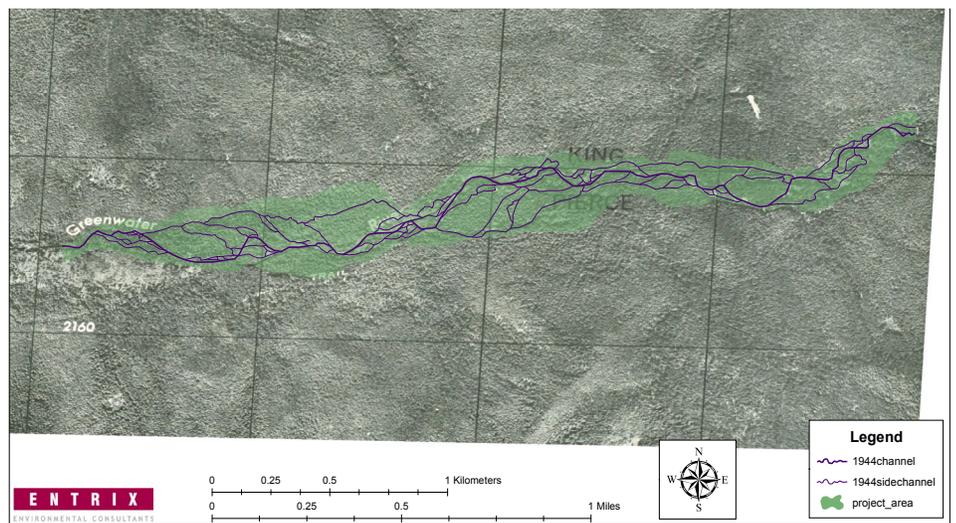


Greenwater Floodplain Restoration Project

The Greenwater River floodplain restoration restores aquatic and riparian habitat within a two-mile reach of the Greenwater River, beginning at river mile 5.0 to 7.0 within the Mt. Baker-Snoqualmie National Forest, adjacent to Forest Service Road 70. The project has reintroduced functional wood and removed 0.8-mile/4,500 linear feet of the abandoned Forest Service Road 70 within the floodplain.

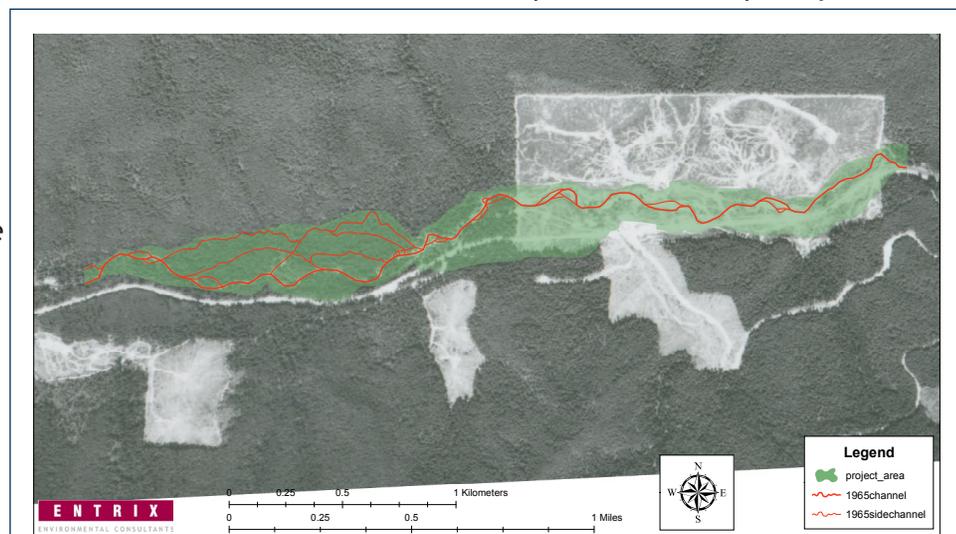


Greenwater River project reach in 1956 photo with digitized mainstem and side channels.

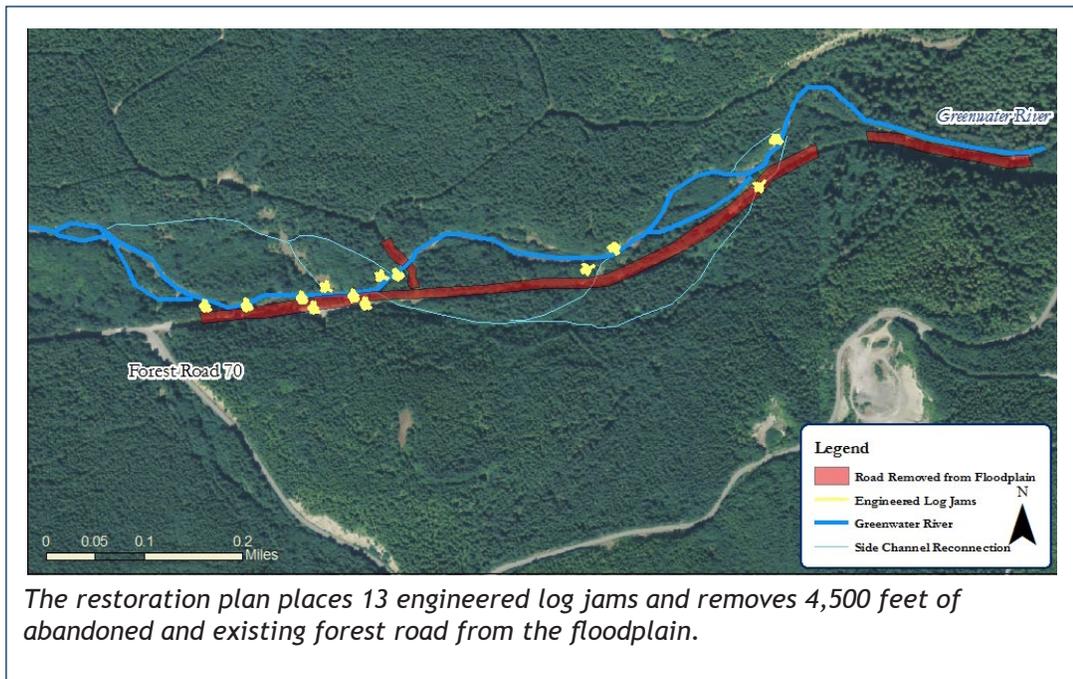
Historically, the Greenwater River was one of the principal spawning and rearing areas in the White River watershed for spring Chinook, bull trout, winter steelhead and coho. Aerial photographs from 1956 of old-growth forest in the Greenwater valley show the importance of large trees in maintaining salmon habitat. The river was in pristine condition, characterized by sinuous channels with many large, deep pools created by log jams. Pools are critical for rearing salmon, bull trout and other fish to provide cool places and refuge from predators.

A legacy of timber harvest altered the Greenwater River between the late 1950s and 1960s when most of the trees were removed from the valley to the banks of the river. This practice stripped the river of instream wood, removed the forest structure from the floodplain and subsequently increased channel incision, stream velocities and river bed scour. The current channel is incised with few pools, little rearing habitat, and almost no functional streamside cover to provide shade, structure, input of nutrients and recruitment of woody debris.

Given these impacts and the current lack of large woody debris, the young age of the streamside forest and large volumes of sediment in the Greenwater River, it could have taken centuries for the system to return to a river sustained by natural processes. A plan was developed to address the lost processes of wood recruitment, forest canopy and floodplain connection by strategically placing engineered log jams and removing road fill and armor from the floodplain.



Greenwater River project reach in 1965 photo with digitized mainstem and side channels.



Watershed and Aquatic Benefits

Overall, the project will increase flood storage and reduce downstream peak flows, thereby providing greater stability and balance to the watershed. The log jam structures will accelerate and maintain system-wide natural processes while reducing sediment loading, stabilizing banks for streamside forest establishment, and provide habitat for salmon and other fish. The species benefiting include: White River spring Chinook, White River winter steelhead, bull trout, pink salmon, coho salmon, rainbow trout, and coastal and resident cutthroat trout.

Specifically the project will:

- Create large, persistent structures that will trap mobile wood and sediment,
- Reduce erosion and sedimentation sources by dampening peak flow velocities,
- Aggrade the existing river bed elevation to reconnect stream flows to the floodplain, increasing flood storage and providing backwater-flood refuge for rearing juvenile fish,
- Increase side-channel rearing capacity and spawning opportunity for juvenile and adult salmon,
- Encourage trapping and sorting of spawning gravels within the main stream channel, increasing spawning opportunities,
- Improve salmon egg retention and survival by reducing scour stress of the river,
- Increase the quantity and quality of pools with lots of overhead, woody cover for predator avoidance for juvenile salmon and staging of upstream-migrating adult salmon,
- Provide interim, instream structure and stability to allow the Greenwater valley forest to regenerate to a size that will naturally stabilize the river.

Project Partners—Collective funding totaled \$1.9 million in salmon recovery and mitigation dollars

Project Managers: South Puget Sound Salmon Enhancement Group,

Engineers: Herrera Environmental Consultants, Cardno ENTRIX, Olympic Region Engineering Cluster,

Contractors: RV Associates, McClung Construction, Southworth and Sons,

Stakeholders: US Forest Service, Muckleshoot Tribe, Puyallup Tribe, Community of Greenwater,

Funding Partners: Salmon Recovery Funding Board, Forest Service, Puyallup Tribe and Puget Sound Partnership, Natural Resource Damage Assessment Trustees, WA State Department of Transportation.