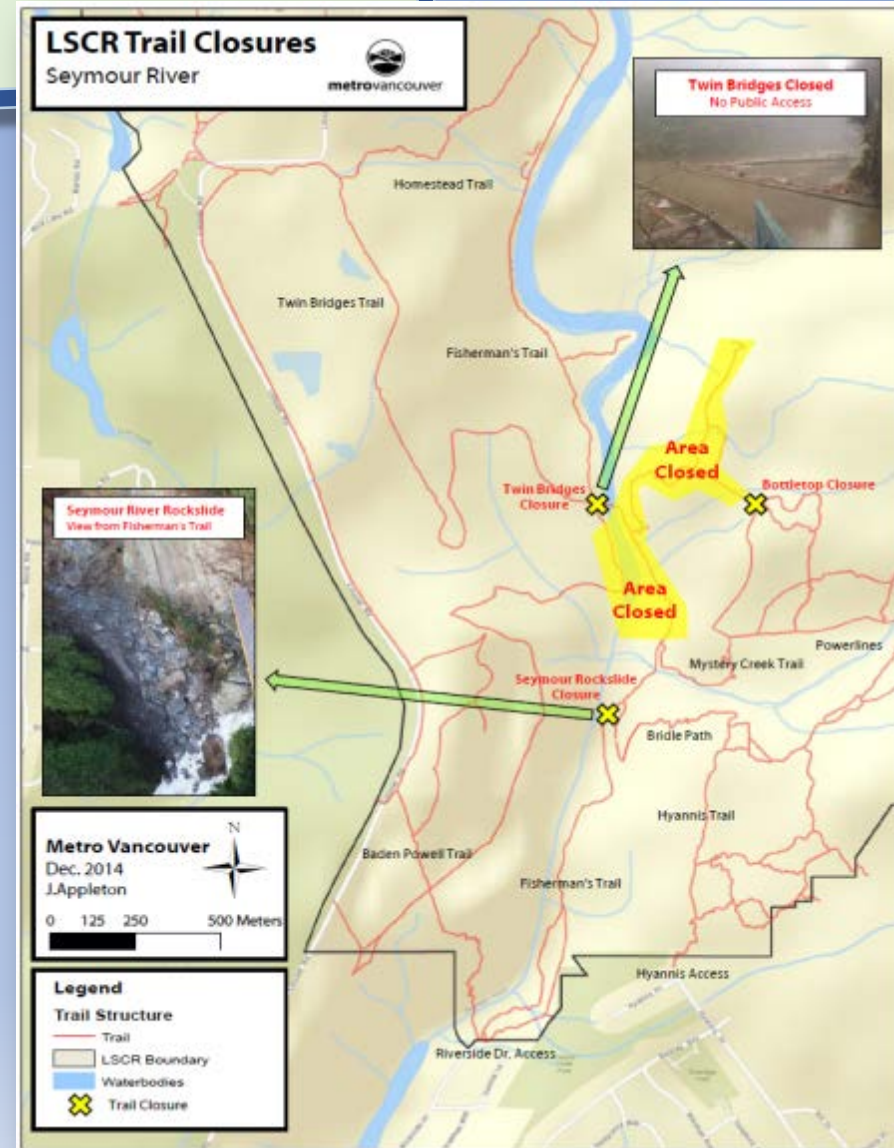
Upstream



Rock Fall

Backwater

Downstream



Seymour River Rock Fall Impacts

Rock fall Impacts:

- Creation of a backwater extending upstream to Twin Bridges
- Water level increase >30 feet, destabilized Twin Bridges structure
- Removal of Twin Bridges
- Possible fish barrier

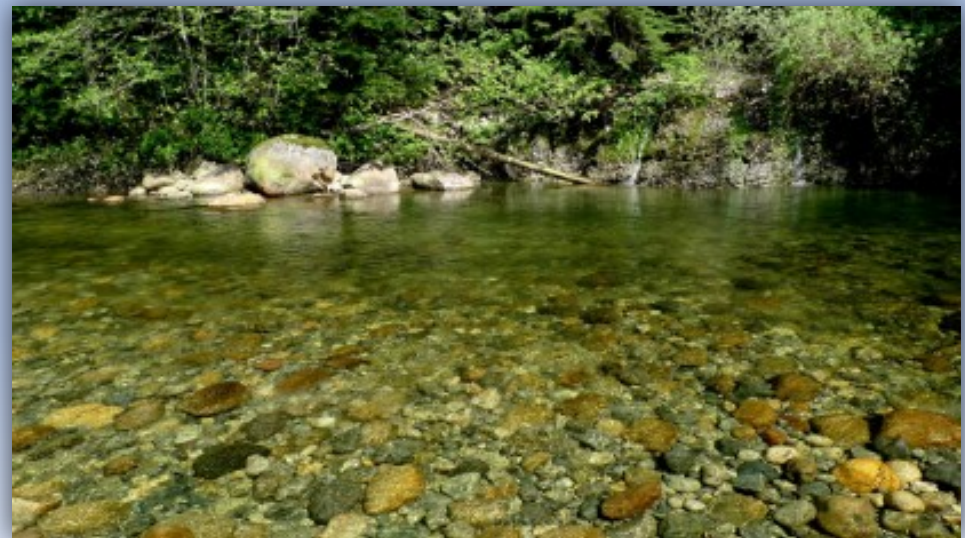


Seymour River Salmon Spawning Habitat

Upper Seymour River, above the rock fall, contains the majority of productive salmon habitat in the watershed



Concerns are justified regarding future health of the Seymour River salmon run, if migration past the rock fall is not successful



Tagging Projects

Radio and acoustic tagging is being used to monitor juvenile seaward migration and adult steelhead and coho migration to spawning grounds

Pacific Salmon Foundation, Fisheries and Oceans Canada, BC Ministry of Forests, Lands and Natural Resource Operations, UBC, Kintama & Freshwater Fisheries Society of BC contributed emergency funding and equipment for the tagging programs



Pêches et Océans
Canada

Fisheries and Oceans
Canada



Tagging Project Results

No fish have been detected by fixed or mobile receivers.

It appears that no fish are able to move past the rock fall.



Tagging Project Results



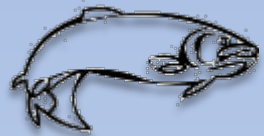
Radio Tag

Snorkel survey, July 15, 2015
confirmed approximately 300 coho &
25 steelhead below the rock fall

The majority of fish
are holding in two
pools directly below
the rock fall

Salmon Migration Mitigation Strategies

A two-stage strategy is currently underway to aid the migration of fish above the rock fall and to obtain coho and steelhead broodstock until fish passage can be restored:



Capture & Transport



Floating Fence Installation

Lower River Project



Fisheries & Oceans Canada in partnership with Seymour Salmonid Society, Tsleil-Waututh Nation, Metro Vancouver, Squamish Nation & North Van District, Pacific Salmon Foundation and Habitat Conservation Trust Foundation are attempting to capture returning salmon in the lower Seymour River to transport above the rock fall

Lower River Project

Seymour Parkway Bridge

The capture system included a PVC trap within a large net anchored into the Seymour River immediately downstream of the Seymour Parkway Bridge.



PVC Trap

Lower River Project



Hoop Net

The net trap has since been removed - hoop nets, tangle nets, seine nets and anglers are currently being used to capture fish in the Lower Seymour River

Lower River Project



Lower River Project

We have begun to see some fish return to us in this state – we suspect that these fish reached the rockslide and have worn their heads down trying to negotiate the barrier. They have since dropped back downstream in search of alternative spawning grounds.



Future Prospects



- Over 2000 man hours to date
- We reached our broodstock targets
- Not a sustainable option

Floating Fence



Applied for Funding to

- Install a floating fence in the lower river
- Create a fish passage through the slide using non-explosive methods



Seymour River Rock Slide Response Strategy

The Society raised funds to hire North West Hydraulics (NHC) to investigate the options to make the rockslide fish passable

Seymour River Salmon Migration Mitigation Strategy: Multi-Project Partners & Contributors



TSLEIL-WAUTUTH NATION
PEOPLE OF THE INLET



SEYMOUR
SALMONID
SOCIETY

ENHANCING FISHERIES ON THE NORTH SHORE SINCE 1987



Salmonid Enhancement Program
Fisheries and Oceans Canada / Pêches et Océans Canada



metrovancover

INSTREAM FISHERIES RESEARCH



Freshwater Fisheries
Society of BC
gofishbc.com



Skwxwú7mesh Úxwumixw
Squamish Nation



NORTH VANCOUVER
DISTRICT



Restoration of Fish Passage

An agreement in principle regarding a permanent mitigation method has been reached by roundtable members from 6 levels of government



Skwxwú7mesh Úxwumixw
Squamish Nation

Fisheries and Oceans Canada
BC Ministry of FLNRO
Metro Vancouver
District of North Vancouver
Squamish First Nation
Tsleil-Waututh First Nation



TSLEIL-WAUTUTH NATION
PEOPLE OF THE ISLET

Restoration of Fish Passage

“Re-shaping the slide with scaling crews, low-velocity explosive rock-breaking and river flows”

- Non-conventional rock-breaking
- Limited heavy equipment
- River hydraulics to redistribute 10 000 – 20 000 m³ of material into a gradient that can be utilized by all salmon species



Restoration of Fish Passage

Budget

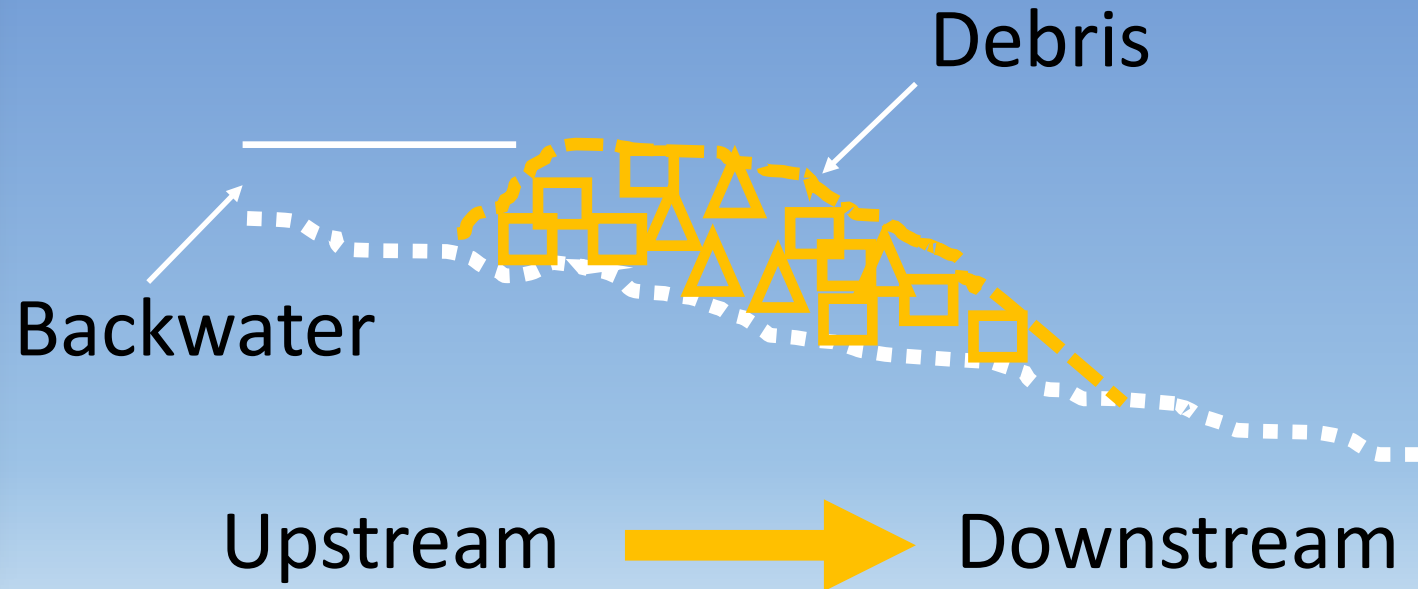
Time Frame	Cost
Per Day	\$5000 - \$7000 (including materials)
Per Event (assuming 5 day work period)	\$30 000
Per Year (assuming 8 work events)	\$240 000
Total (at 5 years)	\$1 200 000

Restoration of Fish Passage



Downstream

Schematic Cross-Section



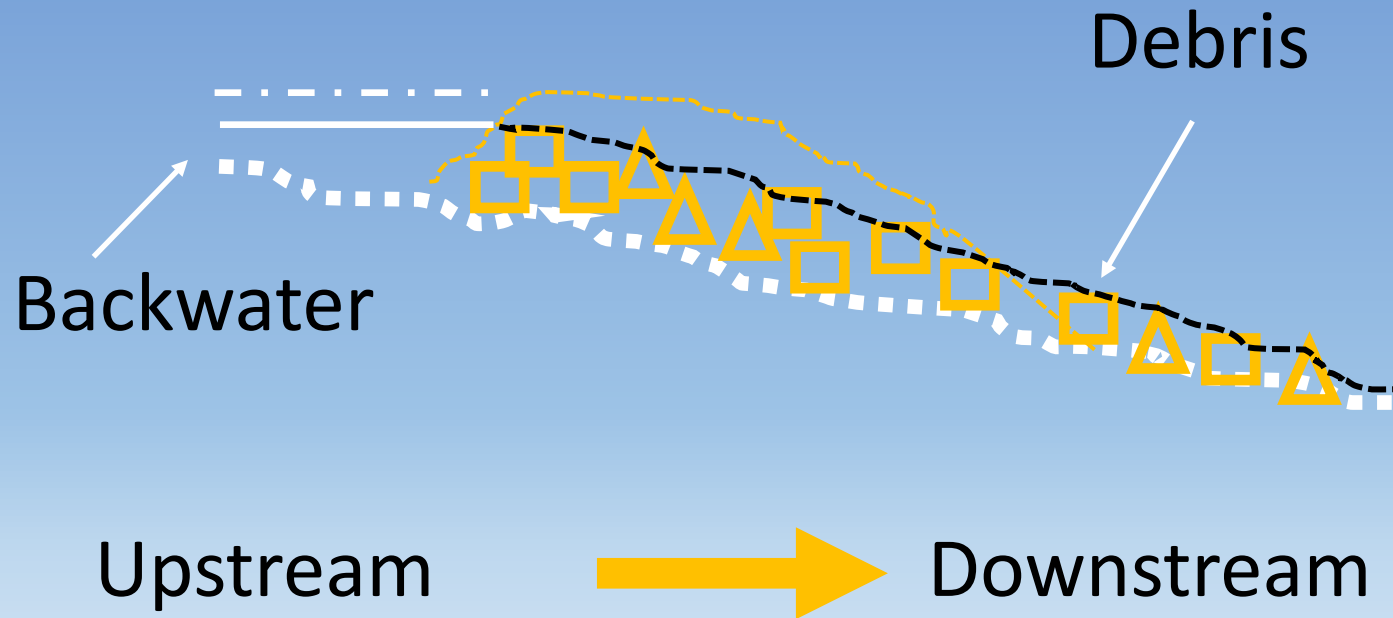
Goal to reduce debris pile grades –
steeper slopes to shallower slopes

Restoration of Fish Passage



Downstream

Schematic Cross-Section



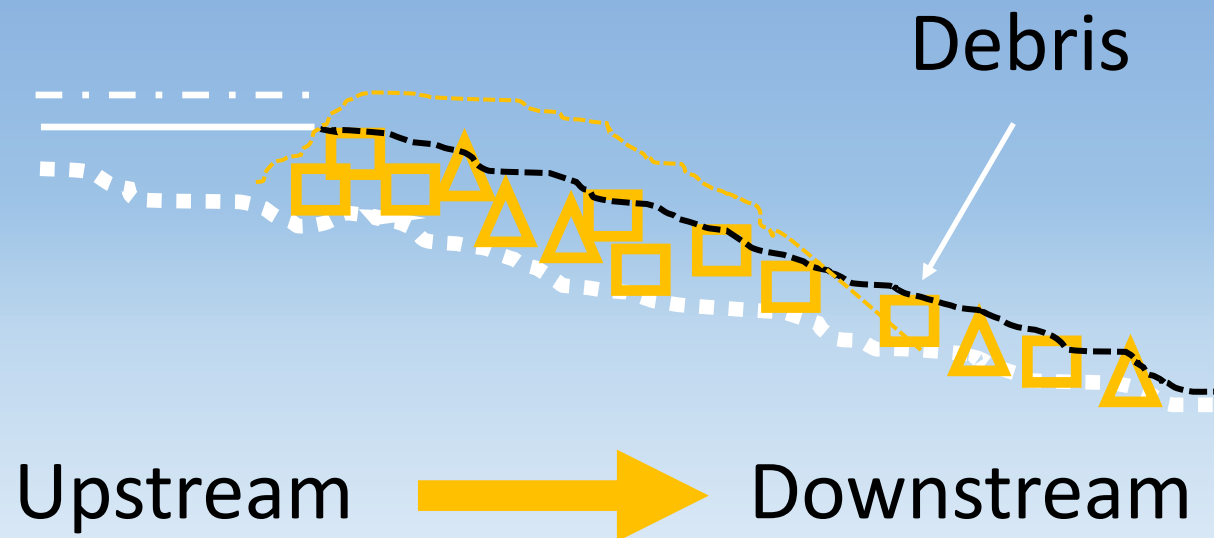
Restoration of Fish Passage



Downstream

Work Flow

Escarpment crest to river channel
(top down for safety of site crew)



Upstream



Downstream

Restoration of Fish Passage

Construction Process

Drill



Low-Velocity Blast



Repeat



Restoration of Fish Passage

Vision Statement

“To restore migration conditions on the Seymour River for all species that existed before the 2014 rockslide, in a safe and sustainable manner.”

Questions?

