WATERSHED RESILIENCE ACTION PLAN

A Tree to Sea plan for landscape scale restoration and salmon recovery in the Snohomish Watershed.

JANUARY 2022

WASHINGTON STATE DEPT OF
NATURAL RESOURCES
HILARY S. FRANZ
COMMISSIONER OF PUBLIC LANDS

LETTER FROM THE COMMISSIONER OF PUBLIC LANDS

HILARY S. FRANZ
Commissioner of Public Lands

For centuries, salmon have defined Washington. They've fed our culture and spirit as much as they've fed our people and iconic orcas. But over the past several decades, we've watched salmon runs—once so thick you could walk across rivers—dwindle to near extinction. Our orcas are dwindling, too, deprived of the fatty salmon that sustain them.

There have been enormous efforts to restore salmon habitat and support these shrinking populations, including investments by Tribes, government agencies, nonprofits and businesses. That work has produced tangible, positive results in building healthier habitat to help our salmon recover.

But we need to do more. And fast. Because despite our work to-date, there remains a great need for bold, innovative and interconnected action across the state.

Salmon are still struggling, which means we all need to do more.

That is where this plan comes in. The Department of Natural Resources' (DNR) Watershed Resilience Action Plan coordinates, enhances and maximizes investments and work to protect and restore salmon habitat—at a watershed scale—in ways that also provide jobs and build healthier, more equitable communities. The plan builds on existing efforts and also deploys new resources on the ground.

There is no better place to start than the Snohomish Watershed, which has a community that is incredibly dedicated to recovering salmon.

The Watershed Resilience Action Plan is holistic and comprehensive—a Tree to Sea approach. We want to use every tool, not just in the DNR toolbox, but in the toolboxes of all of the organizations and partners that are committed to saving our salmon. Salmon do not care about property boundaries or zoning. They just need a safe place to lay their eggs and grow strong enough for the ocean.

This plan is guided by five goals that drive action toward outcomes that can be measured in short- and long-terms:

1. Protect and clean up aquatic habitat.
2. Restore, conserve and connect forests and riparian habitat.
3. Revitalize urban forests and streams.
4. Engage and invest in communities.
5. Reduce and combat climate impacts.

Our goals focus on different parts of the landscape—headwaters, healthy forests and riparian zones, urban areas, estuary and nearshore—so that we address salmon habitat throughout the whole watershed.

This includes a focus on what DNR already does, and how we can do more of what we do well at scale, including removing derelict vessels, correcting barriers to fish passage, reducing impacts of overwater structures, addressing pollution, improving salmon habitat, expanding tree canopies, increasing green stormwater infrastructure and preserving and restoring precious kelp forests and eelgrass meadows.

It also includes new initiatives and strategies in order to achieve resilience throughout the watershed, such as sourcing trees for woody debris projects and protecting lands suitable for beaver that could improve habitat and streamflow.

This plan coordinates with, and supports, ongoing work so that efforts amplify and complement each other and act as a magnet for new public-private partnerships and funding, which will build an even more effective and powerful salmon recovery community.

Accountability and transparency are built into this plan. In order to secure additional investments, we must have clear, accessible tools that will clarify needs and outcomes. Under this plan, all work will be captured by our interactive WatershedConnect tool, which allows anyone to track progress or identify opportunities to amplify efforts. This is part of a collaborative effort between DNR and the Snohomish Watershed core salmon recovery team to use local data to identify what does and doesn't deliver meaningful results in the watershed.

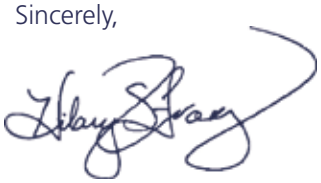
This tool will also tell the story of return on investment—showing the multiple benefits of these projects, including job creation and environmental justice benefits that we know salmon recovery projects provide.

I want to share a huge appreciation for the work and engagement by everyone working on Snohomish salmon recovery who helped the DNR team develop this plan, especially the Tribes and local partners in the Snohomish Basin Salmon Recovery Forum. And I want to thank in advance the many partners we will collaborate with in the future to achieve the plan's objectives.

Saving Washington's salmon is critical to preserving what makes this place so special. This plan urges us forward, together, and ensures we are all moving in the same direction.

By doing this, we will build resilient watersheds that make our salmon and our state stronger and healthier.

Sincerely,



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Riparian forest along the Tye River near Deception Falls.

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EXECUTIVE SUMMARY

Salmon are an iconic and vital part of Washington's environment, communities, economies and cultural traditions. Many Washingtonians take pride in our salmon as they are tied to fond childhood memories, recreation and outdoor activities, arts and culture and our fishing and culinary industries. Salmon, steelhead and other salmonids depend on a diverse array of healthy habitats found within a watershed to thrive. Salmon are a perfect indicator species for whether our landscapes, our watersheds and our communities are thriving, which is why DNR has embarked on this strategic approach. Salmon rely on each landscape they access throughout their life cycles, from mountain streams where salmon spawn and eggs hatch, through rivers, estuaries and "underwater forests" where young salmon feed and grow, to Puget Sound and back again.

Unfortunately, our salmon are in trouble. Despite decades of focus at federal, state and local levels, and nearly $1 billion invested in salmon recovery efforts, there are still 16 populations of salmonids listed as endangered or threatened in Washington State (NOAA Fisheries 2021).[1] Robust salmon recovery plans identify habitat restoration needs, but that restoration has not kept up with numerous pressures including climate change, a growing human population and increased urban development.

Commissioner of Public Lands Hilary Franz has launched a strategy dedicated to creating resilient watersheds in support of salmon recovery while securing human wellbeing so that all people can thrive in healthy and equitable communities. We approach this effort from our unique perspective as a land management agency with important roles around urban, forest and aquatic lands. These critical goals are in no way guaranteed, and DNR is committed to redoubling our efforts and working in innovative ways in order to achieve them.

Water Resource Inventory Area (WRIA) 7—the Snohomish Watershed—was selected in 2020 as the first location where DNR will apply this watershed-scale work. This watershed was selected after DNR reviewed critical needs on the ground and identified numerous programmatic connections to the landscape as well as relationships with partners interested in finding new ways to work together. The Snohomish Watershed is one of the primary producers of anadromous fish in the state, home to nine salmonid species,[2] three of which (Chinook salmon, steelhead and bull trout) are currently protected under the Endangered Species Act (ESA).

There are numerous aligned, federally-approved salmon recovery plans which this work builds upon—the Snohomish River Basin Salmon Conservation Plan, the Puget Sound Salmon Recovery Plan and Washington's Statewide Strategy to Recover Salmon. DNR's aim is to fill critical gaps and add value where our programs are best suited—including working and natural forested lands in the uplands, urban areas and the submerged aquatic vegetation in the estuary and Puget Sound.

Many challenges make WRIA 7 a critical watershed. Nearshore kelp and eelgrass habitat decline necessitates additional protections, while the proliferation of derelict vessels, unpermitted marinas and marine debris require cleanup to improve habitat and water quality. Snohomish Watershed cities and towns are growing rapidly, providing challenges as well as opportunities, including increasing urban forest cover and green stormwater infrastructure.[3] Small forest landowners face new challenges, from changing precipitation patterns and increased wildfire risk, to economic challenges and threat of conversion from population growth; these factors mean the Snohomish Watershed faces increasing risk of loss of forest cover lost to conversion, which is nearly impossible to recover.

1. Snake River Sockeye; Snake River Spring/Summer Chinook; Snake River Fall Chinook; Snake River Basin Steelhead; Upper Columbia River Spring Chinook; Upper Columbia River Steelhead; Middle Columbia River Steelhead; Lower Columbia River Chum; Lower Columbia River Coho; Lower Columbia River Chinook; Lower Columbia River Steelhead; Hood Canal Summer Chum; Puget Sound Chinook; Puget Sound Steelhead; Ozette Lake Sockeye; Bull trout throughout Washington State.
2. Chinook salmon, Coho salmon, Chum salmon, Pink salmon, Sockeye salmon, Steelhead and rainbow trout, Cutthroat trout, Bull trout, Mountain whitefish.
3. Total population in WRIA 7 is expected to grow from 425,782 in 2020 to 610,000 by 2050. Source: Puget Sound Regional Council Year 2050 projections, derived from PSRC VISION 2050 modeling outputs and SEIS analysis (Nov 2020).

In addition, with approximately 50% of the watershed owned by the US Forest Service (USFS), DNR has unique opportunities to use tools including Good Neighbor Authority to work collaboratively to improve forest habitat and hydrology. All of these challenges, if addressed strategically and holistically, are opportunities to create a more resilient watershed to help communities and salmon thrive.

A watershed is a natural boundary to bring together collaborative efforts and commitment to innovation and successful implementation. This will require breaking down silos—within DNR's own programs, between landowners in the watershed and between public and private actors. DNR recognizes and embraces interconnectedness and intersectionality in pursuit of these goals.

Our Watershed Resilience Action Plan has five Goals, 15 Actions and 34 Outcomes, and is rooted in supporting the needs on the ground and working with partners across all landscapes in the Snohomish Watershed to achieve measurable benefits for salmon recovery. These strategies will be brought to scale and applied to other priority watersheds in Washington State.

This Watershed Resilience Action Plan is our path forward. It takes an expansive view of the limiting factors salmon face in a critical watershed and develops a coordinated approach to removing or decreasing the barriers to recovery over the next 10 years. From Puget Sound, through our cities and towns, farms, forests and mountain headwaters—we will take action across these landscapes to help restore our salmon to non-endangered and stable levels, while creating healthy and resilient landscapes across the watershed.

DNR is one among many in a rich network of watershed resilience and salmon recovery partners. No one entity can do it all—but we know that we must do all that we can.

Urban tree canopy in Everett. Urban trees and green stormwater infrastructure contribute to cool, cleaner water in urban rivers and streams.

TRIBAL NATIONS, SALMON AND WATERSHED RESILIENCE

Since time immemorial, native peoples hunted, gathered and fished throughout the Snohomish Watershed. Tribes signatory to the 1855 Treaty of Point Elliott reserved their rights to access, harvest, and manage natural resources on lands that now constitute DNR lands and other publicly managed lands in the Snohomish Watershed. The Tulalip Tribes reserved such rights and has a continuous interest in activities taking place both inside and outside of the reservation, particularly those that might affect treaty protected fishing, hunting and gathering rights.

Washington State and the Department of Natural Resources acknowledge the ancestral and contemporary lands called home by the state's Tribal Nations and Indigenous peoples from time immemorial. We recognize Tribal sovereignty and that this place and the region of the Pacific Northwest hold spiritual, cultural and personal significance for Indian Tribes and Nations. DNR is committed to upholding these rights and working together with tribal co-managers of the salmon resource. We seek to express gratitude for the historic and ongoing self-determination of the Tribes to be stewards for these lands, waters, natural resources and many creatures including salmon that we are so privileged to enjoy here.

Partnerships between Tribal Nations and state agencies including DNR have led to many successful efforts to protect and conserve natural resources and recover salmon, and sustaining these partnerships is critical in order to achieve all that is truly necessary to restore and protect these resources over the long term. Washington State and the Department of Natural Resources are committed to honoring the role of Indian Tribes and Nations as we work collectively to protect and restore salmon, the waterways and ecosystems paramount to their survival statewide and the countless people who depend on and are enriched by these vital resources.

Woody debris in the Upper Snoqualmie River. In the background is q'əlpc' (Mt. Si). *Photo courtesy of Matthew Baerwalde, The Snoqualmie Indian Tribe.*

WATERSHED RESILIENCE ACTION PLAN VISION

We will build and sustain resilient landscapes at the watershed level that provide sufficient habitat and cool, clean waters that support salmon recovery and human wellbeing. We will manage our lands and waters, protect our communities and connect our work across multiple land-ownerships, jurisdictions and land uses. We will not just look to the past or the present to inform our work, but look to the future and the changes in front of us—increasing population growth, shrinking fish and wildlife habitat and a rapidly changing climate. We will tackle these challenges in a holistic manner to achieve true watershed resilience.

GOALS AND OUTCOMES

This Watershed Resilience Action Plan has five goals. For each of these goals we have selected strategic action areas, measurable outcomes and key actions that we will work with partners to achieve over a 10-year period.

GOAL 1: PROTECT AND CLEAN UP AQUATIC HABITAT.
Remove habitat impediments and protect critical nearshore and estuary habitat for the long term.

GOAL 2: RESTORE, CONSERVE AND CONNECT FORESTS AND RIPARIAN HABITAT.
Restore and conserve forests and improve riparian habitat, to ensure fish have access to cool, clean rivers and streams across the landscape.

GOAL 3: REVITALIZE URBAN FORESTS AND STREAMS.
Increase urban tree canopy and nature-based solutions that improve urban heat islands, air quality and water quality.

GOAL 4: ENGAGE AND INVEST IN COMMUNITIES.
Engage communities in actions that protect and restore our lands and waters, while also benefiting people through education, training, positive economic impacts and advancing environmental justice.

GOAL 5: REDUCE AND COMBAT CLIMATE IMPACTS.
Improve the pace of investments in climate mitigation and adaptation strategies for the lands, waters and people to thrive.

GOAL 1: PROTECT AND CLEAN UP AQUATIC HABITAT

ACTION 1: Protect and Restore Submerged Aquatic Lands and Nearshore Habitat

Outcome 1: Protect 100% of priority nearshore habitat with a Kelp and Eelgrass Protection Zone by 2022.

Outcome 2: Increase kelp forest and eelgrass meadow coverage (net gain) by 2031: 967 acres baseline.

ACTION 2: Improve Aquatic Lands and Riparian Habitat in the Estuary

Outcome 3: Restore habitat availability by removing 150 tons of marine debris by 2024.

Outcome 4: Improve aquatic lands, including removal of 100% of current derelict vessels by 2026.

Outcome 5: Eliminate 100% of unpermitted marinas/infrastructure, and bring 100% of default leases into compliance and resolve resulting habitat impacts by 2031.

ACTION 3: Increase Estuary and Puget Sound Water Quality

Outcome 6: Increase Marine Water Condition Index score above zero for Whidbey Basin by 2031: negative 11 baseline.

GOAL 2: RESTORE, CONSERVE AND CONNECT FORESTS AND RIPARIAN HABITAT

ACTION 4: Remove or Repair Fish Passage Barriers on Fish-Bearing Streams

Outcome 7: Inventory 36 miles of stream on small forest landowner parcels, and develop new funding strategy for expediting repair of small forest landowner barriers, by 2023.

Outcome 8: Expand fish passage barrier programs across all land ownership types, and develop a full prioritized inventory, by 2026.

Outcome 9: Remove 100% of priority barriers—as identified through a watershed barrier inventory—throughout the Snohomish Watershed by 2031.

ACTION 5: Improve Water Quality and Quantity in Forest Headwaters

Outcome 10: Conduct site evaluations on 48 miles of stream on DNR lands identified as High Suitability beaver habitat by the Beaver Intrinsic Potential model, using Tulalip Tribes' site scorecard, by 2026.

Outcome 11: Decrease turbidity through implementing high-priority road, stream and fish passage projects across at least 10 miles of federal forestlands by 2026.

Outcome 12: Increase Snohomish River summer low flows by 8.2 cubic feet per second by 2031.

ACTION 6: Protect and Restore Forestlands

Outcome 13: Conduct Forest Health evaluation in the Snohomish Watershed and identify key restoration metrics by 2023.

Outcome 14: Increase forestland acreage (net gain) by 2031: 900,000 acres baseline.

ACTION 7: Protect Riparian Ecosystem Functions at Scale

Outcome 15: Increase riparian habitat complexity through conducting at least 1,000 large woody debris installations in fish-bearing streams across the watershed by 2031.

Outcome 16: Improve riparian habitat function through attaining maintenance levels of knotweed (95% control) and replanting riparian zones along headwater streams, mainstem rivers and major tributaries by 2031.

GOAL 3: REVITALIZE URBAN FORESTS AND STREAMS

ACTION 8: Grow Tree Canopy in Priority Urban Areas

Outcome 17: Increase tree canopy by 2,000 acres (3.5% increase) in Snohomish Watershed cities and towns by 2031.

Outcome 18: Plant 10,000 trees annually alongside streams, streets and other priority landscapes in Snohomish Watershed cities and towns through 2031, to achieve clean water goals.

ACTION 9: Reduce Impervious Surfaces and Increase Green Stormwater Infrastructure Solutions

Outcome 19: Expand green stormwater infrastructure programs, including the development of at least $50M worth of prioritized projects and an expansion of workforce training opportunities, by 2025.

Outcome 20: Mobilize 50,000 hours of Urban Forestry Revitalization workforce training and Corps crews work time by 2024 and sustain at least 14,000 hours of crew work time and training annually.

Outcome 21: Reduce impervious surface levels in key urban sub-basins to below 30% by 2031.

GOAL 4: ENGAGE AND INVEST IN COMMUNITIES

Action 10: Increase Environmental Literacy and Engagement to Support Ecosystems

Outcome 22: Provide outdoor education and career-connected learning opportunities that reach at least 6,000 K-8 and high school students with a focus on girls and youth of color by 2031.

Outcome 23: Support 500 people to complete a natural resources apprenticeship/training program by 2031.

Action 11: Create Good Jobs and Support Equitable and Resilient Economies

Outcome 24: Support salmon-dependent economies through creating an average of 188 direct and indirect jobs per year until 2031.

Outcome 25: Avoid forest conversion by enrolling 90% of working forests in long-term protections and establishing a new program to retain and diversify small forest landowners by 2031.

Action 12: Support Environmental Justice and Human Health Benefits

Outcome 26: Conduct an Environmental Justice Assessment including meaningful community engagement on 100% of Watershed Resilience Action Plan projects in the watershed by 2023.

Outcome 27: Ensure 100% of projects located in overburdened communities ranked seven and above on the Environmental Health Disparities Map are implemented by 2025.

Outcome 28: Utilize social determinants of health lens and community-centered process to identify restoration projects with significant human health benefits by 2026.

GOAL 5: REDUCE AND COMBAT CLIMATE IMPACTS

Action 13: Sequester Carbon and Mitigate Growing Climate Risks

Outcome 29: Conduct a baseline analysis of carbon storage on the landscape by 2024.

Outcome 30: Implement 10,000 acres of carbon sequestration projects in the Snohomish Watershed by 2026.

Action 14: Track Climate Change Impacts over Time to Inform Policy, Programs and Investments

Outcome 31: Establish one ocean acidification monitoring station in the Snohomish nearshore by 2024.

Outcome 32: Conduct climate change impacts monitoring for 100% of relevant watershed actions by 2025.

Outcome 33: Protect shoreline habitat by ensuring 100% of aquatic leaseholds at high risk of sea level rise include environmentally friendly mitigation strategies by 2031.

Action 15: Attract New Funding Streams to Accelerate Resilience-building and Salmon Recovery

Outcome 34: Facilitate the investment of $200M in public and private funding by 2031, as part of approximately $1 billion of restoration need identified by the watershed.

IMPLEMENTATION STRATEGIES

The Watershed Resilience Action Plan has eight implementation strategies that will help guide our actions and contribute to the goals outlined above. Specific actions in the short- and medium-terms will deliver on these overarching strategies in the most appropriate ways for each goal and outcome.

1. **Achieve multiple benefits.** Work towards improving environmental, social and economic outcomes wherever possible to achieve a higher return on investment and support human wellbeing. We will integrate opportunities to improve equity and environmental justice.

2. **Collaborate.** To be successful, we need an "all hands on deck" approach, and must work through existing partnerships with all actors, including Tribes, the Lead Entity, federal, state and local government, regional fish enhancement groups, conservation districts, nonprofits and the private sector. This strategy will mobilize new actors and inspire collaborative approaches, including public-private partnerships.

3. **Connect.** Provide connectivity of the lands and waters salmon depend on. Be strategic and prioritize based on upstream and downstream data so that barrier removal provides as much additional habitat connection as possible.

4. **Educate and enforce.** Educate partners and the public about opportunities to contribute to salmon recovery, and strengthen enforcement of existing regulations.

5. **Fund.** Raise funding or leverage financing to implement restoration and acquisition activities. This should involve capital projects addressing limiting factors on the ground, as well as capacity and programmatic funding to plan, manage and monitor the effectiveness of recovery actions.

6. **Monitor and report.** Conduct research, analysis and monitoring activities, share data with partners and connect to education activities.

7. **Protect.** Protect high-quality habitat for the long term. This includes implementing existing laws and policies that protect habitat and endangered species, such as DNR's State Trust Lands Habitat Conservation Plan and Forest Practices Habitat Conservation Plan. This also includes avoiding loss of habitat and preventing conversion through acquisitions, easements, transfer of development rights, Trust Land Transfers or other means.

8. **Restore.** Improve habitat quality and ecosystem function through restoration and stewardship measures.

WATERSHED INFORMATION
THE SNOHOMISH WATERSHED: WRIA 7

Our aim is to leverage DNR's resources, relationships and role as the second-largest landowner in the state (after the federal government) to make meaningful contributions to salmon recovery in targeted watersheds. We believe that targeting salmon recovery efforts within key watersheds will lead to more impactful, large-scale change.

We are piloting our efforts in **Water Resource Inventory Area (WRIA) 7—the Snohomish Watershed**. This watershed-specific approach will allow us to harness the power of innovation, community expertise and historical knowledge, alongside statewide resources and the business community, to address core barriers to salmon recovery such as riparian cover, water quality, culverts, impervious surfaces and more.

The Snohomish Watershed covers an area of approximately 1,856 square miles in both King and Snohomish counties, and is the second-largest river system draining into Puget Sound. It is one of the primary producers of anadromous fish in the state, home to nine salmonid species:

- Chinook salmon (Oncorhynchus tshawytscha)
- Coho salmon (Oncorhynchus kisutch)
- Chum salmon (Oncorhynchus keta)
- Pink salmon (Oncorhynchus gorbuscha)
- Sockeye salmon (Oncorhynchus nerka)
- Steelhead and rainbow trout (Oncorhynchus mykiss)
- Cutthroat trout (Oncorhynchus clarkii)
- Bull trout (Salvelinus confluentus)
- Mountain whitefish (Prosopium williamsoni).

Three of these species, Chinook salmon, steelhead and bull trout, are currently protected under the Endangered Species Act (ESA). Coho salmon are also listed as a species of concern. Our plan includes support for recovering all salmonids, with a focus on these ESA-listed species.

Salmon face numerous limiting factors in this watershed, including lack of spawning and rearing habitat, as well as water quality and quantity impairments, lack of access due to fish passage barriers and more. In a watershed with significant human population growth, the pressures on healthy salmon habitat are only increasing. The Snohomish Watershed has among the fastest population growth in the Puget Sound; the population grew by more than 52,000 people (14%) between 2010-2020, and is expected to continue to rapidly increase, with expected growth from 425,782 in 2020 to 610,000 by 2050 (Puget Sound Regional Council 2020). While salmon recovery projects have led to many site-scale successes over the last 20 years, many environmental indicators continue to decline, showing the need for additional actions and new approaches.

Salmon moving through the waters and landscapes they rely on as part of their anadromous life cycle.

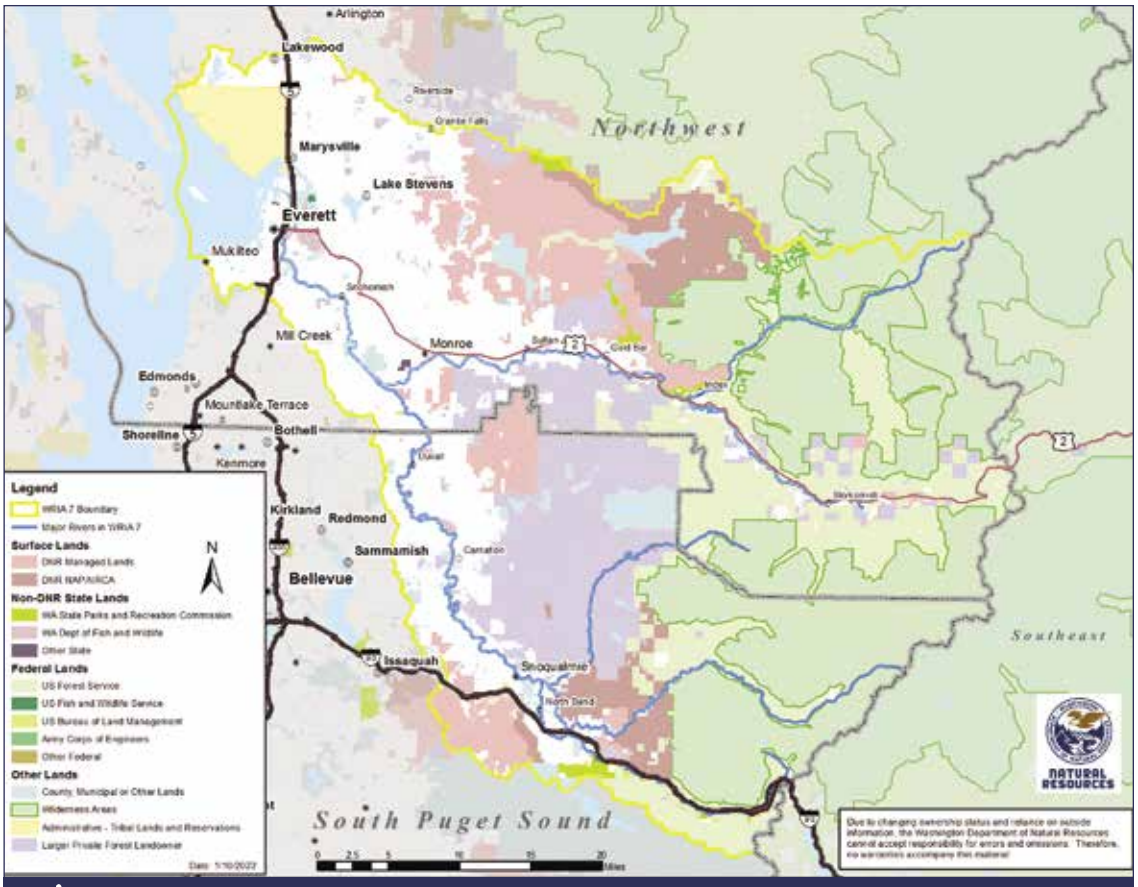
BUILDING ON EXISTING AGENCY EFFORTS

DNR has already made tremendous advances in resilience and habitat improvement across the landscape. This is an overview of DNR's ongoing contributions in the Snohomish Watershed.

Agency-wide Contributions

There are numerous important efforts led by DNR at the agency level that contribute to habitat protection and support salmon recovery.

- **Plan for Climate Resilience:** DNR developed a Plan for Climate Resilience in 2020, which laid out strategies to sequester carbon and reduce climate impacts, as well as methods to ensure DNR resources and programs are more resilient in the face of a changing climate.
- **Research and Monitoring:** DNR leads and participates in numerous research and monitoring activities that contribute to an understanding of riparian, nearshore and other land management conditions that are supportive of watershed health and salmon recovery.
  - DNR conducts Status and Trends Monitoring of aquatic and riparian habitat in the Olympic Experimental State Forest (OESF).
  - DNR is leading the new T3 Watershed Experiment examining new, innovative approaches to managing forests on the Olympic Peninsula (T3 Watershed Experiment | Olympic Natural Resources Center), supported by the Legislature and University of Washington.
  - DNR supports monitoring efforts through the Forest Practices Cooperative Monitoring, Evaluation and Research (CMER) Committee, including projects related to Road Sediment Effects and Fish Passage and Fish Habitat.



Snohomish Watershed boundary and major landownership within the watershed.

Aquatic Resources

DNR manages, sustains and protects 2.6 million acres of state-owned aquatic lands, 8,953 acres of which are located within the Snohomish Watershed. Accomplishments in recent years include:

- **Unauthorized and Derelict Marina Removal:** Since 2014, DNR has prioritized reduction/removal of unauthorized marinas located on Ebey and Steamboat sloughs. Through compliance visits and communication with the responsible parties, the size of six illegal marinas has been reduced, decreasing the amount of overwater coverage and creosote-treated wood in the estuary.
- **Creosote Pilings:** DNR partnered with Snohomish County to inventory piling locations and create a prioritization plan for piling removal, including those that are creosote-treated.
- **Debris Reporting:** Snohomish County Marine Resources Committee (MRC) initiated the MyCoast reporting app in Washington State. DNR has added to and expanded MyCoast to build on the county's investment.
- **Debris Removal:** DNR funded four derelict crab pot removals by NW Straits Foundation/Natural Resource Consultants in Possession Sound off the Snohomish River estuary. DNR also completed a large debris removal of six items weighing 15 tons from the sloughs in 2015, and cleanup of debris from an illegal floating house which sank next to Langus Riverfront Park in July 2019.
- **Derelict Vessel Removal:** In the last five years, 45 derelict vessels from the estuary have been removed by DNR.
- **Freshwater Reaches:** In the freshwater reaches of the watershed, DNR works with multiple partners on proposed restoration projects on the Pilchuck River, communicating with an abutting property owner to address illegal driving on a large gravel bar on the Snohomish River and consulting with Snohomish County Surface Water Management Division on proposed habitat restoration projects on state-owned aquatic lands.

ACIDIFICATION NEARSHORE MONITORING NETWORK (ANEMONE) SENSORS

DNR's Aquatic Assessment and Monitoring Team has established a nearshore network of sites from Willapa Bay to Cherry Point for monitoring water quality and habitat characteristics potentially affected by a changing climate. The Acidification Nearshore Monitoring Network (ANeMoNe) is sustained with the assistance of a dedicated crew of volunteer community scientists who clean and maintain deployed sensors year-round, and conduct biological surveys through the spring and summer.

The program also connects students to their marine environment through a K–12 science curriculum that integrates ANeMoNe data and field activities into an interactive curriculum that addresses required Next Generation Science Standards and raises awareness of local climate change issues. The ANeMoNe curricula engages students in scientific inquiry, teaches them about pressing environmental issues and will ultimately help develop more informed and inspired community members.

DNR will seek to add an additional site in the Snohomish Watershed as part of this plan.

Forest Resilience and Regulation

DNR's Forest Resilience and Regulation activities support watershed resilience and salmon recovery in the following ways:

- **Small Forest Landowner Office:** This office provides small forest landowners with technical and financial assistance that helps them to meet objectives for their lands—whether it is to enhance fish and wildlife habitat, reduce fuels, increase sustainable recreation opportunities, improve forest health, produce revenue or all of the above. Funding incentives include the Family Forest Fish Passage Program (FFFPP), Forestry Riparian Easement Program (FREP) and Rivers and Habitat Open Space Program (RHOSP). Technical assistance is provided through Forest Stewardship, Regulation Assistance and related programs. DNR recognizes that small forest landowners provide great value in terms of clean water, carbon storage, wood products and habitat for salmon and other fish and wildlife. In 2021, DNR launched a One-Stop Shop to provide integrated services and greater support for these small forest landowners, including those in WRIA 7.
- **Urban Forestry:** The Urban and Community Forestry program provides technical, educational and financial assistance to local governments, Tribes, nonprofit organizations and educational institutions. Since 2010, the program has provided more than 135 unique technical assists to 12 of the 14 cities in the watershed (including Tree City USA participants Arlington,[4] Duvall, Everett, Monroe, North Bend and Snoqualmie), and made pass-through grant investments totaling more than $100,000 to four communities that cover a significant extent of the watershed: Arlington, Everett, North Bend and Snoqualmie.
- **Good Neighbor Authority:** In 2018, DNR, Washington State Department of Fish and Wildlife and the US Forest Service created a Shared Stewardship agreement that establishes a commitment to work in partnership on adjacent lands within the state. This includes forest health treatments, wildfire suppression and the ability to raise revenue and make investments under the Good Neighbor Authority (GNA) that benefit forest and watershed health. DNR anticipates that GNA projects in the Mount Baker-Snoqualmie National Forest will move forward in the coming years. Working in coordination with the US Forest Service, these will generate resources for habitat restoration projects in WRIA 7 including fish passage barrier removal, large woody debris installations and road maintenance and abandonment projects.
- **Forest Action Plan:** Development of the 2020 Forest Action Plan, which included assessing Western Washington landscapes based on forest health needs. The plan identified the Middle Snohomish as a priority landscape due to local needs including small forest landowner parcels, valuable resources and aquatic functions.
- **Forest Practices:** DNR administers the Washington State Forest Practices Habitat Conservation Plan which protects habitat for all fish. Since 2001, DNR has worked with large forest landowners to achieve many benefits for salmon including these statewide numbers:
  - **Road Improvement:** 28,651 miles of road improved.
  - **Road Abandonment:** 3,931 miles of road abandoned, which helps to reduce delivery of sediment into streams.
  - **Fish Passage Barriers:** 7,424 fish passage barriers corrected, opening up 5,024 miles of fish habitat.
  - **Fish Passage Barriers in WRIA 7:** 299 large forest landowner fish passage barriers corrected, and 12 FFFPP barriers corrected on small forest landowners' land (out of 76 known barriers).

Washington Geological Survey

The Washington Geological Survey (WGS) collects and disseminates geologic information to support safe, resilient and prosperous communities. WGS is responsible for the collection of light detection and ranging (LiDAR) data, which includes high-resolution topography allowing for accurate stream locations along with information to assess watershed conditions and monitor them over time. LiDAR coverage for WRIA 7 currently stands at approximately 85%. In 2021, WGS entered into an agreement with the United States Geological Survey (USGS) to collect LiDAR data for King County. When completed, the project will provide modern LiDAR information to allow for watershed assessments. WGS is planning to complete full LiDAR coverage and regular refreshes of this data as part of a Statewide LiDAR Acquisition and Refresh.

4. The City of Arlington is only partially located within WRIA 7.

State Uplands

DNR manages more than 2 million acres of forested state trust lands statewide for long-term timber production, specific habitat objectives such as protecting riparian zones, and protection of clean, abundant water, including over 167,000 acres in WRIA 7. Of these 167,000, approximately 89,000 acres are part of a conservation strategy. In addition to earning income, trust lands provide habitat for native plant and animal species, provide clean and abundant water, and offer diverse public recreation opportunities. The State Trust Lands Habitat Conservation Plan is a multi-year plan developed by DNR to protect habitat for at-risk species, such as salmon, while carrying out forest management and other revenue-producing activities.

- **Fish Passage Barriers:** Since 1999, DNR has identified over 2,515 potential barriers to anadromous and resident species and has addressed 2,495 (99%) through the removal of structures, use of science-based fish passage designs, and the correct identification of fish and non-fish habitat. All told, DNR's fish passage program has opened an estimated 800 miles of fish habitat statewide.
- **Habitat enhancement incorporated in trust land management in WRIA 7:** In addition to the protective measures in the Trust Lands HCP, DNR seeks opportunities to incorporate additional habitat or community enhancements in our land management when doing so is compatible with our Trust responsibilities.

Natural Areas Program

The Natural Areas program protects the best remaining examples of many ecological communities, including rare plant and animal habitat, throughout the state, including WRIA 7. Our Natural Heritage staff identify the highest quality, most ecologically important sites for protection as natural areas and work with local land managers to acquire lands containing these features. The resulting network of Natural Areas (including Natural Area Preserves and Natural Resources Conservation Areas) are a legacy for future generations and help ensure that blueprints of the state's natural ecosystems are protected forever. In the Snohomish Watershed, 58,327 acres of DNR-managed lands are DNR natural areas (approximately 35% of DNR lands within WRIA 7).

TURNING WHEEL TIMBER SALE AND RESTORATION PROJECT

An example of a timber sale in the Snohomish Watershed that has generated revenue for state trusts and created habitat improvements is the Turning Wheel Timber Sale and Restoration Project.

Removal of fish barriers and stream channel restoration

The sale took place in the Reiter Foothills Forest, a multi-use landscape in southeastern Snohomish County. The area is near an abandoned logging railroad grade that has been used as an illegal trail, where recreation users placed undersized culverts and fill material within the stream channel where the trail crossed three Type 3 fish-bearing streams. As part of the road plan for the Turning Wheel Timber Sale, the culverts and fill material were pulled out, which restored fish access to 2,194 feet of stream. In addition, DNR restored two Type 5 streams where streamflow had been unnaturally rerouted. The streams' natural courses were re-established to reduce downstream sediment delivery.

A bridge wide enough to support fish passage was installed as part of the Turning Wheel Timber Sale process.

Cost share of permanent bridge installation supporting forest management and recreation objectives

In order to access part of the landscape, DNR needed a bridge to cross a fish-bearing stream. With a typical timber sale, a temporary log stringer bridge would be installed and later removed and the road abandoned following completion of harvest activities. Timber sale staff collaborated with DNR recreation staff and determined this access road location would also double as good trail access to provide long-term public access, and upgraded plans to a permanent steel bridge. This decision uses state resources efficiently and reduces disruptions to the landscape.

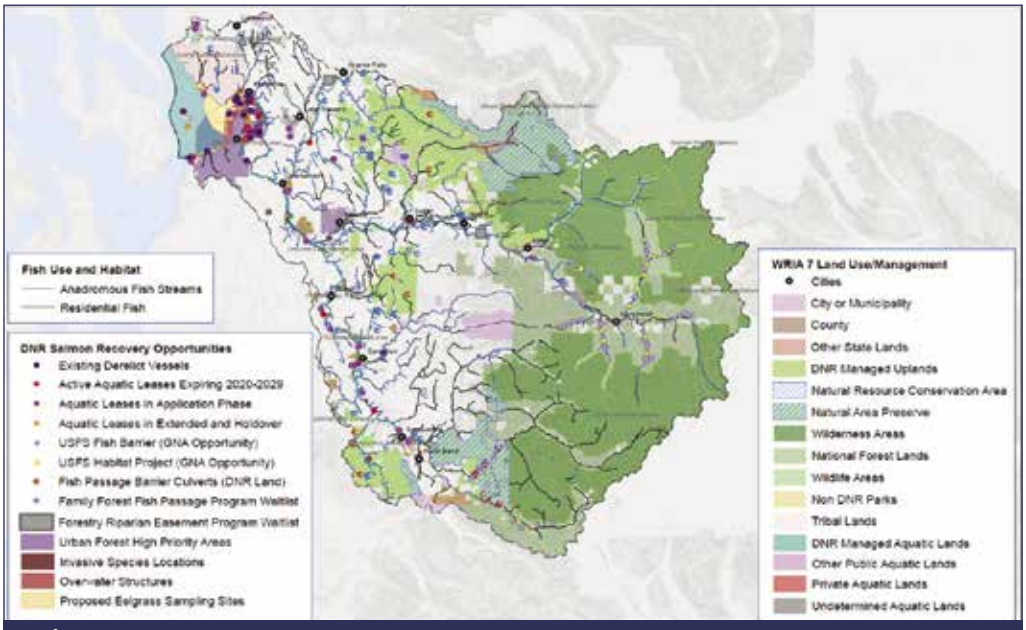
PLAN DEVELOPMENT PROCESS

WATERSHED SELECTION PROCESS

WRIA 7, the Snohomish Watershed, was selected to launch DNR's watershed resilience approach because it is a watershed that is critical for salmon populations that are at a tipping point. Additionally, WRIA 7 was selected for its:

- Significant DNR-managed lands both aquatic and terrestrial;
- Large percentage of federal forestlands which present opportunities for shared stewardship between DNR and the US Forest Service;
- Urban forestry canopy and health disparities assessment;
- Threat of conversion of working forest land to non-forest land-use, especially small forest land;
- High number of fish passage barriers;
- Increased presence of derelict vessels and creosote in the estuary.

The Snohomish Watershed provides ample opportunity to increase our impact based on existing and potential DNR programs and authorities. It is also a watershed with strong local, state and federal programs and partnerships, as well as relationships in place that facilitate the exploration and adoption of new collaborative methods to promote salmon recovery, healthy forests and resilient landscapes for people and communities.



Map developed in 2020 to show locations of DNR salmon recovery opportunities in WRIA 7.

FALL -WINTER 2019	SPRING 2020	SUMMER 2020	FALL-WINTER 2020	SPRING-SUMMER 2021	FALL-WINTER 2021	JANUARY 2022	2022-2031
DNR baseline review of existing salmon recovery activities ▼ Relationship building and information gathering with WRIA 7 partners	Input from WRIA 7 partners on plan goals and partnership opportunities	Create first map of watershed projects ▼ Internal review of new program ideas	Initial development of Watershed-Connect Map ▼ Drafting of goals and metrics for action plan	Develop draft action plan ▼ Refine Watershed-Connect, present at RCO Salmon Recovery Conference	Tribal review, then stakeholder review of draft plan ▼ Watershed-Connect soft launch	Launch Watershed Resilience Action Plan, Watershed-Connect and dashboard ▼ Begin plan implementation	Plan implementation

PARTNERSHIPS & CROSS-SECTOR COLLABORATION

Our partnership efforts have included entities from all sectors, and we have sought wherever possible to break down traditional silos and introduce enhanced coordination. A non-comprehensive overview of our partnership efforts[5] includes:

Tribal Nations and Tribal-led organizations	Watershed, regional and state-wide salmon networks	Federal, state and local government	Environmental nonprofit organizations	Private sector and non-traditional salmon partners
Northwest Indian Fisheries Commission	Salmon Recovery Network	City of Everett	Audubon (Pilchuck and Washington)	Blue Forest Conservation
The Snoqualmie Indian Tribe	Snohomish Basin Salmon Recovery Forum	King County	Emerald Alliance	Boeing
The Tulalip Tribes	Snohomish Basin Salmonid Recovery Technical Committee	King Conservation District	Forterra	Cedar Grove
	Snohomish County Marine Resources Committee	National Oceanic and Atmospheric Administration	Futurewise	Craft3
	Snohomish-Stillaguamish Local Integrating Organization	Port of Everett	Long Live the Kings	Dirt Corps
	Snoqualmie Watershed Forum	Puget Sound Partnership	Mountains to Sound Greenway Trust	Front and Centered
	Sustainable Lands Strategy	Snohomish County	Puget Sound Restoration Fund	International Association of Machinists and Aerospace Workers
		Snohomish Conservation District	Sound Salmon Solutions	Latino Community Fund
		Snohomish County Public Utility District	The Nature Conservancy	ORCA School
		Washington State Department of Ecology	The Wilderness Society	School's Out Washington
		Washington State Department of Fish and Wildlife	Trout Unlimited	Washington State Labor Council
		Washington State Recreation and Conservation Office, including the Governor's Salmon Recovery Office		
		United States Department of Agriculture - Forest Service		

5. This table is inclusive of all members of the Snohomish Basin Salmon Recovery Forum, Snoqualmie Forum and others. For more information on Forum roles and members please see: https://snohomishcountywa.gov/1128/Forum-Roles-Activities

LIMITING FACTORS IN SNOHOMISH WATERSHED

Salmon have intrinsic worth and provide innumerable benefits to our region. Additionally, their close connection to and dependence on healthy habitat from mountain streams to Puget Sound means they function as an indicator species of watershed health and resilience. Therefore, this plan is rooted in addressing the limiting factors for salmon recovery that connect to habitat as a strategy for building watershed resilience.[6]

Following selection of the Snohomish Watershed, we conducted a review of existing salmon recovery plans and limiting factor assessments relevant to this watershed. DNR's salmon recovery efforts are intended to support and be grounded in the robust analyses and partnerships that already exist in the watershed; our engagement seeks to complement and enhance existing recovery efforts.

As such, we reviewed a number of documents, including the following (ordered by publication year):

Washington Conservation Commission Salmon Habitat Limiting Factors in Washington State (2003); Snohomish River Basin Salmon Conservation Plan (2005); USDA Forest Service PNW Aquatic Restoration Strategy (2005); Snohomish Basin Protection Plan (2015); Governor's Salmon Recovery Office – State of Salmon in Watersheds (2018 and 2020); USDA Forest Service Aquatic and Riparian Conservation Strategy PNW (2018); Puget Sound Partnership Salmon Recovery Council Nearshore Chinook Salmon Strategies (2019); Snohomish Basin Salmon Recovery Forum Status and Trends update (2019); Northwest Indian Fisheries Commission (NWIFC) State of our Watersheds (2020); Salish Sea Marine Survival Project Findings (2021).

Stream simulation culverts support fish passage.

6. Salmon recovery is often grounded in the "four Hs"—habitat, hatcheries, harvest and hydropower. This plan will focus on habitat since DNR's role as a land manager creates explicit connections to and responsibilities around habitat.

The following is a brief overview of limiting factors in WRIA 7 that connect to DNR's work. A full summary of these factors and program connections was created as part of the development of this plan. Items in red are declining; items in yellow are showing mixed results.

Limiting factor	Status in WRIA 7	Notes on trajectory	Where addressed in this plan
Nearshore and marine conditions including submerged aquatic vegetation	Declining	Increased shoreline modification, eelgrass goals not being met across Puget Sound.	Action 1
Estuary habitat and aquatic lands	Mixed results	Limited cleanup progress in estuary, improvements in floodplain reconnection.	Action 2
Urban forests and streams	Declining	Contaminant levels exceed fish health thresholds (PCBs and PBDAs).	Action 8, Action 9
Impervious surface	Declining	Increasing - over 20% impervious in every urban stream watershed.	Action 9
Fish passage	Declining	Over 1,220 inventoried barriers blocking at least 400 miles of stream. No complete inventory.	Action 4
Riparian forest cover	Declining	Continued net loss, including 25 acre net decline 2005-2017.	Action 7, Action 8
Forest hydrology and streamflow	Declining	Turbidity and low summer streamflow are an increasing concern.	Action 5, Action 6, Action 7
Land conversion and habitat loss	Mixed results	More than 2,100 acres of forest land converted between 2005-2012. Rate of conversion out of forest practices has slowed but still occurring.	Action 6, Action 11
Climate impacts to water quality and quantity	Declining	Stream temperature and low summer flows are an increasing concern.	Action 1, Action 3, Action 5, Action 13, Action 14
Landscape-scale coordination	Mixed results	Collaboration to address farm, fish, flood planning in Snohomish County is helpful. More capacity is needed to develop reach- or landscape-scale projects and habitat gains.	Through-out plan
Overall funding for salmon recovery	Declining	WRIA 7 target is $15M per year though actual funding achieved is below $10M on average.	Action 15

Puget Sound kelp and eelgrass provide habitat for salmon, forage fish and other wildlife.

WATERSHED RESILIENCE ACTION PLAN: VISION, GOALS, ACTIONS AND OUTCOMES

Goals, Actions and Outcomes

To ensure success of this Watershed Resilience Action Plan, we have set clear goals and measurable outcomes to advance restoration and protection of habitat in the Snohomish Watershed.

The **goals** articulate the desired high-level aspects of the vision. Each goal includes specific **actions** which are related to the most impactful ways to support salmon that connect closely to DNR's programs and priorities. The **sub-actions** describe the steps that DNR and our partners will take to advance watershed resilience in support of salmon recovery. The **outcomes** detail the changes on the ground DNR's plan will work with partners to deliver over the next 10 years.

We recognize that achieving these goals, actions and outcomes will require effort from many, including all levels of government, non-governmental organizations, conservation districts, businesses and individuals.

GOAL 1: PROTECT AND CLEAN UP AQUATIC HABITAT

The Snohomish Watershed has been rapidly changing over the years with increasing population growth and expansion of its economic base.[7] Increased pressures on aquatic habitat result, including more homes and structures on and around aquatic lands, increased presence of debris, and impacts to the plants and animals that depend on this habitat.

ACTION 1: Protect and Restore Submerged Aquatic Lands and Nearshore Habitat

Aquatic lands support salmon throughout their life cycles and require both restoration and protection. In particular, it is critical that salmon be able to access aquatic lands in the estuary and nearshore regions in a more natural condition; forage fish such as Pacific sand lance and surf smelt spawn on beaches and are particularly sensitive to shoreline armoring (NWIFC 2020). Submerged aquatic lands support seagrasses such as eelgrass and kelp which are critical for salmon and forage fish, and which sequester carbon. It is critical for salmon to conserve and protect these lands in more natural conditions, which will retain vegetation and support the ability for erosional drift to occur.

Outcomes

Outcome 1: Protect 100% of priority nearshore habitat with a Kelp and Eelgrass Protection Zone by 2022.

Outcome 2: Increase kelp forest and eelgrass meadow coverage (net gain) by 2031: 967 acres baseline.

Challenge

Eelgrass and other species of submerged aquatic vegetation play a key role in the nearshore ecosystem. They provide food, shelter and nursery habitat for a wide range of organisms, including forage fish, shellfish, juvenile salmonids, crabs and migratory waterfowl. Eelgrass beds support rearing and transition processes for juvenile salmonids. They reduce erosion by slowing current and softening waves, anchor bottom sediments and help keep the water clear by absorbing nutrients and trapping sediments. Underwater vegetation also acts as a carbon sink, taking in carbon dioxide and reducing greenhouse gas emissions to reduce the impacts of climate change. Seagrasses are used as an indicator of watershed health throughout the world, because of their fast response to changes in water quality. Changes in the abundance or distribution of this resource are likely to reflect changes in environmental conditions. They are also likely to affect many other species that depend on seagrass habitat.

DNR monitors the abundance and distribution of eelgrass, kelp and other submerged aquatic vegetation in the greater Puget Sound as part of its stewardship work on state-owned aquatic lands. This includes annual monitoring of the native seagrass population through the Submerged Vegetation Monitoring Program (SVMP), annual aerial surveys of floating kelp canopy along the outer coast and monitoring of bull kelp populations in Central and South Puget Sound.

DNR research shows declines in kelp and eelgrass in many parts of Puget Sound and in the Snohomish Watershed. Kelp cover has declined as much as 62% since 1900

7. WRIA 7 total population was 380,771 in 2010, and 433,257 by 2020. Growth rate for the watershed was 14%. Source: OFM 2021. Puget Sound Regional Council estimates that the total watershed population will reach 610,000 by 2050. Year 2050 projections derived from PSRC VISION 2050 modeling outputs and SEIS analysis (Nov 2020).

across the Puget Sound region (Pearsall et al 2021). In the Snohomish Watershed, an extensive eelgrass monitoring survey was conducted in partnership with Snohomish County in summer 2020 (Christiaen et all 2020). There were approximately 951 acres of eelgrass cover detected.[8] This corresponds to 1.7% of all eelgrass in greater Puget Sound. In addition, understory kelp was detected over approximately 16 acres, at low-to-medium cover. The study found areas of submerged aquatic vegetation decline including in Tulalip Bay and the central Snohomish River delta, indicating these should be priorities for ongoing monitoring.

Kelp and eelgrass extent change significantly year to year and are impacted by coastal development, water temperature changes and changing ecosystem dynamics including predation. Regular monitoring and analysis are critical in order to better support and restore underwater habitat. Awareness raising about the value of kelp and eelgrass, as well as to reduce harm from activities such as anchorage damage, are needed (Pearsall et al 2021). Additional research on the impacts of climate change on kelp and eelgrass is taking place to fill gaps regarding impacts of rising sea levels as well as changing salt water chemistry (further discussion in Goal 5).

The availability of habitat is also a critical factor; marine debris and other physical impediments take up space that is needed for vegetation, forage fish, salmon and all other species in this vibrant ecosystem. In a watershed with high population growth levels and related increases in vessel traffic, recreational boating and more, ensuring that debris is removed and that kelp and eelgrass can be protected from human impacts is a consistent need in the Snohomish Watershed.

Percent of seagrass cover detected near the mouth of the Snohomish River as part of 2020 monitoring by DNR and Snohomish Marine Resources Committee.

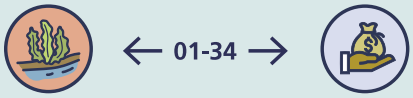
8. DNR 2020 study found approximately 951 acres of eelgrass, and 16 acres of kelp in the nearshore study area.

DNR Implementation Actions: Near-Term (Year 0–3)

1.1 WATERSHED STEWARD

Hire a Watershed Steward for WRIA 7 to implement this Plan. In the near-term, they will focus primarily on WRIA 7 plan update engagement including riparian restoration, small forest landowner outreach and developing projects with private sector, education and community organizations in the basin. (Note: This action will support all plan goals and outcomes but will only be listed once.)

Corresponding Outcomes:



Strategies: Achieve multiple benefits, Collaborate, Connect, Educate and enforce, Fund, Protect, Restore

1.2 KELP AND EELGRASS MONITORING

Conduct regular Kelp and Eelgrass Monitoring and Reporting in partnership with Snohomish County, and share data with relevant partners and the public. This should occur regularly and prioritize areas showing declines.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report

1.3 KELP AND EELGRASS PROTECTION ZONE

Create a Kelp and Eelgrass Protection Zone. Work with the Tulalip Tribes, Snohomish Marine Resources Committee and others to determine priority geographic area.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Protect

1.4 KELP FOREST AND EELGRASS MEADOW HEALTH AND CONSERVATION PLAN

Complete a statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan. Develop detailed conservation and restoration priority areas statewide including in WRIA 7.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

1.5 INCREASE STEWARDSHIP OF KELP AND EELGRASS

Educate the public to reduce damage to kelp and eelgrass and increase stewardship of these resources. This should include actions such as implementing a voluntary no-anchor zone, and conducting research into kelp and eelgrass restoration opportunities.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

1.6 UPLAND DRIVERS OF SEDIMENT STUDY

Conduct a study evaluating upland drivers of sediment in the marine environment. Use study to identify actions to reduce turbidity from upland sources.

Corresponding Outcomes:

Strategies: Collaborate, Educate and enforce, Protect

10-Year Actions (Year 4–10)

1.7 ECOLOGICAL LEARNING LAB

Establish an Ecological Learning Lab associated with the Kelp and Eelgrass Protection Zone. Work with partners to conduct innovative research into protection and restoration opportunities; this could include exploring aquaculture opportunities with multiple benefits such as sequestering carbon (blue carbon projects), or seagrass cultivation for human consumption and/or upland nutrient provision.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Monitor and report, Restore

1.8 KELP AND EELGRASS MONITORING TECHNOLOGY

Improve Kelp and Eelgrass Monitoring and Reporting Technology. Work in partnership with private sector partners to develop and enhance technology solutions including artificial intelligence to monitor vegetation.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

1.9 KELP AND EELGRASS RESTORATION FUNDING

Draw on Kelp Forest and Eelgrass Meadow Health and Conservation Plan to identify and implement highest priority restoration opportunities in WRIA 7. Actively pursue funding and permitting for these restoration projects to ensure net gain of kelp and eelgrass cover by 2031.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

ACTION 2: Restore Aquatic Lands and Riparian Habitat in the Estuary

The freshwater of the Snohomish Watershed meets and mixes with the saltwater of Puget Sound in its estuary. Spreading out across multiple sloughs and estuarine wetlands, these waters are an ever-changing mix of salinity, nutrients and sediment. Despite a legacy of diking and development that have damaged the habitat-forming processes that created the estuary, the Snohomish estuary still provides critical habitat for salmonids. Of the Pacific salmon, Chinook are most dependent on healthy estuarine habitat, spending anywhere from days to many months rearing in the estuary. The focus of the Snohomish Basin Salmon Recovery Forum has been on restoring or re-creating the extensive off-channel salmon habitat lost due to decades of levee construction.

Outcomes

Outcome 3: Restore habitat availability by removing 150 tons of marine debris by 2024.

Outcome 4: Improve aquatic lands, including removal of 100% of current derelict vessels by 2026.

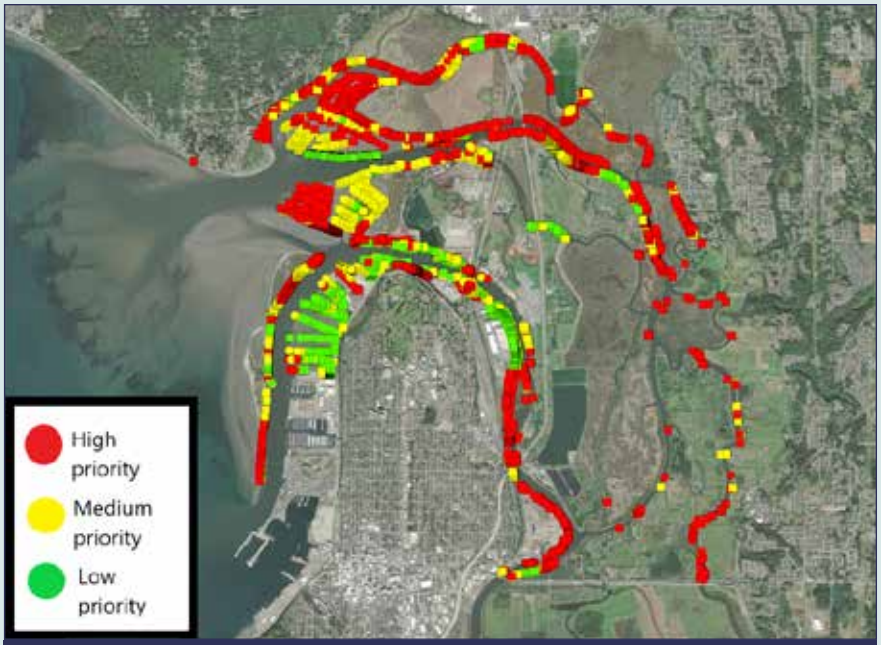
Outcome 5: Eliminate 100% of unpermitted marinas/infrastructure, and bring 100% of default leases into compliance and resolve resulting habitat impacts by 2031.

Challenge

Recent attention to cleanup and protection of the Snohomish River estuary is yielding benefits, and it shows signs of providing more and better habitat for salmon. The Tulalip Tribes and Snohomish County have led wetland restoration, with high-quality habitat being restored at the Qwuloolt and Smith Island projects. However, removal of large debris that impedes habitat is a persistent and expensive problem, and the estuary continues to suffer from derelict vessels sinking and grounding. Removal can cost up to several million dollars per vessel to remove depending on size and location; costs are often borne by the state and local governments.

The presence and impact of unpermitted marinas, which impede habitat and contribute to water-quality impairments, are persistent despite responding to DNR program outreach. These factors are impacted by a growing population as well as increased cost of living in the area.

Removal of creosote-treated and other priority pilings is also critical to ensure availability of habitat in the estuary. Snohomish County MRC has identified priority pilings for removal, based on creosote, habitat impairment and feasibility of removal. However, additional resources and new programming including outreach to private landowners is required to remove all the highest-priority pilings.



Piling prioritization in the Snohomish Estuary. Pilings were prioritized for removal based on data regarding creosote, land ownership and other factors.
Map courtesy of Snohomish County Marine Resources Committee (2020).

DNR Implementation Actions: Near-Term (Year 0–3)

2.1 VOLUNTARY TURN-IN PROGRAM

Expand reach of Voluntary Turn-in Program (VTiP) through enhanced communication, proactively reaching out to potential customers. Prevent derelict vessels from sinking/grounding on habitat.

Corresponding Outcomes:

Strategies: Collaborate, Educate and enforce, Protect

2.2 PUGET SOUNDCORPS

Expand cleanups by Puget SoundCorps crews, including removal of gyres (large floating areas) of debris in off-channel habitat restoration.

Corresponding Outcomes:

Strategies: Collaborate, Restore

2.3 DERELICT CRAB POTS

Remove derelict crab pots in collaboration with Northwest Straits Foundation/Natural Resource Consultants in Possession Sound.

Corresponding Outcomes:

Strategies: Collaborate, Restore

2.4 UNPERMITTED MARINAS

Reduce presence of unpermitted marinas in the estuary by 50%.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Restore

2.5 DERELICT VESSEL REMOVAL

Derelict Vessel Removal Program will accelerate removal of vessels by bundling multiple vessels in removal contracts and including priority "3" along with "2" vessels. Remove 50% of current vessel list.

Corresponding Outcomes:

Strategies: Collaborate, Restore

A derelict vessel. Derelict vessels impede habitat for salmon and other wildlife in the Snohomish estuary.

10-Year Actions (Year 4–10)

2.6 PILING REMOVAL

Complete piling removal for 100% of priority pilings, guided in part by the Snohomish Estuary Pilings Prioritization Final Report, September 2020. A total of 6,982 pilings were assigned High Priority and should be targeted for removal by 2031; this represents 45% of all pilings (out of 15,564 total).

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

2.7 UNPERMITTED MARINAS II

Focus monitoring and enforcement efforts to eliminate unpermitted marinas/infrastructure in Snohomish Estuary by 2031.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Restore

2.8 DERELICT VESSEL REMOVAL II

Remove all derelict vessels on current list by 2026.

Corresponding Outcomes:

Strategies: Collaborate, Restore

ACTION 3: Increase Estuary and Puget Sound Water Quality

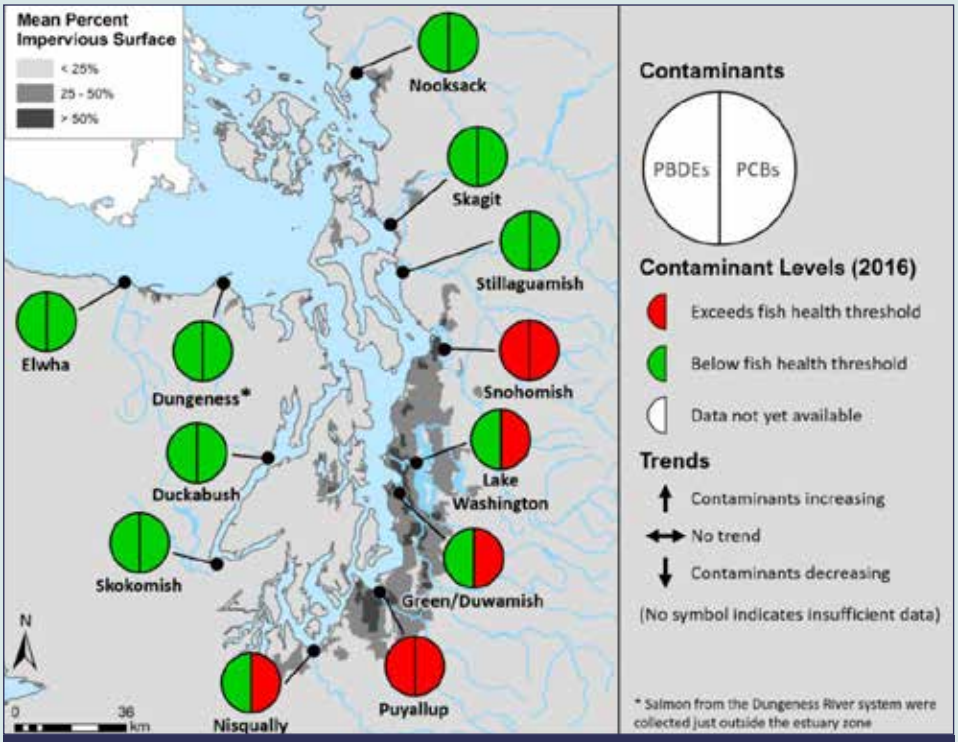
Salmon and other anadromous fish spend most of their adult lives in marine ecosystems where they grow and mature. Limited rearing habitat in rivers and estuaries pushes salmon into and causes them to be more dependent on nearshore ecosystems, and the water quality in those ecosystems impacts their health, including through ingesting contaminants. Salmon gain 99% of their weight in the marine environment, so water quality in this part of their life cycle can have significant impacts (Pearsall et al 2021). Water quality also impacts human wellbeing, as the Snohomish Estuary and nearshore are popular locations for fishing, shellfish gathering, swimming, boating and other activities that impact human health. The local economy is also closely tied to these activities and is critically impacted by local water quality.

Outcomes

Outcome 6: Increase Marine Water Condition Index score above zero for Whidbey Basin by 2031: negative 11 baseline.

Challenge

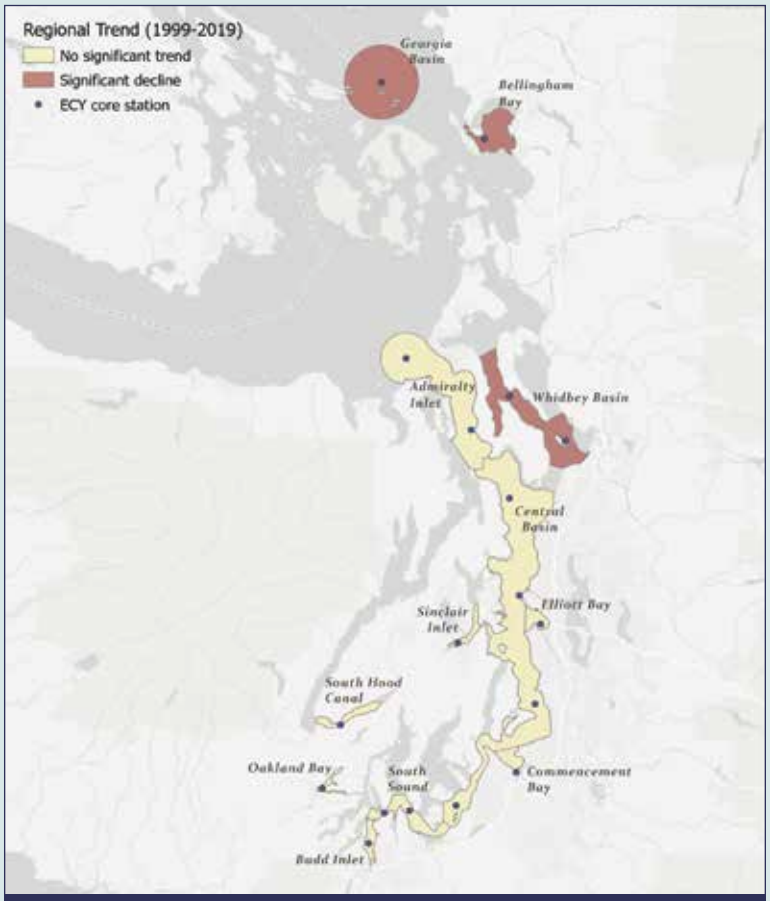
Salmon marine survival is impacted by water quality and habitat limitations including contamination from derelict materials and unpermitted structures, as well as stormwater and wastewater inputs. Contaminants of concern include: polychlorinated biphenyls (PCBs), which are used in commercial applications; polybrominated diphenyl ethers (PBDEs), used as flame retardants; and polycyclic aromatic hydrocarbons (PAHs), present in various petroleum-based products including creosote-treated wood products and burning fossil fuels. These are legacy contaminants and have known toxicity to fish. Although some programs, such as removing creosote from the environment, have been making improvements, contaminant levels remain high in the Snohomish Watershed. The Salish Sea Marine Survival Study identified the Snohomish estuary as one of only two major Puget Sound estuaries where both PBDE and PCB levels exceed fish health thresholds. High levels of these contaminants can negatively impact juvenile salmonid behavior, growth, immune systems and susceptibility to disease (Persall et al 2001). This is particularly critical to address in the marine environment, where salmon gain most of their weight and are at greatest risk of accumulating contaminants through the food web.



Contaminants of concern (including PBDEs and PCBs) exceed fish health thresholds in the Snohomish Watershed for seaward-migrating juvenile Chinook salmon.
Data source: Washington State Department of Fish and Wildlife, Toxics Biological Observation System (unpublished data).

In addition, climate change impacts to marine water quality are an increasing concern, including ocean acidification and rising water temperatures. These climate impacts can change marine conditions in numerous ways that are detrimental to salmon, including reduced prey availability (Pearsall et al 2021). Improving water quality in the marine environment could have benefits throughout the ecosystem.

Dissolved oxygen levels present additional concerns. Lower dissolved oxygen levels can be triggered by excess nutrients in the waters, and can reduce available oxygen for salmon and other fish to below healthy levels, essentially "strangling" fish. The Marine Water Condition Index measures changes in water quality indicators including temperature, salinity, nutrient balance, algae biomass and dissolved oxygen, to monitor improvements or declines. The Whidbey Basin, of which the Snohomish nearshore is a part, has shown significant declines over the last 20 years (Puget Sound Partnership 2021). Improving these water quality conditions is critical for salmonid survival in the marine environment, as well as for many other plant and animal species, while also benefiting human health and wellbeing.



The Whidbey Basin (including Snohomish Watershed nearshore) shows significant declines in marine water quality as measured by the Marine Water Condition Index. *Map courtesy of Puget Sound Partnership.*

Snohomish nearshore regions near Gedney Island provide kelp and eelgrass habitat.

DNR Implementation Actions: Near-Term (Year 0–3)

3.1 WASTEWATER DISCHARGE

Support WRIA 7 partners' efforts to work with the City of Everett to extend wastewater discharge pipes deeper into Puget Sound during key periods when juvenile salmon are present. This will reduce nutrient and contamination in the nearshore where juvenile salmonids are more susceptible.

Corresponding Outcomes:

Strategies: Collaborate, Protect

10-Year Actions (Year 4–10)

3.2 NUTRIENT DISCHARGE

Reduce nutrient discharge into Puget Sound through voluntary public-private partnership. Identify private entities needing increased investments to reduce nutrient discharge, assess investments, identify funding solutions and secure funding to implement infrastructure investments. Assess lessons and share with relevant stakeholders to further improve water quality.

Corresponding Outcomes:

Strategies: Collaborate, Fund, Protect

GOAL 2: RESTORE, CONSERVE AND CONNECT FORESTS AND RIPARIAN HABITAT

Watershed resilience requires a focus on both aquatic and terrestrial habitat. Forest cover, including the extent and quality of riparian ecosystems, are important limiting factors for salmon and other wildlife as well as for people and communities. In particular, the forest headwaters are critical for salmon as they are where salmon hatch and where they must return to spawn. As such, the connectivity of this habitat and the removal of fish passage barriers are all core considerations.

ACTION 4: Remove or Repair Fish Passage Barriers on Fish-bearing Streams

Blocking culverts and other obstructions impede the migration pathways of anadromous fish moving from their rivers of origin to Puget Sound as well as return journeys to spawning habitats. It is necessary to implement fish passage projects that remove blockages and allow migratory fish to return to upstream spawning and rearing habitat and allow resident fish to move freely throughout the watershed. Fish passage projects can also improve the quality of surrounding habitat by reducing river fragmentation, moving wood and gravels, increasing migratory pathways and habitat function for other aquatic species and potentially improving water quality.

In 2018, Washington State Tribes succeeded in the US Supreme Court in Washington v United States,[9] requiring the state of Washington to redesign and rebuild culverts to allow fish passage. DNR has focused on meeting our resulting requirements as quickly as possible. To date, DNR has brought 171 (99%) of its court-ordered culverts into compliance and has plans in place to correct the only remaining barrier in WRIA 7 (Soderman Creek) by 2022.

Outcomes

Outcome 7: Inventory 36 miles of stream on small forest landowner parcels, and develop new funding strategy for expediting repair of small forest landowner barriers, by 2023.

Outcome 8: Expand fish passage barrier programs across all land ownership types and jurisdictions in the watershed, and develop a full prioritized inventory, by 2026.

Outcome 9: Remove 100% of priority barriers—as identified through a watershed barrier inventory—throughout the Snohomish Watershed by 2031.

Challenge

The Snohomish Watershed covers approximately 1,856 square miles, with more than 2,718 miles of mapped rivers and streams. Survey records have identified more than 1,200 blocking culverts in the basin, with more than 400 miles of anadromous fish habitat currently inaccessible (NWIFC 2020).

Efforts are underway from many actors to remove barriers and restore fish passage. DNR has been removing barriers on state lands rapidly and successfully for many decades through implementing the Road Maintenance and Abandonment Plan (RMAP). This includes barrier correction as well as abandoning disused roads, which also reduces excess sediment in streams. DNR has removed

9. 584 U.S. ___ (more) 138 S. Ct. 1832; 201 L. Ed. 2d 200

2,495 barriers (99% of 2,515 potential barriers) on state lands since 1999, opening up 800 miles of streams for fish passage statewide. Through Forest Practices, statewide private landowners have removed more than 8,400 fish passage barriers and opened up 5,184 miles of habitat. In WRIA 7, 299 large forest landowner fish passage barriers have been corrected, and 12 FFFPP barriers were corrected on small forest landowners' land (out of 76 known barriers). At the statewide level, the Brian Abbott Fish Barrier Removal Board (FBRB), WDFW and WSDOT are developing a statewide strategy to address culverts across different landownerships.

At present, there is no comprehensive barrier inventory for WRIA 7, which would enable prioritization to restore passage in the most systematic ways. There are large data gaps that make it difficult to know the extent and location of the most problematic culverts. There are 1,200 inventoried barriers but perhaps as many as 7,000 total barriers in the watershed (NWIFC 2016). The number of known fish barriers is extensive and new barriers are being discovered through new inventory exercises. Recent barrier inventories and prioritization efforts by King County provide help to address these gaps.

Additional challenges include cost, as fish barrier removal can range from tens of thousands to millions of dollars per project depending on complexity. Whenever possible, barriers that are corrected upstream should be matched by corrections downstream so that fish can access the new habitat. A watershed approach is essential to ensure the resources invested in removing fish barriers upstream are matched downstream and throughout the entire tributary. Both climate resilience and risk of conversion should also be considered as resource decisions are made. Climate change adds additional complexity, as repair schedules should consider where waters are expected to remain cool enough for salmon, and barriers in some areas may need to be designed in ways that accommodate changing precipitation patterns due to climate impacts, such as increased winter peak flows.

Culverts must be designed in ways that allow fish passage. The Snohomish Watershed includes at least 1,200 culverts that are barriers to fish.

DNR Implementation Actions: Near-Term (Year 0–3)

4.1 FISH PASSAGE BARRIER REMOVAL

Continue successful fish passage barrier removal on state lands. Remove or correct Soderman Creek barrier by the end of 2022.

Corresponding Outcomes:

Strategies: Connect

4.2 SMALL FOREST LANDOWNER FISH PASSAGE BARRIERS

Conduct inventory of small forest landowner fish passage barriers, requiring survey of 36 miles of stream. DNR to conduct outreach to landowners. Contract with WDFW to conduct inventory.

Corresponding Outcomes:

Strategies: Collaborate, Connect

4.3 FISH PASSAGE BARRIER DATABASE

Update fish passage barrier database for WRIA 7 and contribute to determining priority barriers along with partners including Lead Entity, local government, USFS, WDFW and others. Contribute to collective prioritization discussions for the watershed.

Corresponding Outcomes:

Strategies: Collaborate, Connect

4.4 FISH PASSAGE BARRIER INVENTORY

Work with all relevant partners to create a full, prioritized fish passage barrier inventory for all landownership in WRIA 7. This inventory will define the priority barriers for removal by 2031.

Corresponding Outcomes:

Strategies: Collaborate, Connect

10-Year Actions (Year 4–10)

4.5 SMALL FOREST LANDOWNER FISH PASSAGE BARRIERS II

Work with WDFW, RCO and others to identify funding for and remove 100% of priority small forest landowner fish passage barriers, in coordination with local government and other stakeholders. Secure new funding mechanisms as needed to achieve this outcome.

Corresponding Outcomes:

Strategies: Collaborate, Connect

4.6 SMALL FOREST LANDOWNER FISH PASSAGE BARRIERS III

Develop program to ensure small forest landowner fish passage barriers are corrected and remain barrier-free over time, including across ownership changes. Work with Tulalip Tribes and others to scope needs. Explore policy changes to ensure barrier repair responsibilities are addressed effectively.

Corresponding Outcomes:

Strategies: Collaborate, Connect

4.7 FEDERAL FISH PASSAGE BARRIERS

Remove 100% of priority fish passage barriers on federal forest land by 2031. Using watershed-wide prioritized list, identify the best opportunities to collaborate with USFS, through GNA, landscape-scale forest health projects or other mechanisms. Develop formal agreement and biannual plan to implement projects. Barrier removal projects will also reduce turbidity in forest streams.

Corresponding Outcomes:

Strategies: Collaborate, Connect, Fund

4.8 FISH PASSAGE BARRIER REMOVAL II

Work with Lead Entity and partners to identify funding for and remove 100% of fish passage barriers on a priority stream. Probable target Pilchuck River; final target to be agreed upon with partners.

Corresponding Outcomes:

Strategies: Collaborate, Connect, Fund

4.9 FISH PASSAGE BARRIER INVENTORY II

Keep state lands barrier-free over time. This will be achieved through increasing the speed of fish passage barrier inventory and removal on state lands. Barriers can develop over time through natural processes, and in order to identify and correct them quickly, DNR will increase the frequency of review so 10% of fish culverts are inspected every year, and any new barriers are corrected within six years.

Corresponding Outcomes:

Strategies: Connect, Restore

ACTION 5: Improve Water Quality and Quantity in Forest Headwaters

The movement of water through the forest headwaters in WRIA 7 is a critical factor impacting salmon recovery as well as human communities. Salmon are dependent on having access to adequate cool, low flows in the summer, the timing and levels of peak flows in the spring and periodic flooding events that contribute to the creation of habitat. Rivers and streams in the forested headwaters have significant impacts on the provision of sufficient levels of cool, clean water throughout the basin.

Outcomes

Outcome 10: Conduct site evaluations on 48 miles of stream on DNR lands identified as High Suitability beaver habitat by the Beaver Intrinsic Potential model, using Tulalip Tribes' site scorecard, by 2026.

Outcome 11: Decrease turbidity through implementing high priority road, stream and fish passage projects across at least 10 miles of federal forestlands by 2026.

Outcome 12: Increase Snohomish River summer low flows by 8.2 cubic feet per second by 2031.

Challenge

The ways in which water is stored, permeates and passes through the forested landscape have a significant impact on overall hydrology throughout a watershed. Streamflow and temperature levels supportive of salmon can be achieved through natural or managed changes to instream conditions and natural infrastructure.

Stream temperature is a significant water-quality problem for salmon survival. In the Snohomish Watershed, there are currently 147 stream segments identified as having excessive stream temperatures on the Washington State Department of Ecology's 303(d) list, which monitors water quality status. Excessive stream temperature as well as summer low flow levels can critically impact salmon survival in freshwater systems in the forested landscape. Snoqualmie, Skykomish and Snohomish rivers' mainstem reaches frequently see water quality temperature exceedances which can last several weeks or months. Additionally, a number of larger tributaries including the Middle Fork Snoqualmie, Pilchuck River, Raging River and Wallace River, and smaller tributaries including Carpenter Creek, Cherry Creek, French Creek, Patterson Creek and Woods Creek, also often exceed recommended maximum water temperatures, and sometimes reach levels lethal to salmon (Kubo et al 2021).

Some interventions to improve ecosystem function and water quality in forest streams, such as the placement of large woody debris and the introduction or maintenance of beavers on the landscape in forested headwaters, can contribute to natural infrastructure supportive of water quality and quantity outcomes. Benefits can include surface water storage and aquifer recharge, supporting slower flows of cooler water and enhancing summer flows. Continued temperature monitoring is critical to continue to evaluate temperature conditions, responses to interventions and land management changes and trends.

Snohomish Watershed research demonstrated that the presence of beavers increased groundwater storage 2.4 times per unit of surface water storage (Dittbrenner 2019). However, there is often a lack of information and guidance that might help identify and manage projects with forest landowners. Improvements require coordinated actions at the landscape level to improve streamflow and other water-quality standards supportive of spawning, rearing and migration downriver to Puget Sound, while avoiding impacts to homes and other downstream infrastructure.

A broad and coordinated array of strategies, including increasing forest cover, improving riparian function and carbon sequestration to mitigate climate change impacts (addressed in actions 6, 7 and 13) will contribute to improved streamflow outcomes. DNR will work with partners to add additional actions over time, such as implementing recommendations from the Tulalip Tribes' plans and research including The Tulalip Uplands Strategy and The Tulalip Salmon, Forest and Waters project. This latter project is modeling land management strategies that may improve basin hydrology. Actions seeking to improve water quality and streamflow will be grounded in long-term, sustainable improvements to forest hydrology. Taking these actions as part of landscape-scale restoration projects including multiple partners and jurisdictions will help to ensure improvements are made at the scale necessary to improve streamflow across the entire watershed.

Roads and stream crossings in the forest landscape can contribute to water-quality problems if standards are not adhered to. Suspended sediment is associated with negative impacts to spawning, growth and reproduction of salmonids. Therefore, programs such as Road Maintenance and Abandonment Plans (RMAPs) are critical to ensure that impacts from roads on fish passage and turbidity are reduced. Through Forest Practices, working with private landowners, more than 30,700 miles of roads have been improved and almost 4,000 miles of roads abandoned. On federal lands, the USFS would benefit from increased funding to support road maintenance and abandonment standards that fully address sediments reaching streams and resulting turbidity impacts (suspended sediment in water systems). Reports from the Mount Baker-Snoqualmie National Forest regarding sustainable roads planning and management have identified significant road maintenance needs in this watershed, while also documenting declining roads budgets over the last 20 years that make it difficult to fully address these needs (USFS 2015). Prioritization of public and private land projects should focus on benefits to salmon habitat. At present this is not always the case.

DNR Implementation Actions: Near-Term (Year 0–3)

5.1 BEAVERS SITE SUITABILITY

Train staff in Northwest and South Puget Sound region offices to evaluate beaver site suitability through Tulalip Tribes or other training opportunities.

Corresponding Outcomes:

Strategies: Collaborate, Educate and enforce, Restore

5.2 LIVING WITH BEAVERS

Develop new voluntary landowner program for living with beavers. DNR will develop and implement a program to work with willing landowners (e.g. small forest landowners) who want to participate in beaver reintroductions or management on their land. DNR will use Beaver Intrinsic Potential (BIP) mapping tool and seek input and collaboration from Tulalip Tribes Beaver Project.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Restore

5.3 BEAVERS AND HYDROLOGIC IMPACTS

Support beavers and related hydrologic impacts on the landscape through research and analysis about water quality and quantity impacts of beavers. This should include evaluating water quality and quantity benefits of beaver dams and beaver dam analogues.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund, Restore

5.4 STATE TRUST LANDS AND FOREST PRACTICES HABITAT CONSERVATION PLANS

Continue to implement State Trust Lands and Forest Practices Habitat Conservation Plans (HCPs), which contribute to water quality protections including controlling turbidity.

Corresponding Outcomes:

Strategies: Protect, Educate and enforce, Fund

5.5 ROAD MAINTENANCE AND ABANDONMENT

Assess extent of road maintenance and abandonment on USFS lands in WRIA 7. Include culvert inventory data from Action 4. Prioritize need based on salmon benefit in coordination with USFS. Collaborate with stakeholders to fund highest priority projects in the near term, while identifying future priority projects.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Monitor and report

10-Year Actions (Year 4–10)

5.6 BEAVERS SITE SUITABILITY II

Evaluate all stream segments on DNR lands that are considered High Suitability for beavers using Beaver Intrinsic Potential model, to add additional on the ground criteria using site scorecard. Use this information to inform consideration of beaver introduction on state lands where benefits for salmon are high and risks to property and infrastructure are low.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Restore

5.7 LANDSCAPE SCALE RESTORATION PROJECTS

Develop and implement landscape-scale restoration projects across land ownerships. Projects should include multiple benefits including forest hydrology and streamflow, fish passage, riparian enhancements, wildlife, Tribal Treaty rights and resource protection and more. Funding and financing opportunities may include Forest Resilience Bonds (FRB) and Landscape Scale Restoration (LSR) grants.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Connect, Fund, Restore

5.8 ROAD MAINTENANCE AND ABANDONMENT II

Implement Road Maintenance and Abandonment Plans (RMAP) projects across Mount Baker-Snoqualmie National Forest lands in WRIA 7 according to prioritization. Utilize Good Neighbor Authority, the Tribal Forest Protection Act (TFPA) and related opportunities to work in collaboration across land ownerships.

Corresponding Outcomes:

Strategies: Collaborate, Connect, Fund, Restore

ACTION 6: Protect and Restore Forestlands

Forestlands provide many important ecosystem benefits that support salmonids and other wildlife. Forestlands filter and store water and improve key metrics including water quality and temperature (Bradley et al 2007). Forests also provide water storage through retention in the soil, duff layer and standing trees, and improved water quantity and stream flow as the water is released throughout the year. Trees also sequester carbon, providing natural climate solutions. In addition to these benefits for wildlife and ecosystem function, working forests provide timber and support jobs and economic outcomes in the timber industry. In addition, most forested lands provide recreation opportunities that support a high quality of life and health and wellbeing for many Washingtonians and visitors to our state. It is important to restore existing forestlands and reduce conversion of forestlands to development. Moreover, we must make net gains in forest cover since this habitat provides critical salmon habitat and supports ecological function, wildlife and sustainable recreation across the basin.

Outcomes

Outcome 13: Conduct Forest Health evaluation in the Snohomish Watershed and identify key restoration metrics by 2023.

Outcome 14: Increase forestland acreage (net gain) by 2031: 900,000 acres baseline.

Challenge

The Snohomish Watershed includes approximately 900,000 acres of forested lands, about 75% of its total acreage (NWIFC 2020). Of forestlands, more than 50% is federally owned, with the remaining acreage owned or managed by DNR, counties, cities, small forest landowners and private industrial timber companies (Snohomish Basin 2005). Forests are an essential part of this watershed, and they provide a wealth of benefits to Washingtonians and the planet, including supporting ecosystem functions on which salmon depend. However, there are no guarantees that lands that are forested today will remain in this condition, which is why additional protections to avoid conversion and development are essential. Today, more than 75% of Puget Sound estuaries and adjacent landscapes, including mixed woodlands and floodplain forests, are heavily modified to the point that they no longer provide original ecosystem functions (DNR 2020 Forest Action Plan). Between 1978 and 2001, the state lost 700,000 acres of forestland in western Washington (Bradley et al 2007), and this trajectory persists in WRIA 7, one of the fastest-growing counties in the country. Between 2005 and 2012, at least 2,152 acres of forestland were converted to uses incompatible with continued forestry (Snohomish Basin Protection Plan 2015).

Stream after restoration project conducted alongside Turning Wheel Timber Sale. Additional forest health restoration projects will be identified and completed as part of this plan.

Changes in land use and development can impair water quality, reduce forest cover, degrade habitats, increase greenhouse gas emissions and alter culturally and environmentally significant landscapes and Tribal treaty-reserved rights and resources. Conserving lands with ecological, historical, cultural and community value is integral to maintaining a healthy ecosystem.

At the local, state and federal level, there is a growing call for protecting lands and waters from development (White House Executive Order January 2021). Efforts to protect at least 30% of lands and waters nationally are providing vital targets, and may be supported by recent federal infrastructure funding that will support natural infrastructure and landscape resilience among other benefits (White House Bipartisan Infrastructure Press Release November 2021). DNR recently launched a statewide initiative to protect 1 million acres of forestland, known as Keep Washington Evergreen initiative. This initiative will help prioritize private forestlands at risk of conversion, develop and improve voluntary incentives and financing and increase funding for protecting forestlands. Locally, much work has been occurring to increase land conservation in

the fast developing watershed. In WRIA 7, King County has developed an impactful Land Conservation Initiative (LCI), and DNR works with the county to respond promptly to opportunities to conserve lands. Recently, Snohomish County has also committed to developing an LCI for that county, which would mean all parts of the watershed will have established conservation priorities. These local land conservation initiatives are critical opportunities that will only be successful if key partners—including DNR—collaborate and commit internal capacity to informing LCIs and providing rapid response to conservation opportunities.

Wildfires have been increasing west of the Cascades with a rapidly changing climate and increasing forest health crisis. While "forest health" is well understood in an eastern Washington context, in western Washington there is a need to more thoroughly assess the forest health issues facing our moist coniferous forestland, and to identify restoration priorities. With the passage of HB 1168 (concerning long-term forest health and the reduction of wildfire dangers), DNR will be working to develop a forest health plan and complete forest health assessments for western Washington, including WRIA 7.

These efforts to sustain working forests, conserve the most important lands and restore forest health will be essential to keep this watershed abundant with critical, healthy forests that sustain salmon and communities.

Forestlands in the Middle Fork Snoqualmie portion of the watershed.

DNR Implementation Actions: Near-Term (Year 0–3)

6.1 FOREST HEALTH EVALUATION

Work with USFS to conduct a forest health evaluation in the Middle Snohomish priority landscape. Collaborate to determine a shared understanding of desired forest conditions in the context of changing climate conditions, streamflow and needs of endangered species, treaty-reserved resources and human wellbeing.

Corresponding Outcomes:

Strategies: Collaborate, Restore

6.2 SMALL FOREST LANDOWNER CONVERSION RISK

Evaluate risk of conversion for small forest landowners in WRIA 7. Use data to assess conversion risks in this watershed and assess priority for technical assistance and other support.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

6.3 LAND CONSERVATION INITIATIVES

Contribute to county Land Conservation Initiatives. This includes supporting development of Snohomish County LCI, and implementation of King County LCI. Respond in a timely manner to acquisition and easement opportunities.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

6.4 LAND CONVERSION FROM FORESTRY AUTHORITY

Engage cities and counties that have not assumed authority from DNR for Class IV-G activities (regarding land conversion from forestry).[10]

Corresponding Outcomes:

Strategies: Collaborate, Protect

6.5 MOUNT SI

Purchase remaining in-holding Mount Si NRCA. This is the last remaining highest quality in-holding (539 acres) within DNR's first conservation effort.

Corresponding Outcomes:

Strategies: Protect

6.6 MIDDLE FORK SNOQUALMIE

Purchase remaining in-holdings Middle Fork Snoqualmie NRCA (200 acres).

Corresponding Outcomes:

Strategies: Collaborate, Protect

10. Class IV General permits are for forest practice activities that are being conducted as part of a conversion from forestry to non-forestry use.

6.7 RATTLESNAKE MOUNTAIN

Purchase remaining in-holding within Rattlesnake Mountain Scenic Area (170 acres).

Corresponding Outcomes:

Strategies: Protect

6.8 MIDDLE FORK SNOQUALMIE TRUST LAND TRANSFER

Complete Middle Fork Snoqualmie Trust Land Transfer (25 acres transferred to NRCA status).

Corresponding Outcomes:

Strategies: Collaborate, Protect

6.9 KEEP WASHINGTON EVERGREEN

Develop mapping, targets and new incentive and financing tools to avoid conversion of forested lands in support of the Keep Washington Evergreen initiative.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Protect

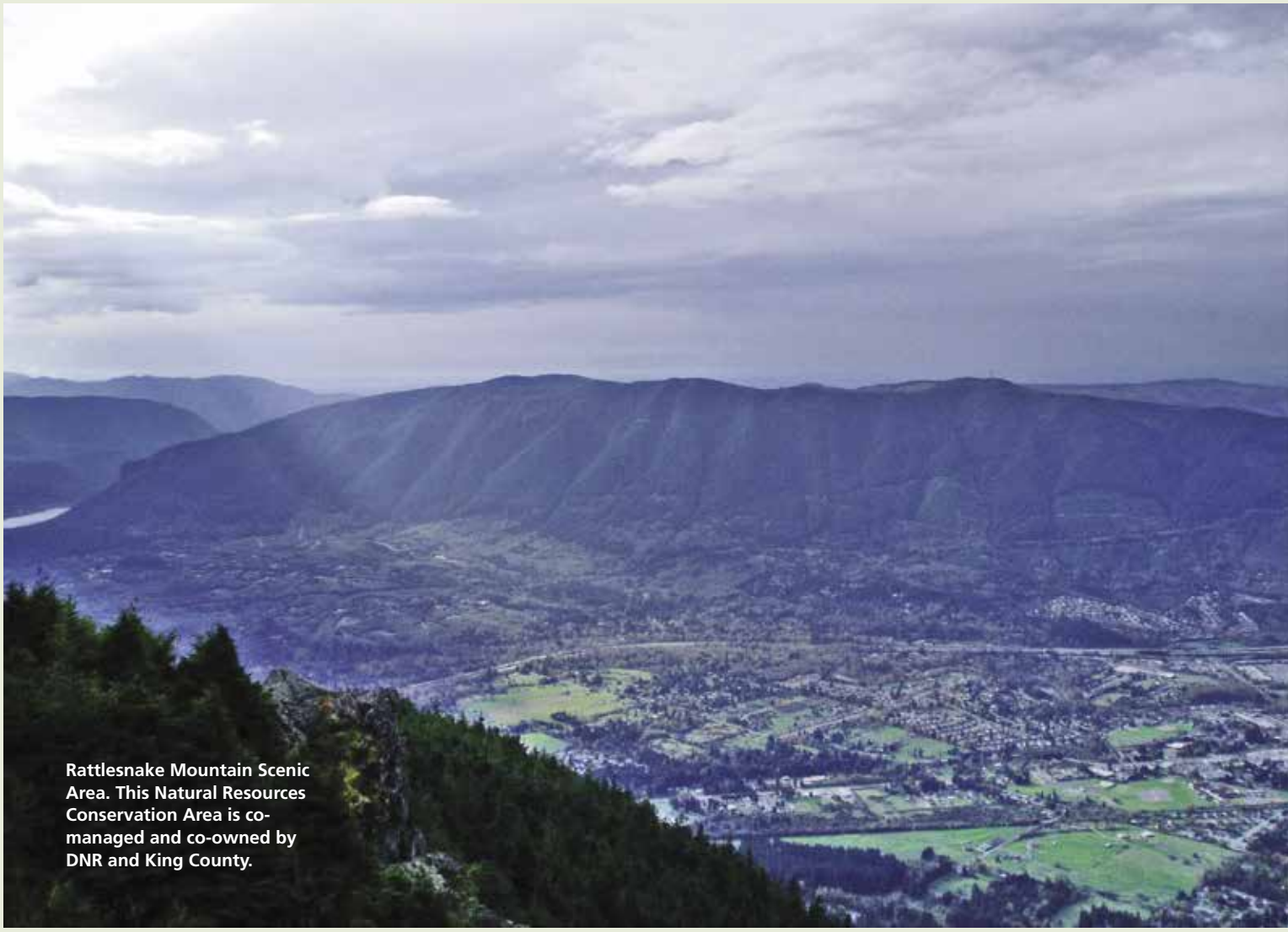
10-Year Actions (Year 4–10)

6.10 FORESTLAND ACREAGE

Increase forestland acreage to more than 900,000 acres. Through the Keep Washington Evergreen Initiative, leverage voluntary incentive-based tools, financing opportunities and increased funding that provide financial value for the underlying environmental, health, equity and cultural values of working forestlands, to contribute to net gain in forested acres by 2031.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Protect



Rattlesnake Mountain Scenic Area. This Natural Resources Conservation Area is co-managed and co-owned by DNR and King County.

ACTION 7: Protect Riparian Ecosystem Functions at Scale

Riparian ecosystems provide vital shade to maintain or limit stream temperature, increase bank stability, provide sediment filtration, add leaf litter to provide nutrients and produce large woody debris which creates pools to provide slower, cooler areas along rivers and streams. These riparian areas support the function of instream habitat needed for salmon spawning and rearing and serve as critical climate refugia for the movement of multiple species of fish and wildlife. Riparian forest buffers provide critical barriers between polluting landscapes and receiving waterways using relatively little land. Forest buffers reduce the adverse effect of excessive nitrogen, phosphorus and suspended sediment inputs. In particular, in the context of climate change and warming waters, riparian forest buffers are critical.

Outcomes

Outcome 15: Increase riparian habitat complexity through conducting at least 1,000 large woody debris installations in fish-bearing streams across the watershed by 2031.

Outcome 16: Improve riparian habitat function through attaining maintenance levels of knotweed (95% control) and replanting riparian zones along headwater streams, mainstem rivers and major tributaries by 2031.

Challenge

The Snohomish Watershed is approximately 75% forested. The majority of the forested landscape provides protections for riparian zones through specific plans: DNR's Habitat Conservation Plan (HCP) covers 1.4 million acres of forested state Trust Lands and regulates riparian zone buffer widths and management requirements. On federal lands, the Northwest Forest Plan regulates these riparian zones over 1.8 million acres of land in Washington State. The Habitat Conservation Plan for Washington State Forest Practices Rules covers 9.3 million acres of private forestlands across the state.

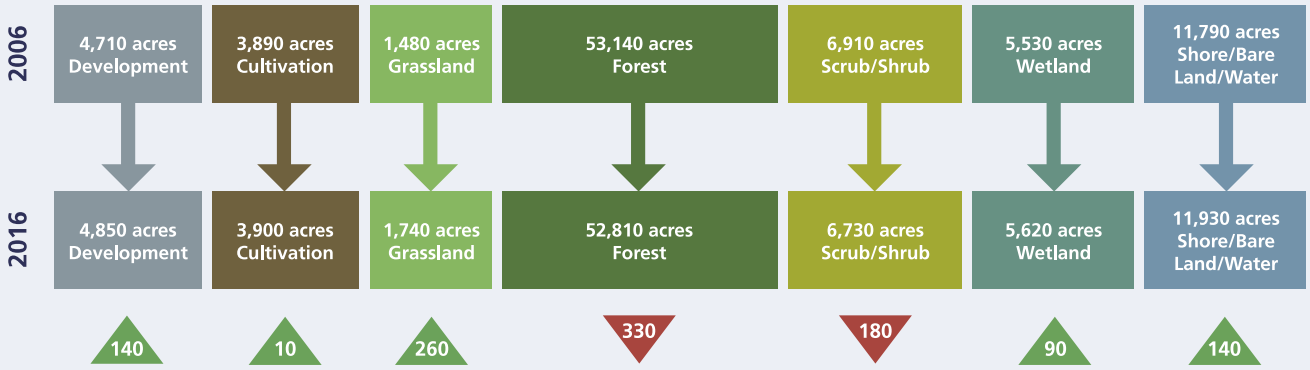
Restoration successes are taking place, including 332 acres of riparian habitat planted in the mainstem between 2005-2019 (Snohomish Basin 2019). However, a challenge for forest riparian cover is to avoid conversion out of forested land use. Notably, 330 acres of forest riparian buffer were converted to other land uses in Snohomish Watershed between 2006 and 2016 (Snohomish Basin 2019). This is concerning since gains were made for most other land use types. Conversion of forestlands to other land uses is a persistent problem as this often leads to reduced protections for riparian zones and increases in other limiting factors such as fish passage barriers and impervious surface. Efforts to increase overall forest cover and avoid conversion of working forests are addressed in this plan in Actions 6 and 11.

Currently, WRIA 7 is updating high-resolution mapping of riparian cover to determine restoration targets. It is anticipated that the majority of the forested landscape will be meeting the long-term goals of 80% forest cover along fish-bearing streams; however, new data resulting from this planning effort will be used to target priority areas for further action in the forested landscape.

The quality of ecosystem function in riparian zones is of significant importance as we consider how to support resilient forests and streams in this landscape. Fallen trees in rivers and riparian zones can create more diverse aquatic habitats. Habitat complexity, including areas with slow, cool pools, provide hiding and resting places for salmon and other aquatic organisms. Large wood in streams also contributes to storage in aquifers and groundwater exchange which lowers stream temperatures. While large trees fall naturally in time, the Snohomish Watershed has identified significant benefits from restoration projects

Engineered log jam in the Sultan River. Large woody debris projects like this support healthy riparian ecosystems.

Changes in Land Use Types within 150-Foot Riparian Buffers in the Snohomish Watershed from 2006-2016



Riparian cover is being lost in the Snohomish Watershed, especially in forestlands converted to other land uses. *Graphic adapted from Snohomish Basin Status and Trends Update (2019). Data from NOAA Coastal Change Analysis Program.*

that actively install large woody debris to increase habitat complexity (Snohomish Basin 2019). However, it can be a challenge to find reliable access to materials for instream projects, such as large trees with root wads for large woody debris installations. Securing access to these key pieces, ideally sourced in relatively close geographic proximity to restoration project sites to reduce transportation costs, is a gap in the restoration project landscape.

Another challenge is the presence of invasive flora in riparian zones, especially knotweed. Riparian zones are dynamic which can make them susceptible to invasion; non-native plants such as Japanese knotweed (Fallopia japonica) have become pervasive and are challenging to control in riparian zones. Knotweed usually outcompetes native plants, reducing biodiversity and decreasing habitat quality. To address this, it is important to invest significant resources in activities to achieve "control levels" where knotweed is removed and controlled in the vast majority of the landscape, followed by planting of native species to regain their presence in the riparian area. In WRIA 7, additional resources are needed to develop field protocols to archive these outcomes, to guide efforts to monitor and control knotweed. In addition, there is a need for a basin-wide strategy and for partners to provide consistent annual resources to control activities to counter annual recurrence of knotweed. Efforts in headwaters areas will be critical to support control throughout the watershed.

DNR Implementation Actions: Near-Term (Year 0–3)

7.1 LARGE WOODY DEBRIS PROGRAM

Develop new Snohomish Large Woody Debris Program. DNR will develop a new program to sell whole or partial trees to partners in WRIA 7 for use in large woody debris projects. Partnership and planning with Tulalip Tribes and fish enhancement groups will be sought. Explore opportunities to create or expand a regional wood bank.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

7.2 RIPARIAN RESTORATION TARGETS

Update watershed-wide riparian restoration targets. Collaborate with WRIA 7 to update long-term riparian restoration targets. Provide data to support a complete inventory to identify full needs of riparian forest restoration.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Restore

7.3 RIPARIAN RESTORATION STRATEGY

Participate in and support development of a Riparian Restoration Strategy for WRIA 7 to address knotweed and other riparian ecosystem restoration needs. Contribute to data collection and monitoring. Fund and implement actions that improve ecosystem function in priority riparian zones in WRIA 7, especially headwaters. Ensure at least 60 acres of riparian replanting occur on state-owned aquatic lands (this target may increase following prioritization efforts), using restoration corps crews and related resources.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Restore

7.4 RIPARIAN EASEMENT PROGRAM

Fund all remaining Forestry Riparian Easement Program small forest landowners currently on the program waitlist. Three landowners with 20 acres of land on list at present.

Corresponding Outcomes:

Strategies: Collaborate, Fund, Restore

7.5 LIDAR MAPPING

Use LiDAR data to contribute to monitoring of land use changes and climate impacts in riparian zones. Share data with partners for use in collaborative planning and restoration efforts.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

10-Year Actions (Year 4–10)

7.6 RIPARIAN FOREST COVER

Implement actions to avoid conversion of forested lands and protect riparian forest cover, as described in action 6.9. This will include responding to opportunities related to Land Conservation Initiatives in King and Snohomish counties where these address riparian lands.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report, Protect

7.7 KNOTWEED REMOVAL

Work with King and Snohomish County Noxious Weed Boards and other partners to remove knotweed infestations and conduct activities to control invasives annually in headwater streams, mainstem rivers and major tributaries. Efforts should be prioritized higher in watershed first, to achieve control levels by 2031.

Corresponding Outcomes:

Strategies: Collaborate, Restore

7.8 GOOD NEIGHBOR AUTHORITY

Use Good Neighbor Authority to support riparian restoration projects. Focus areas include North Fork Skykomish (1 site), South Fork Skykomish (2 sites) for stream and side channel restoration.

Corresponding Outcomes:

Strategies: Collaborate, Fund, Restore

GOAL 3: REVITALIZE URBAN FORESTS AND STREAMS

Urban forests provide clean water, clean air and habitat for fish and wildlife, and improve human wellbeing through local air and water quality improvements and increased opportunities for nature experiences in urban environments.

ACTION 8: Grow Tree Canopy in Priority Urban Areas

Improving the health and distribution of urban forests mitigates adverse environmental conditions associated with urban landscapes such as urban heat islands, pollution and stormwater runoff. These conditions degrade the health and sustainability of adjacent aquatic and riparian ecosystems such as rivers, streams and nearshore habitats upon which salmon and other species depend.

Outcomes

Outcome 17: Increase tree canopy by 2,000 acres (3.5% increase) in Snohomish Watershed cities and towns by 2031.

Outcome 18: Plant 10,000 trees annually alongside streams, streets and other priority landscapes in Snohomish Watershed cities and towns through 2031, to achieve clean water goals.

Challenge

Urban tree canopy cover gains are needed throughout the Snohomish Watershed. A commonly accepted best practice for temperate urban areas is 40% forest cover. Other nearby municipalities (such as Kirkland) and many other cities (such as Washington, DC) are working towards goals of 40% urban forest cover (City of Kirkland 2021, Sustainable DC 2021). Recent data finds that King and Snohomish counties have tree canopy cover in urban areas at 33% and 27% respectively (DNR 2021).

Addressing tree canopy loss resulting from pressures related to population growth and increased urban development is vital. In addition to addressing drivers of loss, canopy gain should be made; the 2021 UN Climate Change Conference in Glasgow, UK (COP26), led to commitments to halt and reverse forest loss and degradation, and urban forests are an important part of this (UN 2021). Impacts of insufficient tree canopy are harmful to salmon and to people; access to nature in cities is increasingly seen as fundamental to human health and wellbeing (Lev 2020). However, many cities lack staff support and resources to implement projects. Additionally, urban forestry efforts should be planned for at a municipal level, and urban forestry management plans are important tools that are lacking in many areas. Robust plans would also benefit from thorough canopy analysis and tree inventories, although sufficient recent data is not always collected or available across the state.

Existing programs address these issues in part, including DNR's Urban and Community Forestry program. DNR's program is relatively limited in resources, although it was recently expanded through state legislation, the Evergreen Communities Act update (HB 1216), which will support increased technical assistance and grants to cities including those in WRIA 7. However, DNR's program and related efforts such as Forterra's Green Cities program are largely

constrained to work on public lands, such as parks and city street corridors. Since significant portions of lands within cities and towns are privately owned, it is important to find ways to support urban greening and low-impact development across all land ownerships, including creating new partnerships with private companies and other private landowners. Successful programs such as the City of Philadelphia's Green City, Clean Waters initiative provide a model that can be replicated in WRIA 7 with public-private partnership. Additional challenges include seeking ways to better engage local community members and organizations, so that urban forest plans and projects are developed with community input to support equitable health outcomes.

Urban vegetation is a key form of green stormwater infrastructure. Benefits include reducing water contamination while providing outdoor exercise opportunities.

DNR Implementation Actions: Near-Term (Year 0–3)

8.1 TREE CANOPY DATA

Analyze and share tree canopy data and recommendations for WRIA 7, using recently released data for Snohomish and King counties. Use results to help local governments identify target locations for strategic investments and to inform policy changes to improve urban forest health at scale. Supply analysis data to all 13 municipalities in WRIA 7 by the end of 2022.

Corresponding Outcomes:

Strategies: Collaborate, Educate and enforce, Monitor and report, Restore

8.2 TREE CANOPY EQUITY

Deploy new prioritization tools for health and equity impacts to ensure at least 50% of urban tree program resources are deployed in highly impacted communities. This will include the Health Disparities Mapping Tool and the Community Engagement Plan under the Healthy Environments for All (HEAL) Act.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Restore

8.3 URBAN FORESTRY TECHNICAL ASSISTANCE

Provide urban forestry technical assistance to WRIA 7 cities.

Corresponding Outcomes:

Strategies: Collaborate, Fund, Restore

8.4 URBAN FORESTRY PRIORITIZATION FRAMEWORK

Develop Urban Forestry Prioritization Framework to plant 10,000 trees annually and increase tree canopy by 2,000 acres. Work with communities to identify priority urban tree planting areas based on environmental, health and equity criteria. Develop an online dashboard to measure progress.

Corresponding Outcomes:

Strategies: Collaborate, Protect, Restore

10-Year Actions (Year 4–10)

8.5 URBAN FORESTRY PRIORITIZATION FRAMEWORK II

Implement the Urban Forestry Prioritization Framework with communities to plant and maintain 10,000 new trees annually and increase their tree canopy by 2,000 acres by 2031. Utilize Urban Forestry Revitalization crews where appropriate.

Corresponding Outcomes:

Strategies: Collaborate, Protect, Restore

ACTION 9: Reduce Impervious Surfaces and Increase Green Stormwater Infrastructure Solutions

As populations grow in cities and towns, the amount of impervious surface tends to increase, as does the presence of contaminants from industry, transportation and other human impacts on the landscape. This is a critical issue, especially as contaminants in urban streams contribute significantly to the health of salmon, especially coho. Contaminants from car tire particles lead to "pre-spawn mortality" for coho, meaning they are killed before being able to spawn (Pearsall et al 2021). Managing stormwater runoff through green stormwater infrastructure is an important part of the solution, and provides benefits for people, salmon and other wildlife.

Outcomes

Outcome 19: Expand green stormwater infrastructure programs, including the development of at least $50M worth of prioritized projects and an expansion of workforce training opportunities, by 2025.

Outcome 20: Mobilize 50,000 hours of Urban Forestry Revitalization workforce training and Corps crews work time by 2024 and sustain at least 14,000 hours of crew work time and training annually.

Outcome 21: Reduce impervious surface levels in key urban sub-basins to below 30% by 2031.

Challenge

In WRIA 7, impervious surface levels are increasing across the watershed in ways that impair watershed health and harm salmon. The overall watershed impervious surface level is now nearly 13%, up from 12% in 2016. This is particularly acute in urban areas: King County and Snohomish County urban areas are approximately 37% and 35% impervious, respectively (DNR 2021). It is critical to identify methods for decreasing impervious surface, especially in areas where contaminant levels damage human health and can be lethal for coho. Addressing these conditions is particularly important in WRIA 7 where contaminants—especially polychlorinated biphenyl (PCB) and polybrominated diphenyl ethers (PBDE)—are above fish health thresholds (Pearsall et al 2021).

It is critical to move forward both greening and urban forestry actions (described under Action 8), and broader efforts to tackle impervious surfaces and move forward green stormwater infrastructure projects. Increasing these efforts at a large scale will likely require new programs that are training a new workforce to support these efforts, which can also provide valuable work hours and economic development opportunities. Additionally, it will be valuable for all landowners including DNR to evaluate the best opportunities to retrofit facilities with green stormwater infrastructure solutions. DNR has 15 facilities in the Snohomish Watershed, which we will evaluate and prioritize, and implement retrofits on priority sites to reduce impervious surface and contribute to water quality goals.

DNR Implementation Actions: Near-Term (Year 0–3)

9.1 URBAN FORESTRY REVITALIZATION CORPS

Establish an Urban Forestry Revitalization Corps program to implement projects that increase green stormwater infrastructure solutions and increase urban forest canopy cover. This may involve utilizing the Puget SoundCorps program, and may expand to meet additional needs outlined in this plan or to connect to Civilian Climate Corps efforts.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

9.2 WATER QUALITY SCREENING STUDY

Conduct Water Quality Screening Study to identify interventions with highest return on investment in WRIA 7 key urban areas. Assess the most significant contamination sources such as specific roads or bridges.

Corresponding Outcomes:

Strategies: Collaborate, Educate and enforce, Monitor and report, Restore

9.3 TREE INTERCEPTION EFFECTIVENESS STUDY

Participate in an Effectiveness Study of Tree Interception and Management of Water with Washington State University and The Evergreen State College.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report

9.4 NONPOINT SOURCE POLLUTION

Work with Tulalip Tribes on Visualizing Ecosystem Land Management Assessments (VELMA) tool to evaluate natural and engineered opportunities to address nonpoint sources of pollution.

Corresponding Outcomes:

Strategies: Collaborate, Monitor and report

10-Year Actions (Year 4–10)

9.5 GREEN STORMWATER INFRASTRUCTURE

Use water quality and related research to complete a prioritized water quality and green stormwater infrastructure project list for targeted urban area(s). Develop at least $50M worth of prioritized projects, and develop funding and implementation strategy, by 2025.

Corresponding Outcomes:

Strategies: Collaborate, Fund, Restore

9.6 GREEN STORMWATER INFRASTRUCTURE PARTNERSHIPS

Develop comprehensive green stormwater infrastructure public-private partnership(s) in the Snohomish Watershed. Work with local government, private sector, nonprofit and environmental justice partners to develop vision and roles. Utilize Urban Forestry Revitalization crews where appropriate. Track urban greening and depaving outcomes to contribute to reducing urban impervious surface levels below 30% by 2031.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund, Restore

9.7 GREENING INCENTIVES

Establish mechanisms to incentivize private greening activities by partnering with regulatory agencies and larger municipalities within the WRIA. Potential models for consideration include: Washington DC's Stormwater Retention Credit Trading Program; City of Philadelphia's Green City, Clean Waters Initiative. May involve establishing a stormwater credit trading program.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund, Restore

9.8 GREEN CAMPUSES

Work in partnership with private sector entities to green corporate campuses. Attention should be paid to improving human health and environmental justice in this work. Utilize Urban Forestry Revitalization crews where appropriate.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund, Restore

9.9 DNR FACILITIES

Retrofit priority DNR facilities in WRIA 7 with low-impact development and green stormwater infrastructure by 2031.

Corresponding Outcomes:

Strategies: Fund, Restore

GOAL 4: ENGAGE AND INVEST IN COMMUNITIES

Creating watershed resilience is also about increasing community resilience. It is essential to conduct our work with an equity lens, engaging communities and creating multiple benefits.

ACTION 10: Increase Environmental Literacy and Engagement to Support Ecosystems

Career-connected, outdoor learning opportunities that are accessible to all communities in Washington, including girls, low-income youth and youth of color, are critical to the state's future. At present, DNR recognizes a need to support the creation or extension of educational programs with an equity lens so that a broad range of people see themselves as the next generation of natural resource stewards and consider careers in this field. Ensuring that outdoor education programs in WRIA 7 are available to support salmon recovery as well as expanded opportunities for girls, youth of color, and other communities will yield multiple benefits for people and salmon.

Outcomes

Outcome 22: Provide outdoor education and career-connected learning opportunities that reach at least 6,000 K-8 and high school students with a focus on girls and youth of color by 2031.

Outcome 23: Support 500 people to complete a natural resources apprenticeship/training program by 2031.

Challenge

Currently, there are limited opportunities for children and youth to experience outdoor learning and engagement both within and outside of formal school settings. Additionally, natural resource agencies need to secure a future workforce to steward and protect our natural resources and public lands for future generations. Given that Washington DNR manages 5.6 million acres of land across the state and employs more than 1,400 people in communities in every corner of Washington, DNR is well-positioned to invite kids and youth into outdoor classrooms to learn about the state's natural resources and how each of us can play a role in building a sustainable future. To strategically engage children and youth in education programming on public lands and with land management staff, DNR can partner with schools and other entities to increase hands-on learning on DNR-managed lands. These programs should engage girls, youth of color and youth from underserved and overburdened communities.

Outdoor education experiences should be complemented by training and workforce development opportunities that support the next generation of natural resource workers and leaders. There are very few apprenticeship or pre-apprenticeship programs related to natural resource industries at present in Washington State; increasing the reach of this type of training program will help ensure that there are sufficient trained workers to meet the needs of restoration and watershed resilience work of today and in the future, while creating paid workforce opportunities and pathways to good-paying jobs.

DNR Implementation Actions: Near-Term (Year 0–3)

10.1 OUTDOOR EDUCATION AND TRAINING

Partner with School's Out Washington to identify opportunities for outdoor education and training using DNR resources that align with salmon recovery and DNR equity and environmental justice goals. Identify priority actions and partnerships in WRIA 7 for outdoor education.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce

10.2 ECOSYSTEM HEALTH EDUCATION

Establish education-focused partnerships related to monitoring and learning about ecosystem health. Partnership opportunities include Acidification Nearshore Monitoring Network (ANeMoNe) station and related water-quality curriculum, educational partnerships related to Kelp and Eelgrass Protection Zone, potentially including local schools.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce

10.3 OUTDOOR EDUCATION AND TRAINING PROGRAM MANAGER

Hire an Outdoor Education and Training Program Manager to partner with nonprofits and schools in the WRIA 7 watershed. Identify appropriate partners such as Tribes or community organizations.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce

10.4 OUTDOOR EDUCATION AND TRAINING PROGRAM

Establish a robust, statewide outdoor education and training program at DNR. Maintain salmon recovery and watershed resilience objectives as key components of the curriculum.

Corresponding Outcomes:

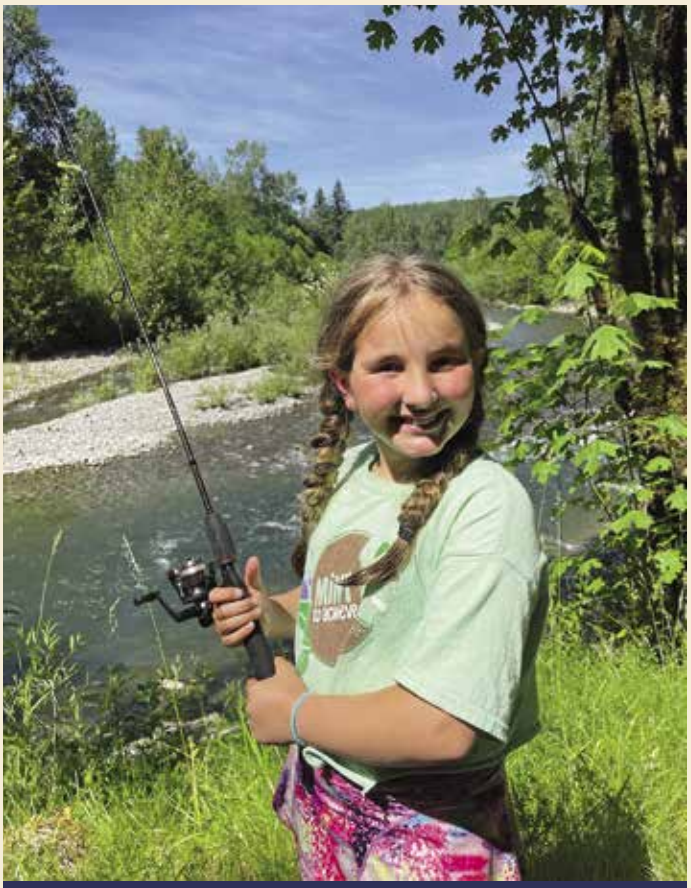
Strategies: Achieve multiple benefits, Educate and enforce

10.5 TRAINING AND PRE/APPRENTICESHIP PROGRAMING

Develop a formal partnership to expand training programs and establish new pre/apprenticeship programming to train workers for restoration, forestry and natural resource careers. Work with partners including unions, restoration industry companies, community colleges and others to identify the most pressing needs for natural resource training and apprenticeships that will support related workforce and environmental justice goals.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce



A child enjoying fishing and outdoor education activities along the Tolt River.

10-Year Actions (Year 4–10)

10.6 TRAINING AND PRE/APPRENTICESHIP PROGRAMING II

Work collaboratively to deliver new training and apprenticeship program opportunities to at least 500 program graduates by 2031.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

10.7 ECOLOGICAL LEARNING LAB II

Share lessons learned from Ecological Learning Lab and related research related to Kelp and Eelgrass Protection Zone (described in Action 1) to provide education and environmental literacy related to submerged aquatic vegetation, salmon habitat and leading-edge restoration research. Reach at least 6,000 K–8 and high school students by 2031, with a focus on girls and youth of color.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Protect, Restore

ACTION 11: Create Good Jobs and Support Equitable and Resilient Economies

Recovery projects and resilience activities create many benefits, in terms of natural resources and ecosystem function as well as creating and supporting jobs and contributing to local economies. Jobs and economic benefits can be direct, such as the work hours spent to plant trees, monitor eelgrass presence or repair a fish passage barrier. They can also be indirect or induced, supporting the resulting supply chains and goods and services in the broader industry. Additionally, investments in habitat and ecosystem projects that contribute to salmon recovery also support all those whose livelihoods, culture, traditions and spirituality depend on healthy and harvestable salmon populations.

Outcomes

Outcome 24: Support salmon-dependent economies through creating an average of 188 direct and indirect jobs per year until 2031.

Outcome 25: Avoid forest conversion by enrolling 90% of working forests in long-term protections and establishing a new program to retain and diversify small forest landowners by 2031.

Workers construct an engineered log jam as part of a beach restoration project.

Challenge

Salmon recovery and habitat restoration activities are related to many important economic outcomes. One is that loss of salmon populations threatens salmon-dependent economies, including fishing, canning and various outdoor recreation-related industries. Restoring salmon populations is necessary in order to sustain these industries and protect the economies which rely on healthy and harvestable levels of salmon that are sustained by a resilient ecosystem. Other related industries are parts of resilient watersheds. An important example is working forests, which are based on long-term management of forestlands according to Forest Practices policies that protect endangered species. Many small forest landowner properties are at risk of conversion out of forested use, which can be associated with development and increases in impervious surface, thereby reducing habitat availability and compromising water-quality conditions. While programs exist to protect forestland—such as the Forest Legacy Program—it is valuable to increase enrollment in such programs to help avoid conversion, especially if done in ways that increase forest connectivity (Rabotyagov et al 2020). Additional programs to support forest landowners, such as increasing market access, and efforts to enhance diversity and inclusion in small forest landowner communities are needed.

Implementing salmon recovery projects has the co-benefit of creating or sustaining jobs. It is important to better understand the nature of these jobs, including average pay, who has access to them and how they impact local economies. This information can help to mobilize new partners and funders, such as through the use of DNR's WatershedConnect tool. In addition, analysis about current economic impacts and who benefits economically from salmon recovery projects can help us to find ways to enhance the workforce-development opportunities, providing greater benefits for workers and supporting more just economic outcomes. When implemented in overburdened communities, these projects and activities can also increase equity and environmental justice.

DNR Implementation Actions: Near-Term (Year 0–3)

11.1 WATERSHEDCONNECT

Develop a job creation metric for WatershedConnect's mapping tool, project comparison tool and related communications. Use these tools to reach out to new funders.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund

11.2 ECONOMIC IMPACTS OF NATURAL AND WORKING LANDS

Work with partners on an Economic Impacts of Natural and Working Lands report to better understand economic impacts of salmon recovery and forest health activities. Use lessons to communicate economic impacts of these project types, to support these activities and their contributions to climate resilience. Develop next steps including connecting to workforce provisions in HB 1168 implementation and training/apprenticeship opportunities.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

11.3 NATURAL RESOURCES WORKFORCE NEEDS

Conduct a needs assessments with natural resources employers to identify workforce needs in industries connected to salmon recovery and watershed resilience.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate

11.4 GREEN STORMWATER INFRASTRUCTURE JOBS

Pilot local job-creating efforts related to green stormwater infrastructure, restoration or related activities. Engage in planning around equitable career pathways opportunities. Identify WRIA 7 pilot efforts.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

11.5 CAPITAL PROJECTS FOR SALMON RECOVERY

Work with partners to develop and prioritize a large suite ($50M+) of capital projects developed for salmon recovery, work-force development and job creation using WatershedConnect.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund, Restore

Urban streets benefit from tree canopy which reduces human health impacts such as urban heat islands while infiltrating stormwater.

10-Year Actions (Year 4–10)

11.6 GREEN STORMWATER INFRASTRUCTURE JOBS STRATEGY

Develop a regional green stormwater infrastructure and jobs strategy, building off existing stakeholder efforts in the area. Establish partnerships with entities on green stormwater infrastructure workforce training opportunities in Snohomish County.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

11.7 CAPITAL PROJECTS FOR SALMON RECOVERY II

Implement a large suite ($50M+) of capital projects developed for salmon recovery, workforce development and job creation using WatershedConnect.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

ACTION 12: Support Environmental Justice and Human Health Benefits

Salmon recovery and restoration activities produce direct outcomes for salmon and multiple benefits outcomes for the wellbeing of people and communities. DNR approaches watershed resilience with the belief that we can advance salmon recovery by recognizing these interconnections between ecosystem and human wellbeing. We seek to create environmental benefits for people and advance equity and environmental justice.

Outcomes

Outcome 26: Conduct an Environmental Justice Assessment including meaningful community engagement on 100% of Watershed Resilience Action Plan projects in the watershed by 2023.

Outcome 27: Ensure 100% of projects located in overburdened communities ranked seven and above on the Environmental Health Disparities Map are implemented by 2025.

Outcome 28: Utilize social determinants of health lens and community-centered process to identify restoration projects with significant human health benefits by 2026.

Challenge

Disparities in environmental health are a problem in the Snohomish Watershed, as is the case throughout the state. Tools such as the Environmental Health Disparities (EHD) show what areas have the most significant health burdens when it comes to indicators of environmental health risks and vulnerabilities, including exposure to diesel emissions, proximity to pollution from roads and hazardous waste facilities, populations living in poverty, housing affordability and race. DNR has used the EHD map to understand the locations of scoped salmon recovery and habitat restoration projects in relation to the cumulative health disparities ranking of the census tracts in which the proposed projects are located. Highly impacted communities are particularly concentrated in the urban areas, especially parts of Everett and Marysville, along the Interstate 5 corridor. The EHD map layer has been incorporated into the new WatershedConnect mapping tool described in Action 15.

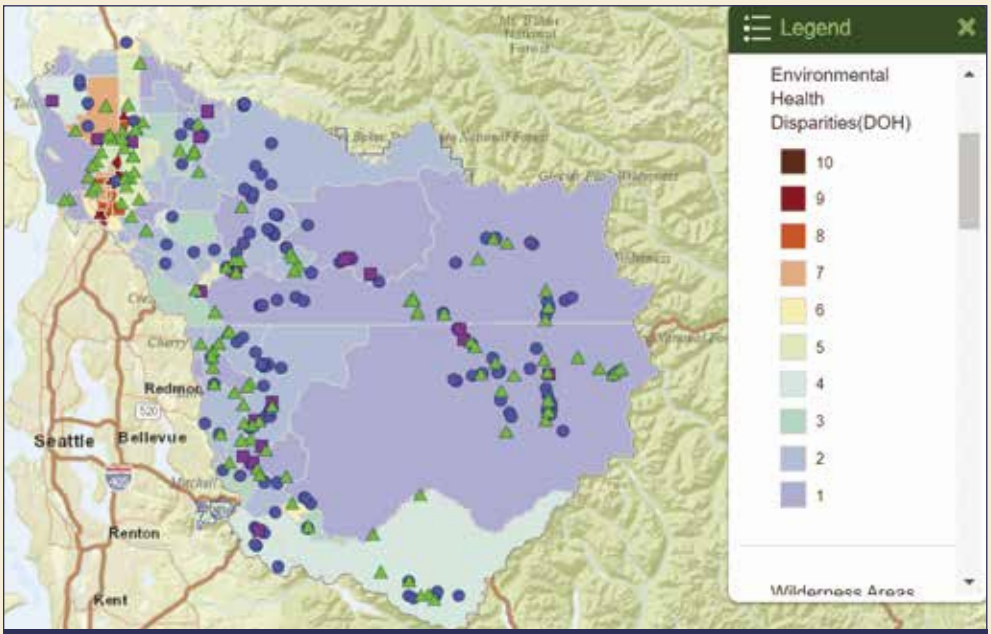
The term "environmental justice" was recently defined in Washington State: Environmental justice means *"the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, rules and policies. Environmental justice includes addressing disproportionate environmental and health impacts in all laws, rules and policies with environmental impacts by prioritizing vulnerable populations and overburdened communities, the equitable distribution of resources and benefits and eliminating harm."*

DNR uses the term "equity and environmental justice" to affirm that we take an equity-based approach to advancing environmental justice. This recognizes that historic and current structural biases have contributed to unequal environmental health outcomes, access to resources and access to participation in environmental policymaking. An equity-based approach does not distribute resources or relieve burdens equally, but rather seeks to address the imbalance (or "disproportionate burden") of environmental health outcomes. To the greatest extent feasible, DNR seeks to advance equity and environmental justice in how we will support watershed resilience, salmon recovery in the Snohomish Watershed, and in the agency's broader work. In this document we use the terminology "overburdened communities" and "highly impacted communities." At its heart, these terms describe people and the places where they live in relation to disproportionate environmental health outcomes. The Environmental Health Disparities Map helps to identify these places and communities.

It is important to bring an equity and environmental justice lens to how salmon recovery actions are planned and implemented. While all projects on this list are important for salmon recovery, it is important to ensure that those located in overburdened communities are prioritized for implementation. This emphasis can create outcomes with multiple benefits—supporting both salmon and communities—while also providing an opportunity to connect with new partners and funders for whom environmental justice is a priority.

The Washington State Legislature passed pivotal environmental justice legislation, the Healthy Environment for All (HEAL) Act, SB 5141, in 2021. It creates requirements for many state agencies including DNR to address environmental justice, including through the use of a new tool called Environmental Justice Assessments. This tool requires formal consideration of how to equitably distribute environmental health benefits and reduce disparities. These assessments must be used starting in 2023 for a selection of significant agency actions, although the required scope will exclude many smaller-scale restoration actions such as many salmon recovery projects. As such, DNR is interested in going beyond minimum requirements and using Environmental Justice Assessments on a wider range of actions which we will lead in this watershed.

However, more work is needed to improve the ways in which environmental health data can help inform and advance salmon recovery and restoration projects. For example, identifying ways in which the EHD map can differentiate between census tracts in rural areas would be beneficial. Many projects are located in more rural and forested areas which have lower cumulative impacts scores. However, there can still be crucial differences in human experience and opportunity in communities that are difficult to distinguish on the map at present, such as poverty, underemployment, the prevalence of adverse childhood experiences and behavioral health challenges. Seeking to better understand the rural communities in the Snohomish Watershed so that using the map will help direct resources to these communities would be helpful in pursuit of equitable outcomes. Additionally, it would be valuable to conduct a formal assessment of the human health benefits of restoration projects. These efforts should be conducted together with community organizations and health-focused partners to complete an assessment with meaningful community engagement. These additional analyses should contribute to ongoing conversations with the Snohomish Watershed Forum partners to identify the most appropriate and meaningful ways to incorporate environmental justice considerations into how projects are planned, prioritized and implemented in the future.



The Environmental Health Disparities map highlights census tracts where communities face disproportionate health risks and burdens. Using this data to help prioritize restoration projects can bring health and wellbeing benefits to communities.

DNR Implementation Actions: Near-Term (Year 0–3)

12.1 WATERSHEDCONNECT II

Study and communicate about environmental justice components of salmon recovery work. Include Environmental Health Disparities Map layers in WatershedConnect and assess the distribution of projects in overburdened communities.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate

12.2 HUMAN HEALTH BENEFITS OF SALMON RECOVERY

Conduct an assessment of the human health benefits of salmon recovery project types included on WatershedConnect, working with community partners and environmental organizations to assess health benefits and develop a methodology. Share findings with watershed partners, state agencies and others.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund

12.3 ENVIRONMENTAL HEALTH DISPARITIES MAPPING

Explore opportunities to enhance Environmental Health Disparities map with inclusion of additional data relevant to environmental health and related challenges of particular relevance in urban areas. Participate in efforts to communicate the value of these features with broad audiences.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate

12.4 ENVIRONMENTAL JUSTICE PRINCIPLES AND METRICS

Explore opportunities to incorporate environmental justice principles and metrics into restoration funding systems in the Snohomish Watershed. Opportunities may include creation of an Equity and Environmental Justice working group within the WRIA 7 forum.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate

12.5 URBAN FORESTRY MANAGEMENT PLANS

DNR's urban and community forestry (UCF) program will work with local governments and EJ partners to determine best practices and recommendations for urban forestry management plans and community engagement.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

12.6 ENVIRONMENTAL JUSTICE ASSESSMENT

Pilot the use of an Environmental Justice Assessment (based on the HEAL Act/SB 5141 and EJ Task Force Recommendations). Seek to share findings with watershed partners and expand the use of this tool, including on projects that go beyond minimum requirements of 5141.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

12.7 PRIORITIZING OVERBURDENED COMMUNITIES

Target project fundraising efforts to projects located in overburdened communities. Implement at least 50% of projects located in overburdened communities ranked seven and above. There are 12 projects in census tracts ranked seven to nine based on current list incorporated in WatershedConnect.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

10-Year Actions (Year 4–10)

12.8 PRIORITIZING OVERBURDENED COMMUNITIES II

Fund and implement 100% of projects in overburdened communities ranked 7 and above by 2025.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

12.9 HUMAN HEALTH BENEFITS

Participate in projects that seek to better include human wellbeing in restoration project design. Incorporate these into DNR ongoing work (including development of Environmental Justice Assessments), and share findings with watershed partners.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Restore

GOAL 5: REDUCE AND COMBAT CLIMATE IMPACTS

Storms, floods, sea level rise, ocean acidification, drought, forest health and wildfires are all issues tied to climate change that impact and threaten salmon recovery and watershed resilience. It is critical to connect a vision of watershed resilience to efforts that both seek to mitigate the worst impacts of climate change, and also enact changes that make our lands, waters and communities more resilient in the face of climate change.

ACTION 13: Sequester Carbon and Mitigate Growing Climate Risks

Carbon sequestration projects offer a significant opportunity to mitigate greenhouse gas emissions. This should include upland forest and underwater vegetation ("blue carbon") projects.

Outcomes

Outcome 29: Conduct a baseline analysis of carbon storage on the landscape by 2024.

Outcome 30: Implement 10,000 acres of carbon sequestration projects in the Snohomish Watershed by 2026.

Challenge

Climate impacts are already occurring and creating new or exacerbating existing challenges for salmon and other wildlife and natural systems as well as for people. Climate change impacts many aspects of salmon health and prospects of recovery. Key issues include stream temperature, precipitation changes including increased high flows that dislodge redds, decreased summer flows that limit habitat access and ocean acidification. Habitat restoration efforts by DNR and partners cannot be effective in salmon recovery if climate change results in lethal stream temperatures and reduced water supply for rivers and streams.

Taking steps to reduce greenhouse gas emissions, sequester carbon and mitigate climate change are an essential component of tackling the root causes of salmon population decline. We must center climate action and climate resilience in all our efforts.

DNR will also ensure that climate resilience is a factor in how we plan for the future and design restoration activities. For example, in prioritization of fish passage barrier removal, as it is critical to focus on streams expected to be cool enough to support fish health in changing future climate conditions.

DNR Implementation Actions: Near-Term (Year 0–3)

13.1 CARBON SEQUESTRATION INVENTORY

Create a complete inventory of current landscape-scale carbon sequestration opportunities, including but not limited to blue carbon, soils, urban trees and state and privately owned forests. Update existing forest carbon data. Work with partners to use this information to assess the carbon benefits of land management decisions and carbon sequestration projects.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Fund

13.2 RESILIENT FISH PASSAGE DESIGN

Work with watershed and other partners to incorporate climate change projections in the design of culverts and fish passage barrier removal. Use this data to inform prioritization for streams to focus on over the long term in the context of warming waters. Ensure findings are incorporated in planning and implementation in WRIA 7.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Protect

Blue carbon projects that protect and restore kelp and eelgrass also sequester carbon in the marine environment.

10-Year Actions (Year 4–10)

13.3 URBAN FORESTRY CARBON SEQUESTRATION

Implement actions to increase forest cover in urban areas as described under Goal 3. Focus on developing opportunities related to urban carbon sequestration, to enhance the role of urban forestry as a natural climate solution. Contribute to outcome of 10,000 acres by 2026.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Protect

13.4 SMALL FOREST LANDOWNER CARBON SEQUESTRATION

Implement actions to increase forest cover in forested lowlands and headwaters as described under Goal 2. This should include investigating opportunities to support carbon projects on small forest landowner lands. Contribute to outcome of 10,000 acres by 2026.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Protect

13.5 BLUE CARBON SEQUESTRATION

Implement blue carbon projects in the Snohomish Watershed, which will increase underwater vegetation, provide habitat and sequester carbon. Develop opportunities related to kelp, eelgrass and tidal forests. Contribute to outcome of 10,000 acres by 2026.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Protect

ACTION 14: Track Climate Change Impacts Over Time to Inform Policy, Programs and Investments

Monitoring, assessing and adapting to these changing environmental conditions will help plants and animals, support healthy habitat, create improvements for public infrastructure and help communities withstand the adverse effects of climate change.

Outcomes

Outcome 31: Establish one ocean acidification monitoring station in the Snohomish nearshore by 2024.

Outcome 32: Conduct climate change impacts monitoring for 100% of relevant watershed actions by 2025.

Outcome 33: Protect shoreline habitat by ensuring 100% of aquatic leaseholds at high risk of sea level rise include environmentally friendly mitigation strategies by 2031.

Challenge

In the context of rapidly changing climate impacts, planning and implementing salmon recovery and restoration projects the same way as in decades past will no longer suffice. It is critical to ensure projects are prioritized that contribute to monitoring climate impacts, better understanding how our lands, forests and waters are changing and to work collaboratively with many partners to share this data to inform future efforts.

Many critical outcomes related to monitoring rely on the existence of high-quality light detection and ranging (LiDAR) data, which includes high-resolution topography allowing for accurate stream locations along with information to assess watershed conditions and monitor them over time. LiDAR coverage for WRIA 7 currently stands at approximately 85%. However, much of this data was collected in 2003 and is an older generation of LiDAR that does not meet the requirements for watershed assessments.

DNR has identified a need for complete LiDAR coverage and regular refreshes of this data as part of a Statewide LiDAR Acquisition and Refresh.

An Acidification Nearshore Monitoring Network (ANeMoNe) station. DNR plans to install a new monitoring station in the Snohomish Watershed as part of this plan.

DNR Implementation Actions: Near-Term (Year 0–3)

14.1 ACIDIFICATION NEARSHORE MONITORING NETWORK (ANeMoNe)

Establish an Acidification Nearshore Monitoring Network (ANeMoNe) station in the Snohomish nearshore. Work with partners on planning and siting. Collaborate to ensure monitoring efforts are conducted regularly and contribute to outdoor education outcomes as well as climate impacts assessments.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Protect

14.2 LIDAR MAPPING II

Collect, use and share LiDAR and geologic data to inform forest habitat and riparian efforts. Seek funding to implement statewide LiDAR Acquisition and Refresh plan, which will provide stable funding for statewide LiDAR coverage on a 10-year refresh rate. Use data for outputs such as hazard mapping analyses including climate-related hazards. Pursue possible collaborative opportunities using LiDAR to reduce hazard risks, such as Building Resilient Infrastructure and Communities (BRIC) funding or related funding sources.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Protect

14.3 HYDROLOGIC DATA

Improve hydrologic data accuracy and access. Assess options for moving DNR's hydro layer to the National Hydrography Dataset. Ensure climate impacts are included in assessments of changing hydrologic systems. Pilot completed; full transition proposals under development.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Monitor and report, Protect

14.4 CLIMATE RESILIENT PROJECTS

Work with WRIA 7 partners to improve climate resilience considerations in project development and selection. Work to ensure that planning includes both appropriate climate resilience provisions, and that climate impacts modeling is included in implementation.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Protect

14.5 SEA LEVEL RISE IMPACTS

Work with partners to develop sea level rise projections and assess expected impacts in the Snohomish Watershed. Use projections to help identify lands with greatest potential to become inundated. Evaluate protections needed as land use and cover changes over time, including changes to DNR aquatic leases.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Protect

14.6 ECOLOGICAL INTEGRITY ASSESSMENTS

Conduct Ecological Integrity Assessments to understand upland and wetland ecosystem health in Puget Sound, including climate impacts. DNR Natural Heritage Program will review datasets and determine regions where watershed ecosystem health is intact or in need of restoration or management actions. Maps and recommendations will be created and should be shared with partners.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Protect

10-Year Actions (Year 4–10)

14.7 CLIMATE IMPACTS MONITORING

Establish processes collaboratively with WRIA 7 partners to ensure 100% of projects include climate impacts monitoring. Use findings to inform future planning and project selection.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Protect

14.8 SEA LEVEL RISE IMPACTS II

Amend aquatic lease provisions to ensure that all leaseholds at risk of inundation from sea level rise include relevant protections by 2031. Engage collaboratively with partners to provide education and ensure enforcement of these provisions to support nearshore habitat.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate, Educate and enforce, Protect

ACTION 15: Attract New Funding Streams to Accelerate Resilience-building and Salmon Recovery

Monitoring, assessing and adapting to these changing environmental conditions will help plants and animals, support healthy habitat, create improvements for public infrastructure and help communities withstand the adverse effects of climate change.

To create more resilient landscapes that accelerate salmon recovery, we must enhance the number of restoration and protection projects being implemented on the ground and attract new audiences to support these projects. Resilience and restoration needs are frequently well-understood but consistently underfunded. Part of DNR's intent in creating this plan is to grow the total amount of funding being made available for salmon recovery and resilience projects in this watershed, with a focus on bringing new partners and funders to the table.

Outcomes

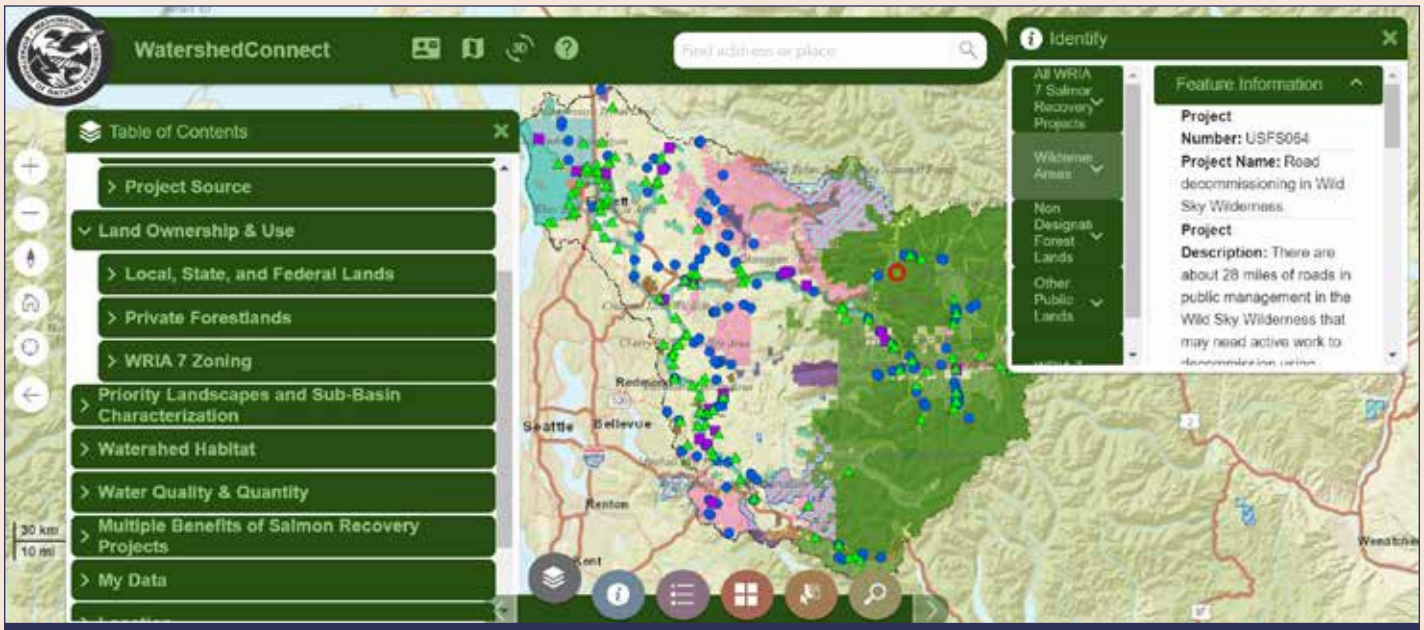
Outcome 34: Facilitate the investment of $200M in public and private funding by 2031, as part of approximately $1 billion of restoration need identified by the watershed.

Challenge

Salmon recovery plans historically receive only about 20% of requested need (Governor's Salmon Recovery Office 2020). The reasons for this consistent shortfall are many, including the high levels of funding needed, the many competing partners and landowners involved and challenges for different funders in assessing the many competing needs and understanding which projects will deliver the highest return on investment. Additional resources and a new approach to bringing new partners and funders to the table is critically needed if we are to address these challenges quickly and at scale. Additionally, in a constrained funding environment, it is especially valuable to be able to identify and prioritize projects that deliver multiple benefits by supporting salmon recovery and contributing to other socioeconomic and ecosystem service benefits, though at present these multiple benefits are not often the focus of project development or funding assessments.

In addition, DNR can fill critical gaps in this watershed by leading on mobilizing resources towards resilience and restoration in the forested landscape. Our unique partnership with the US Forest Service including the Good Neighbor Authority will enable the completion of projects on federal forestlands that reduce wildfire risk and increase forest health, while generating revenue for habitat restoration projects. Other federal funding opportunities that provide opportunities to enhance forest health in ways that support salmon recovery and communities, including FEMA Building Resilient Infrastructure and Communities, Innovative Finance for National Forests (IFNF), and Landscape Scale Restoration (LSR) grants, are opportunities where DNR can add value by leading in developing proposals and implementing funded projects.

Leaders from DNR and the US Forest Service sign a Good Neighbor Authority agreement. This will support projects to reduce wildfire risk and generate revenue to invest in restoration projects on federal forestland.



The WatershedConnect tool will help increase funding for critical salmon recovery and restoration projects in the Snohomish Watershed.

A Multiple Benefits Approach to Salmon Recovery

To create more resilient landscapes that accelerate salmon recovery, we must enhance the number of restoration and protection projects being implemented on the ground and attract new audiences to support these projects. These are some of the reasons that the Washington State Department of Natural Resources (DNR) has created WatershedConnect: https://watershedconnect.dnr.wa.gov.

WatershedConnect is an interactive mapping application that supports salmon recovery and habitat restoration by DNR and our partners. This engaging mapping tool also helps the public understand and visualize the multiple benefits of salmon recovery projects, such as job creation, economic impacts and environmental justice. WatershedConnect will help motivate new partners and target new funding by improving understanding of project-level needs in individual watersheds. Organizations that traditionally focus less on salmon recovery may find the addition of a co-benefits comparison helpful in understanding how they can benefit from salmon recovery projects.

WatershedConnect focuses on DNR's pilot watershed, the Snohomish Watershed, and aggregates information on salmon recovery projects from our regional, state, Tribal and federal partners for habitat connectivity, restoration and landscape protection activities.

DNR Implementation Actions: Near-Term (Year 0–3)

15.1 MULTIPLE BENEFITS ASSESSMENTS

Include multiple benefits assessments in WatershedConnect mapping tool, project comparison tool and communications about WatershedConnect. Use these tools to reach out to new funders.

Corresponding Outcomes:

Strategies: Achieve multiple benefits

15.2 GREEN JOBS NEEDS ASSESSMENT

Conduct a needs assessment with green infrastructure employers to identify workforce needs in industries connected to salmon recovery and watershed resilience.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Collaborate

15.3 WATERSHED RESILIENCE FUNDING

Use WatershedConnect, Economic Impacts study and other resources to establish funding processes with private sector actors in the watershed. Explore public-private partnerships to move forward implementation of priority projects. Connect to and collaborate with Puget Sound Partnership Mobilizing Funding work group.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund

15.4 RESILIENT GRANT PROGRAMS

Develop grant proposals that enhance resilience, including Building Resilient Infrastructure and Communities (BRIC), Landscape Scale Restoration (LSR), Innovative Finance for National Forests (IFNF) and other grant programs.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund

15.5 GOOD NEIGHBOR AUTHORITY II

Work with the US Forest Service to implement Good Neighbor Authority Actions that support resilience, while funding habitat projects on federal forestlands.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

15.6 GREEN JOBS

Pilot local job-creating efforts related to green infrastructure, restoration or related activities. Engage in planning around equitable career pathways opportunities. Identify WRIA 7 pilot efforts.

Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

10-Year Actions (Year 4–10)

15.7 CAPITAL PROJECTS FOR SALMON RECOVERY III

Implement a large suite ($50M+) of capital projects developed for salmon recovery, workforce development and job creation using WatershedConnect.

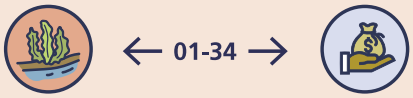
Corresponding Outcomes:

Strategies: Achieve multiple benefits, Fund, Restore

15.8 WATERSHED RESILIENCE FUNDING II

Identify and implement additional actions as needed to support the increase in total funding for restoration projects in the Snohomish Watershed to at least $200M.

Corresponding Outcomes:



Strategies: Achieve multiple benefits, Collaborate, Fund, Protect, Restore

NEW FUNDING AND INNOVATIVE FINANCE

Increasing the amount of funding and financing available for salmon recovery and watershed resilience projects is of critical importance. In WRIA 7, targets of $15 million per year have been set by the Forum; however, this level has only been reached in two out of the last 15 years, with just under $10 million per year on average (Snohomish Basin 2019). Even the $15 million per year target was agreed because it was seen as an ambitious yet possibly achievable target; funding the full needs outlined in the Snohomish Basin Salmon Recovery Plan to achieve desired salmon population levels would require significantly higher funding levels. Fully meeting these needs for salmon recovery and resilience in this watershed alone are estimated to require $1 billion or more.

Advisory Group for Innovative and Landscape-Scale Conservation Financing

For these reasons, DNR's plan includes numerous actions that would tackle the root causes of these problems in WRIA 7. We want to ensure that our efforts are not simply additional work to be funded with new slices of an already too small funding pie. Instead we seek to transform recovery funding by creating new types of funding mechanisms, expanding the amount of funding available and increasing the effectiveness of that funding to achieve greater results on the ground.

Engaging with other regional efforts to craft multiple benefit and innovative financing solutions

To achieve system-level transformation of conservation financing, Commissioner Franz will convene top financial, philanthropy, health and budget experts to collaboratively develop new public and private tools for multiple benefit investments that contribute to achieving outcomes identified in this plan. DNR will seek to participate in Puget Sound Partnership's Mobilizing Funding Initiative so that these opportunities can be identified and outreach conducted in coordination with other key actors. This should include working collaboratively around the development of Legacy Project lists and seeking to direct funding to critical landscape-scale projects.

The Watershed Resilience Action Plan funding advisory group will provide new strategies, approaches and tools to the agency to help accelerate salmon recovery projects and needs identified in this plan.

Ensuring Existing Funding Streams are Used Most Effectively

It is important to ensure that existing funding streams are used as effectively as possible. DNR will focus on increasing the impact of and leveraging existing funding sources, including through the following strategies:

- Lending capacity to the Snohomish Basin Salmon Recovery Forum to support their plans to update the watershed Project Sequencing Analysis, identifying project types and locations that should be prioritized first;
- Using WatershedConnect to communicate highest priority projects based on WRIA 7 analysis and DNR multiple benefits analysis, to mobilize more funding and new funding for these priority projects;
- Collaborating with other partners to target projects most effectively, such as coordinating fish barrier removal plans across state and local governments in coordination with strategies to incentivize private landowners;
- Targeting existing funding sources to help address root causes, such as exploring ways to direct resources for small forest landowner programs targeted to those at highest risk of conversion out of forestry;
- Working with Puget Sound Salmon Recovery Council's Funding Subcommittee, and evaluating opportunities to better use existing tools such as the Conservation Futures Tax in Snohomish County, Forest Resilience Bonds and Legacy Project approaches.

Assess and Communicate Return on Investment and Multiple Benefits

In order to draw in new partners and funders, salmon recovery must communicate the multiple benefits of salmon recovery so that actors who have traditionally not been

involved in salmon recovery may be mobilized by more explicit connection to their existing funding priorities. This includes:

- Using analysis incorporated in this plan, and incorporating additional assessment as needed, to ensure that root causes of problems for salmon are prioritized in funding decisions;
- Compiling data on project needs and communicating about return on investment and multiple benefits, using WatershedConnect;
- Participating in an economic analysis with US Climate Alliance and RTI International to better understand the job creation and economic impacts of all classifications of salmon recovery and restoration work, which may help to mobilize funders interested in job creation;
- Utilizing tools including the Environmental Health Disparities Map to identify and target activities and programs in more highly impacted communities, which may help to mobilize funders interested in benefiting environmental justice.

Public-Private Partnerships

Salmon recovery funding currently comes primarily from state, federal, Tribal and other mainly public sector sources; there is room for deeper engagement with the private sector including corporations and foundations. Our strategy aims to bring in new corporate sector partners and additional private sector funders by:

- Compiling data on project needs and communicating about return on investment and multiple benefits, using WatershedConnect—including collaborative analysis with partners including Trout Unlimited and Blue Forest Conservation to evaluate water quality and human health benefits of recovery projects;
- Developing landscape-scale restoration projects using innovative financing tools such as the Forest Resilience Bond. Opportunities like this can bring together collaborative projects with multiple landowners, create benefits for salmon and other wildlife and forest resilience and support good local jobs—using financing tools that get more critical work done faster with economies of scale;
- Creating structures where private sector landowners can make a difference on their own lands, such as seeking to create corporate campus greening activities, and implementing public-private urban green infrastructure projects in WRIA 7.

Specific private sector actors engaged in voluntary carbon sequestration and natural climate solutions projects should be explored, seeking to make connections to forest protection and avoided conversion. Opportunities to evaluate include but are not limited to:

- Bezos Earth Fund, launched in February 2020 by Amazon founder Jeff Bezos. The fund is designed to combat the effects of climate change by issuing grants to scientists, activists and other organizations in their efforts to "preserve and protect the natural world."
- 1 Trillion Trees Reforestation Pledge. Inventory reforestation needs, including areas of greatest carbon sequestration potential, agency silvicultural requirements and other locations as identified by WatershedConnect.

DNR will work with Tribal partners and watershed stakeholders to develop a full funding strategy for salmon recovery work in WRIA 7. Agency research indicates the most salient opportunities for the needs identified in this plan for WRIA 7 include the following:

- Developing landscape-scale projects using tools such as Landscape Scale Restoration grants and Forest Resilience Bonds to benefit forest health and salmon habitat. These should be crafted to benefit water quality, wildfire risk reduction, local economic development and more;
- Collaboration with the US Forest Service, Emerald Alliance and others on Innovative Funding for National Forests proposals for financing conservation at scale;
- Exploring innovative programs such as City Forest Credits (for carbon sequestration in urban areas), Reforestation Hubs (repurposing urban waste wood to highest and best use, raising revenue for reforestation activities and creating jobs) and forest carbon sequestration projects on DNR or other forestlands;
- Identifying opportunities to connect public safety, hazard mitigation and resilience funding into multiple benefits projects. This may include FEMA Building Resilient Infrastructure and Communities program, and drawing on investment programs to reduce storm surge and coastal flooding hazards;
- Assessing the need for a new statewide revolving fund to support the goals outlined in this plan, which could be a repository for new funding sources and could incorporate standards that support a triple-bottom-line approach, such as incentives or other tools to support contracting with minority, women and veteran-owned enterprises and high labor standard requirements that value workers' health and safety.

WATERSHED RESILIENCE AT SCALE

DNR is committed to innovation and effectively using the leadership of Commissioner Franz and the resources of the agency to support salmon recovery at scale in our pilot watershed, as well as to taking these approaches and lessons to scale in other watersheds. The key actions identified in this plan are based on research and conversations specific to WRIA 7 and each watershed will have its own particular needs and opportunities. However, there are numerous lessons and approaches that can be applied in other watersheds to expand the impacts of this watershed-focused approach.

- **Beavers and Hydrology—Landscape Assessment and Awareness-Raising**
  - **What this is**: DNR will establish efforts and programs to explore which lands are suitable for beaver introduction to support salmon and water storage. This includes mapping DNR lands and providing education to small forest landowners around voluntary reintroduction.
  - **Why this matters:** Beavers are seen as critical for creating cool water refugia, slowing water flow and improving basin hydrology all for the benefit of salmon. Providing additional research and tools including outreach to small forest landowners will help identify the most appropriate locations where beavers may create benefits without impacting human infrastructure.
  - **Opportunity for other Watersheds:** Current efforts in the Snohomish Watershed rely on a mapping tool called Beaver Intrinsic Potential that was developed in partnership with the Tulalip Tribes and is specific to this region. In other watersheds, similar activities will benefit from the existence or creation of similar tools to inform site suitability.
- **Education and Equity**
  - **What this is:** New efforts to use DNR lands to provide outdoor education opportunities to K-12 children, to inspire and raise awareness about the natural environment and the needs of salmon to contribute to recovery. This should have an equity focus, prioritizing girls and youth of color, and providing career-connected learning opportunities.
  - **Why this matters:** DNR can deliver education programs that will support environmental awareness and salmon recovery. With an equity lens, this helps address diversity, equity and inclusion (DEI) and workforce outcomes—so that we can inspire the next generation of natural resource managers, and increase diversity and inclusion in this sector.
  - **Opportunity for other Watersheds:** This approach will be valuable in all watersheds where DNR has lands that can be made available for educational activities and connections to local schools or nonprofits that wish to partner. Outdoor education delivered in ways that support awareness of salmon recovery and resilience needs will support implementation of similar action plans in other areas.
- **Good Neighbor Authority**
  - **What this is:** Use Good Neighbor Authority to raise revenue that can be invested in support of salmon recovery on USFS forestlands, which for WRIA 7 provides opportunities in Mount Baker-Snoqualmie National Forest.
  - **Why this matters:** The USFS has identified $18M worth of salmon habitat projects in this watershed, and the GNA opportunity is one unique to DNR where we can generate new restoration resources which are greatly needed especially in the headwaters.
  - **Opportunity for other Watersheds:** Other watersheds where there is significant acreage of federal forestlands (especially non-wilderness areas) will provide ample opportunity to utilize this program for forest health and salmon recovery.
- **Kelp and Eelgrass Protection Zone**
  - **What this is:** A Kelp and Eelgrass Protection Zone that can be established through a Commissioner's Withdrawal order. This zone would provide a focal

point for kelp and eelgrass protection, research and learning and restoration opportunities.

- **Why this matters:** Kelp, eelgrass and other submerged aquatic vegetation (SAV) are critical for salmon and forage fish habitat and also sequester carbon.
- **Opportunity for other Watersheds:** This approach will be valuable in watersheds in Puget Sound or on the coast where kelp and eelgrass are present. Additional protection zones should be explored strategically after assessing the prevalence of and threats to kelp and eelgrass broadly across the state.

Large Woody Debris Partnership

- **What this is:** Proposed new policy of selling large trees with root wads to Tribes, Fish Enhancement Groups or other partners for in-stream restoration projects.
- **Why this matters:** Having access to a reliable supply of large trees and root wads is important for creating large woody debris installations. DNR has access to such trees in close proximity to many streams where projects are needed. Creating a new agency program will increase reliable access and support habitat complexity for salmon.
- **Opportunity for other Watersheds:** If pilot efforts are successful in the Snohomish Watershed, DNR should work with partners in other watersheds to consider expansion. This will work best where there is a presence of large trees suitable for large woody debris projects in reasonably close geographic proximity to streams in need of more habitat complexity.

Multiple Benefits Communication—WatershedConnect and Restoration Project Dashboard

- **What this is:** WatershedConnect mapping tool and ESRI dashboard with Project Comparison Tool to visually communicate and compare restoration projects.
- **Why this matters:** Generating new funding for restoration projects is critical. These tools seek to help by assessing and communicating multiple benefits—so we can see which projects deliver high return on investment, and connect with strategic priorities of new stakeholders to bring on new partners and funders.
- **Opportunity for other Watersheds:** These mapping tools have been built so they can easily be expanded statewide. Partnerships in additional watersheds where partners are willing to collaborate and share project data would support expansion of these funding strategies.

Water Quality Screening Study

- **What this is:** Assess water quality inputs in a key urban area (roads and bridges, industrial facilities, Combined Sewer Overflow outfalls). Determine what the primary sources of contamination are, and what interventions to reduce this could look like. Work with salmon recovery partners to link interventions with mapped incidents of coho pre-spawn mortality.
- **Why this matters:** We need location-specific information to inform urban water quality interventions with the highest return on investment. This will describe the highest quality protection areas within urban basins.
- **Opportunity for other Watersheds:** This approach will be valuable in watersheds with large urban areas where contamination is impacting local water quality and is harming fish and other wildlife. Efforts should be made to connect with local communities to assess and seek to improve human health outcomes as well.

Watershed Steward

- **What this is:** Agency decision to hire a new staff member to work in the field throughout WRIA 7 to drive forward plan implementation.
- **Why this matters:** We need sufficient capacity to implement this action plan, stay connected to watershed stakeholders to take actions and monitor progress. A role like this takes a tree-to-sea approach to salmon, breaking down internal silos.
- **Opportunity for other Watersheds:** Hiring a similar position in additional watersheds will ensure there is capacity on the ground to work with partners and provide project management. This should be replicated in any additional focus watersheds.

MONITORING PROGRESS

In order to adequately assess the impacts of the actions outlined in this plan and to provide for adaptive management, DNR proposes to create a robust, state-of-the-art monitoring program. This can be implemented in partnership with entities leading innovative salmon recovery work in the watershed, such as the Tulalip Tribes, as well as educational institutions such as the University of Washington and the ORCA School in Everett. It should also coordinate with all other relevant monitoring programs and indicators, such as the Puget Sound Partnership's Vital Signs and Common Indicators.

This monitoring system for the Snohomish Watershed should track progress regarding each outcome in this plan, assessing the timing and level of success of implementation of strategies and the corresponding delivery of outcomes.

While all impacts will not be detectable within the 10-year horizon of this plan, trends should be detectable and can guide future work.

A monitoring system of this magnitude will require investments; DNR will fully scope the need and seek adequate funding. Models and lessons from the Olympic Experimental State Forest will be assessed.

DNR will create a monitoring dashboard to track implementation of all outcomes. The dashboard will provide regular data updates to highlight successes and keep actions on track. A full action plan assessment should be conducted in 2025 to assess the success of the near-term actions and provide recommendations for adaptive management for the remainder of the plan.

Sunrise over the Qwuloolt landscape, site of a significant restoration effort led by the Tulalip Tribes in the Snohomish Watershed. *Photo courtesy of Snohomish Basin Salmon Recovery Forum.*

NEXT STEPS

This action plan articulates the intentions of this agency to redouble our efforts to contribute to salmon recovery and watershed resilience, and presents a 10-year action plan for expanding and creating new programs and partnerships in WRIA 7.

This plan was developed in collaboration with many salmon recovery partners to identify ways in which our agency can best add value to the ongoing restoration and resilience work in this watershed. Our intention is to implement the plan in the same way—working in close partnership and collaboration. Many of the biggest opportunities captured in this plan are ones which must be implemented in partnership in order to be successful.

An immediate next step will be further outreach to stakeholders who have given input into the formulation of our plan, to identify specific partnerships and secure more formal agreement about implementing the near-term actions. For the longer-term strategies, work must also begin now in order to set the stage for change, especially where new partnerships, significant resources and legislative or other policy change will be needed for success.

Implementation of the plan will be reviewed and status updates completed on a biennial basis to allow for adaptive management.

We will also identify further watersheds where this strategy can be applied. While the particular actions and outcomes articulated in this plan are specific to WRIA 7, the principles and approach used to develop the plan can be implemented in other watersheds. We hope to take what we learn and expand this model in due course.

We launched this plan in 2022, in the midst of a persistent global pandemic, at a period when state resources are constrained and our communities face many challenges. Nevertheless, we continued to deliver programs core to salmon recovery, while crafting this plan that will inform our actions and impact over the coming decade.

By reaffirming our commitments to collaboration, innovation and targeted use of resources to achieve multiple benefits, this plan seeks to approach the challenge of salmon recovery in ways that respond to the challenges of these times.

Salmon recovery and watershed resilience cannot wait. DNR is ready to step up and increase our contributions so that we can help turn the tide and see these species return in abundance to our landscapes and thrive across our watersheds, from tree to sea. Our targeted work in the Snohomish Watershed begins this effort. We hope you will join us.

ACKNOWLEDGMENTS

The report benefited from leadership from Commissioner Hilary Franz and support from Washington State Department of Natural Resources staff, including Senior Policy Advisor and Project Manager Stephanie Celt, alongside DNR staff Marissa Aho, Laurie Benson, Laurie Bergvall, Stephen Bernath, Glenda Breiler, Angus Brodie, Tom Bugert, Cynthia Catton, Dennis Clark, Jessica Czajkowski, Chris Danilson, Allen Estep, Csenka Favorini-Csorba, George Geissler, Casey Hanell, Katrina Lassiter, Doug Kennedy, Trevor McConchie, Al McGuire, Alex Nagygyor, Marc Ratcliff, Alex Smith, Katy Taylor, Ben Thompson, Tyson Thornburg, Jen Watkins and Lenny Young.

Many Snohomish Watershed Salmon Recovery Forum members and partners provided critical input and guidance throughout the development of this plan, including: Matthew Baerwalde, Elisa Dawson, Gretchen Glaub, Susan O'Neil, Elissa Ostergaard, Kathleen Pozarycki, Morgan Ruff, Mike Rustay and Cory Zyla. A full list of partner organizations can be found on page 21.

All maps and photos from DNR unless otherwise indicated.

GLOSSARY

Acidification Nearshore Monitoring Network (ANeMoNe): Network of monitoring infrastructure focused on investigating ocean acidification issues in the shallow marine areas where most human activity occurs. DNR Aquatic Assessment and Monitoring Team works with partners to monitor water quality, shellfish spat settlement, eelgrass distribution, density and morphology, bird use and experiments to develop a better understanding of the impacts ocean acidity has on our marine resources.

Environmental Justice (EJ): The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, rules and policies. Environmental justice includes addressing disproportionate environmental and health impacts in all laws, rules and policies with environmental impacts by prioritizing vulnerable populations and overburdened communities, the equitable distribution of resources and benefits and eliminating harm. Defined in statute (RCW 70A.02.010).

Good Neighbor Authority (GNA): GNA is a tool stemming from the 2014 Farm Bill. It allows DNR to hire and collaborate with local companies and interests to perform a variety of watershed, rangeland and forest restoration work on USDA Forest Service and Bureau of Land Management land, leveraging resources and providing additional capacity to federal partners.

Green Stormwater Infrastructure (GSI): The range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse or urban forestry and landscaping to store, infiltrate or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters.

Landscape-scale restoration: A holistic approach to landscape management, aiming to reconcile the competing objectives of nature conservation and the economic activities across a given landscape.

Light Detection and Ranging (LiDAR): A remote sensing method used to examine the surface of the earth. LiDAR can provide information on habitat location, quality and land use change over time.

Limiting factor: The environmental factor that is of predominant importance in restricting the size of a population.

Natural Area Preserves (NAP): Natural Area Preserves protect the best remaining examples of many ecological communities including rare plant and animal habitat. The DNR Natural Heritage Program identifies the highest quality, most ecologically important sites for protection as natural area preserves.

Natural Resources Conservation Areas (NRCAs): NRCAs protect outstanding examples of native ecosystems, habitat for endangered, threatened and sensitive plants and animals, and scenic landscapes. Environmental education and low-impact public use are appropriate on conservation areas where they do not impair the protected features.

Resilience: The capacity of individuals, communities, institutions, businesses and systems within an area to survive, adapt and thrive no matter what kinds of chronic stresses and acute shocks they experience.

State Owned Aquatic Lands (SOAL): Aquatic lands are navigable lakes, rivers, streams and marine waters, such as Puget Sound. DNR manages 2.6 million acres of state-owned aquatics lands as directed by statute (RCW 79.105.030).

Tribal Forest Protection Act (TFPA): This 2004 Act authorizes the Secretary of the Interior or the Secretary of Agriculture to enter into an agreement or contract with Tribes to carry out tribally-proposed stewardship contracting or other projects on Forest Service or Bureau of Land Management land boarding or adjacent to Indian trust land to protect the Indian trust resources from fire, disease, or other threat coming off of that Forest Service of Bureau of Land Management land.

Water Resource Inventory Area (WRIA): Designated regions for water policy and planning as defined in statute (173-500 WAC). There are 62 WRIAs in Washington State.

WATERSHEDCONNECT SUMMARY

A Multiple Benefits Approach to Salmon Recovery

To create more resilient landscapes that accelerate salmon recovery, we must enhance the number of restoration and protection projects being implemented on the ground and attract new audiences to support these projects.

WatershedConnect is an interactive mapping application that supports salmon recovery and habitat restoration by DNR and our partners. This tool also helps the public understand and visualize the multiple benefits of recovery projects, including economic impacts and environmental justice. WatershedConnect will help motivate new partners and target new funding by improving understanding of project-level needs in individual watersheds. This multiple benefits approach will help connect to and mobilize new partners.

The initial version of WatershedConnect focuses on DNR's first focus watershed, WRIA 7. It aggregates project data from multiple watershed partners.

Using clear visual tools and plain language, users can learn about ways that salmon recovery projects support salmon and other co-benefits. In this time when funding is particularly constrained, it is especially valuable to be able to identify those projects that get the most "bang for your buck." WatershedConnect will help us to do this.

Including cross-cutting issues and communicating about co-benefits in new ways, WatershedConnect will help us to grow momentum and speed the delivery of projects that support salmon recovery, economic and health benefits and climate resilience.

Projects are grouped into three high-level categories:

- Restoration
- Protection (acquisition and easements)
- Connectivity (fish passage barriers, culverts)

Project data

DNR used project data from multiple sources to create a WRIA 7 project database which is used to populate the map. We have included project data from the following sources: DNR programs; Snohomish Watershed Salmon Recovery Forum 4-Year Work Plan; Snoqualmie Basin 10-Year Work Plan; US Forest Service; Puget Sound Partnership Near-Term Actions.

As of 2021, the map includes more than 250 projects with costs of approximately $275M.

Multiple benefits areas explored

- Salmon benefit
- Job creation and economic output
- Human health and environmental justice, based on location in overburdened communities (using Washington State Department of Health's Environmental Health Disparities map)

Intended audience

- DNR staff—What salmon projects are located on or near DNR lands to foster collaboration and partnership with other agencies, businesses, local governments
- Legislature/decision makers—The scope of need for capital work/funding and locations
- Funders (current and potential)—List of priority projects
- Partners (current or potential)—What projects are located on or adjacent to their lands and where opportunities for cross-boundary partnerships exist
- Existing salmon recovery community—To infuse new ideas about multiple benefits of salmon recovery

Next Steps

DNR launched WatershedConnect version 1.0 in early 2022. The map will be maintained and updated over time.

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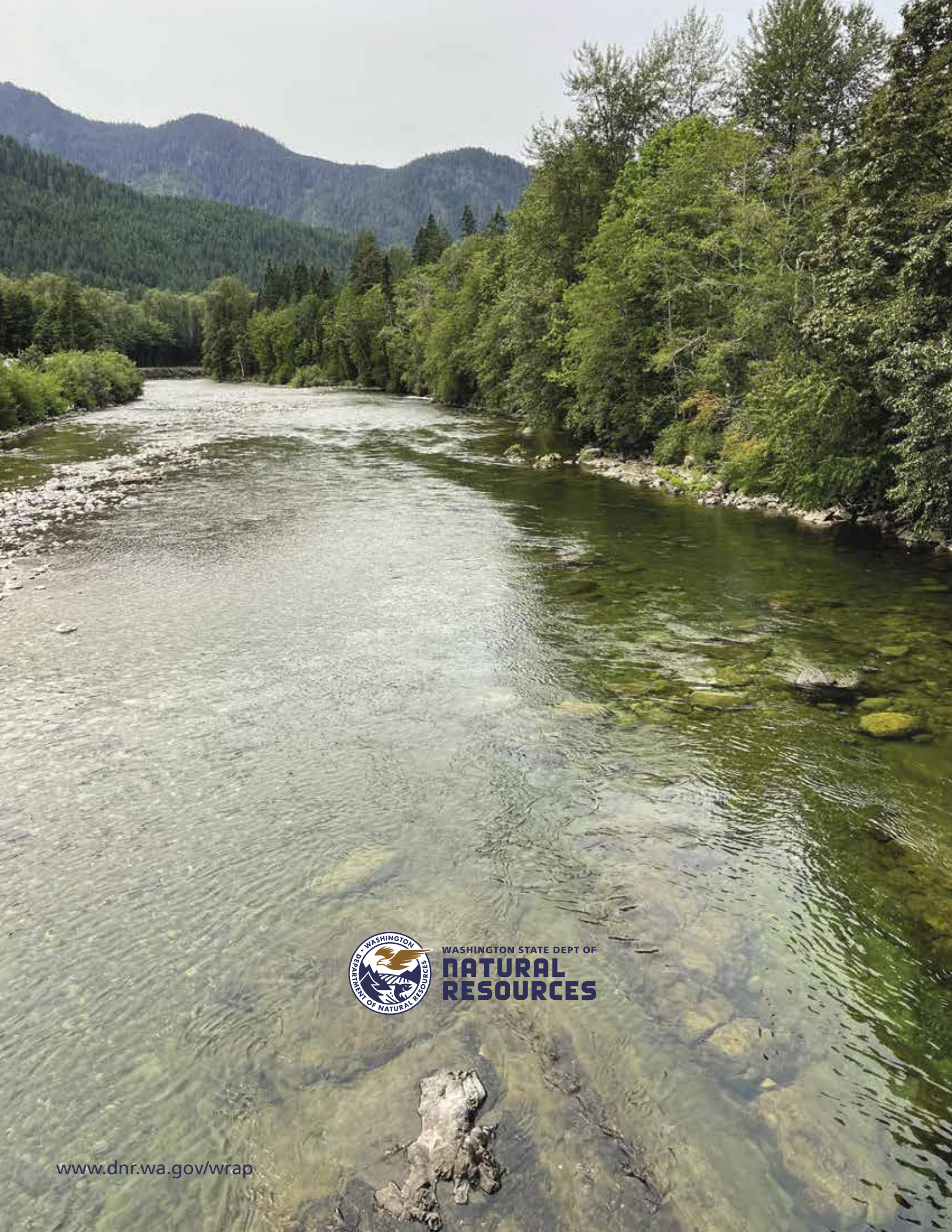

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