

PROJECT GOALS



Protect sensitive salmon habitat from toxic roadway runoff



Test effectiveness of the biofiltration system and polishing layer



Collect data to support Washington State Department of Ecology TAPE certification and widespread implementation

PROJECT STATUS



Ongoing research and monitoring phase



Data collected from 3 storm events in 2022



Seeking funding to continue testing at least 15 storm events



Nisqually Indian Tribe



HERRERA



WASHINGTON STATE UNIVERSITY

UNIVERSITY of WASHINGTON
TACOMA



Treating Toxic Roadway Runoff at Ohop Creek

Tire dust and other chemicals in roadway runoff are deadly to salmon. Tire dust is especially harmful for coho salmon, causing high rates of mortality even at low levels. In a sensitive restoration area in the Nisqually Watershed, LLTK and partners are testing a compost-based biofiltration system to collect and clean stormwater near coho spawning habitat.

Tire dust: deadly impacts on coho salmon

For decades, coho salmon in urban streams across the West Coast have been dying from exposure to stormwater runoff – water that washes from roads, carrying with it a wide variety of pollutants. In 2020, researchers at Washington State University Puyallup and University of Washington Tacoma determined that a chemical called 6PPD-quinone was responsible for the harmful effects, and found that it resulted from the breakdown of tire dust particles that collect on roads reacting with ozone. **6PPD-quinone represents a huge threat to coho survival: between 20% and 90% of coho die within hours of exposure to contaminated stormwater.** Recent studies found that it is harmful to Chinook and steelhead as well.

While policymakers and scientists are working with the tire industry to find safe alternatives, 6PPD-quinone will be present in stormwater for years to come. **Salmon need immediate solutions to remove 6PPD-quinone from runoff near their habitat.** Ohop Creek is one location where coho spawning grounds are impacted by runoff from an increasingly busy highway. The Nisqually Indian Tribe has teamed up with Long Live the Kings, Cedar Grove, Herrera, and other partners to install and test a biofiltration system to clean stormwater and protect the salmon that spawn there.



Ohop Creek Stormwater Management Pilot Project



Coho salmon are severely impacted by tire dust chemicals in stormwater.
Photo credit: Jim Dier

Treating stormwater with compost

Biofiltration is a method that uses living material – such as plants, mulch, and compost – to remove pollution from contaminated water. Rain gardens and bioswales are examples of biofiltration systems which capture runoff and allow it to slowly filter through vegetation and layers of mulch and soil, removing pollutants. Because Ohop Creek is a sensitive habitat restoration site, constructing a large traditional bioswale below ground wasn't a good option. Instead, our partners at Cedar Grove developed a containerized, mobile biofiltration unit to treat runoff. The unit collects stormwater from over 13,000



comparing the levels of contaminants in the runoff before it entered the system, at the midpoint, and when it was discharged. While this first round of data is small, the results are promising: **the system appears to be effective in removing over 90% of the 6PPD-quinone from untreated stormwater, reducing it to levels safe for coho salmon.**

The biofiltration system is currently on site and operational, collecting and filtering stormwater before it reaches salmon habitat. Long Live the Kings is seeking funding to conduct more sampling in future years. Our goal is to collect enough data (from at least 15 qualifying storms) so

“This is the DDT of our generation.”

—DAVID TROUTT, NATURAL RESOURCES DIRECTOR, NISQUALLY INDIAN TRIBE

square feet of roadway in Ohop Valley and filters it through layers of compost to remove toxic compounds. Because compost can add excess nutrients to the water, the system includes a final, external layer to remove phosphorous before the water is discharged to the wetlands near the creek.

Collecting data to test the system

During the first year of this pilot project, LLTK sampled water moving through this system during three storm events in the spring of 2022. (To qualify for this study, a storm must meet rainfall and duration requirements set by the Washington Department of Ecology to ensure consistent data.) The samples were sent to a lab for chemical analysis,

that this system can be approved for use in projects across Washington to protect salmon streams.

With additional testing, we hope to see this mobile biofiltration system become a proven model for reducing the harmful effects of roadway pollution on salmon and their environment.