Final Regulatory Analyses:

Including the:

- Final Cost-Benefit Analysis
- Least-Burdensome Alternative Analysis
- Administrative Procedure Act Determinations
- Regulatory Fairness Act Compliance

Chapter 173-201A WAC

Water Quality Standards for Surface Waters of the State of Washington

By

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For the

Water Quality Program

Washington State Department of Ecology

Olympia, Washington

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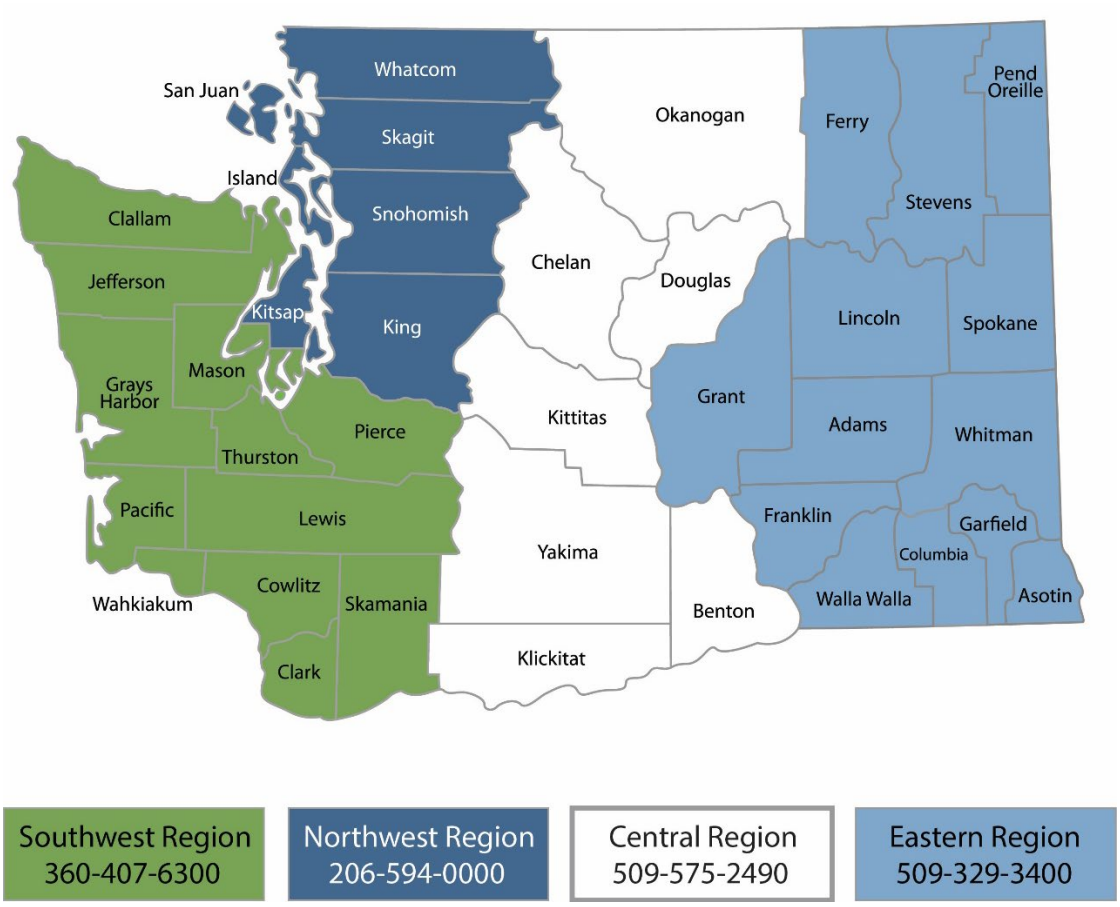
Department of Ecology's Regional Offices

Map of Counties Served



Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	P.O. Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	P.O. Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	P.O. Box 46700 Olympia, WA 98504	360-407-6000

Final Regulatory Analyses

Including the:

Final Cost-Benefit Analysis

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Chapter 173-210A WAC, Water Quality Standards for Surface Waters of the State of Washington

Water Quality Program
Washington State Department of Ecology

Olympia, WA

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DEPARTMENT OF
ECOLOGY
State of Washington

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Abbreviations and Acronyms

APA	Administrative Procedure Act
BMP	Best Management Practice
CBA	Cost-Benefit Analysis
CFR	Code of Federal Regulations
CWA	Clean Water Act
EPA	Environmental Protection Agency
LBA	Least-Burdensome Alternative Analysis
LSR	Late Successional Reserve
ORW	Outstanding Resource Waters
RCW	Revised Code of Washington
RFA	Regulatory Fairness Act
SWQS	Surface Water Quality Standards
WAC	Washington Administrative Code
WDNR	Washington Department of Natural Resources
WRIA	Water Resource Inventory Area

Executive Summary

This report presents the determinations made by the Washington State Department of Ecology as required under Chapters 34.05 RCW and 19.85 RCW, for amendments to the Water Quality Standards for Surface Water of the State of Washington rule (Chapter 173-201A WAC; the "rule"). This includes the:

- Final Cost-Benefit Analysis (CBA)
- Least-Burdensome Alternative Analysis (LBA)
- Administrative Procedure Act Determinations
- Regulatory Fairness Act Compliance

The Washington Administrative Procedure Act (APA; RCW 34.05.328(1)(d)) requires Ecology to evaluate significant legislative rules to "determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the law being implemented." Chapters 1 – 5 of this document describe that determination.

The APA also requires Ecology to "determine, after considering alternative versions of the rule…that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives" of the governing and authorizing statutes. Chapter 6 of this document describes that determination.

The APA also requires Ecology to make several other determinations (RCW 34.05.328(1)(a) – (c) and (f) – (h)) about the rule, including authorization, need, context, and coordination. Appendix A of this document provides the documentation for these determinations.

The Washington Regulatory Fairness Act (RFA; Chapter 19.85 RCW) requires Ecology to evaluate the relative impact of rules that impose costs on businesses in an industry. It compares the relative compliance costs for small businesses to those of the largest businesses affected. Chapter 7 of this document documents that analysis, when applicable.

The rule amendments

The rule amendments make the following changes:

- Adding the definition of "Outstanding resource waters."
    - "Outstanding resource waters" are high quality waters designated by the state due to their exceptional water quality, ecological or recreational significance, unique habitat, or cold-water refuge. Outstanding resource waters are given the highest level of protection under the state Antidegradation policy.
- Designating four waterbodies as outstanding resource waters.
    - Tier III(A) outstanding resource waters:
        - Cascade River and tributaries within the designation boundary (Upstream from the west boundary of Mount Baker Snoqualmie National Forest).

        - Green River and tributaries within the designation boundary (Upstream from the boundary of the Gifford Pinchot National Forest).[2]
        - Napeequa River and tributaries within the designation boundary (Upstream from the boundary of the Okanogan-Wenatchee National Forest and private land near river mile 1).
    - Tier III(B) outstanding resource waters:
        - Soap Lake

- Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.
    - In WAC 173-201A-330, the amendments delete "recognized" and "in the geographic vicinity of the water" from the sentence "The review will include a public process and consultation with recognized tribes in the geographic vicinity of the water" to reflect a more accurate description of Ecology's consultation policy. Ecology does not limit our invitation for consultation to recognized tribes, nor just to those in the vicinity of the water.
- Creating a new section listing waterbodies designated as ORWs.
    - Adding WAC 173-201A-332 Table 332- Outstanding Resource Water designations by water resource inventory area (WRIA). Table 332 lists waterbodies designated as Tier III(A) or Tier III(B) outstanding resource waters.
    - Adding notes for the Soap Lake ORW designation in the table:
        - Soap Lake measurable change is defined as a decrease in salinity as measured by conductivity of 639 microsiemens per centimeter (µS/cm) or greater.
        - In addition, human actions must not cause lake conductivity to decrease below 19,843 µS/cm as calculated as an annual average more than once in 10 years.
        - Annual average conductivity is calculated as the arithmetic average of seven or more samples collected April through October. Sampling should be distributed throughout this period.
- Making two minor changes in Table 602 to note the ORW designations.
    - WAC 173-201A-602: Added a note to Cascade River and Boulder Creek as reference that this waterbody or portions thereof has an ORW designation in Table 602: WRIA 4 - Upper Skagit.
    - WAC 173-201A-602: Added a note to Green River as reference that this waterbody or portions thereof has an ORW designation in Table 602: WRIA 26 – Cowlitz.

[2] Upstream from the west section line of Section 17, Township 10 North, Range 06 East.

Reasons for the rule amendments

Ecology received nominations to designate four water bodies as ORWs. Ecology collected information from local tribes and stakeholders, the U.S. Forest Service, and the National Parks Service about priorities and implementation strategies for managing and protecting the high-water quality and values for each nominated waterbody.

Ecology also met with local officials, including the Soap Lake City Council, the Skagit County Commissioners, the Skamania County Commissioners, Grant County Commissioners, and the Chelan County Natural Resources Director, to discuss implementation questions and concerns for this rulemaking. Based on the nominations, waterbody attributes, and stakeholder and local government outreach, Ecology decided to proceed with the rule amendments to designate these waterbodies as ORWs.

Costs and benefits of the rule amendments

We did not identify immediate or likely future impacts associated with the rule amendments, as implementation of baseline laws and rules is likely to be protective of the ORW-designated waters under likely current and future circumstances. We base this determination on current activities identified for each waterbody and surrounding lands, in conjunction with existing permitting requirements, federal and state laws and rules, and local regulations. We also identified potential development scenarios and broader trends in activities that could occur in the ORW areas.

The rule amendments could affect activities in unlikely or unforeseen circumstances if baseline requirements are not sufficiently protective of the outstanding qualities of the ORW-designated waterbodies. Such circumstances could include:

- Activities that affect inflow or water removal from Soap Lake in a way that affects salinity and is not prevented by state and local baseline regulations and permit requirements.
- Activities that create runoff to ORW-designated rivers, of substances not covered by baseline water quality or land use regulations and permit requirements, where runoff is not mitigated by actions otherwise required in permit.
- Changes to baseline requirements at the federal level, affecting management of federal lands and associated environmental protections.

Likely costs

In the exceptional circumstances listed above, the rule amendments could result in a permittee being required to do additional monitoring for permitted activities.

They could also result in:

- An Ecology investigation of degradation sources under the baseline requirements and procedures to identify potential human causes.
- Technical assistance in compliance.

Based on our understanding of baseline regulations and activities, and the exceptional nature in which the amended rule would be more restrictive than the baseline, we could not confidently forecast likely and specific circumstances and quantify these costs.

Likely benefits

As discussed above, the rule amendments are unlikely to affect current and foreseeable activities in the ORW-designated areas, as baseline requirements are likely to be protective of ORW attributes in current and likely future circumstances. In the exceptional circumstances, with possible additional compliance requirements, discussed above, the rule amendments would generate benefits of additional protection of environmental values associated with ORWs, including incremental values of:

- Relatively pristine or exceptional quality waters and quality of withdrawals.
- Recreational values.
- Fish and wildlife values, including for endangered or threatened species and unique organisms.
- Cultural and use values for tribes.
- Educational and scientific values.

By creating state-controlled protections over and above the baseline for exceptional circumstances, the rule amendments would primarily mitigate risk of changes to baseline requirements that are out of Washington's and Washingtonians' control. These risks include potential future administrative or court decisions that affect the level or scope of federal protections in ORW-designated areas.

Determination

We conclude, based on a reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the rule amendments, as compared to the baseline, that the benefits of the rule amendments are greater than the costs.

Least-burdensome alternative

The authorizing statute for this rule is Chapter 90.48 RCW, Water Pollution Control. Its goals and objectives include the state of Washington's policy of maintaining the highest possible standards to ensure the purity of all waters of the state consistent with public health, public enjoyment, the protection of wildlife, and the industrial development of the state. This requires the use of all known available and reasonable methods to prevent and control the pollution of the waters of the state of Washington.

RCW 90.48.035, Rule-making authority, specifically authorizes Ecology to promulgate, amend, or rescind rules and regulations as deemed necessary to maintain the highest possible standards of all waters in the state. Its goals and objectives include but are not limited to rules relating to standards of quality of waters of the state and regulating substances discharged into them.

We considered the following alternative rule content and did not include it in the rule amendments for the reasons discussed in the subsection below.

- Not designating the Cascade River as an ORW.

After considering alternatives to the rule's contents, within the context of the goals and objectives of the authorizing statute, we determined that the rule represents the least-burdensome alternative of possible rule contents meeting the goals and objectives.

Regulatory Fairness Act compliance

The Regulatory Fairness Act (RFA; RCW 19.85.070) requires Ecology to perform a set of analyses and make certain determinations regarding the rule amendments. We assessed the compliance costs of the rule amendments (see Chapter 3) and did not identify any necessary changes in compliance behavior by any identified business. We determined that Ecology is exempt from performing additional analyses under RCW 19.85.025(4), which states, "This chapter does not apply to the adoption of a rule if an agency is able to demonstrate that the proposed rule does not affect small businesses." Similarly, the rule amendments do not meet the criteria for the requirement to prepare a Small Business Economic Impact Statement under RCW 19.85.030(1)(a), which states, "In the adoption of a rule under chapter 34.05 RCW, an agency shall prepare a small business economic impact statement: (i) If the proposed rule will impose more than minor costs on businesses in an industry."

We examined the set of landowners around the ORW-designated waterbodies, including nine business locations.[3, 4] We also identified a special permit holder for annual hydroplane races on Soap Lake.[5] As these businesses have not been identified as affecting current qualities of the ORWs, we do not expect their activities to be impacted by the rule amendments.[6] We expect any likely future business expansion or development to be regulated by baseline laws and rules, and similarly not incur additional compliance costs under the rule amendments. The amendments would protect the exceptional qualities of the ORWs largely in cases of unexpected developments or changes to the regulatory baseline.

[3] Grant County, 2023. TerraScan Mapsifter. https://grantwa-mapsifter.publicaccessnow.com/defaultHTML5.aspx
[4] RFA requirements do not apply to government entities or private parties.
[5] WA Department of Ecology, 2023. Proposed Outstanding Resource Waters Designations for Soap Lake and Portions of the Cascade, Napeequa, and Green Rivers. Technical Support Document. July 2023.
[6] We note that the WA Department of Natural Resources cannot prohibit public trust activities (including boating) as the authorizing authority for access to Soap Lake, but can place conditions on the activity (e.g., placement of buoys).

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Chapter 1: Background and Introduction

1.1 Introduction

This report presents the determinations made by the Washington State Department of Ecology as required under Chapters 34.05 RCW and 19.85 RCW, for amendments to the Water Quality Standards for Surface Water of the State of Washington rule (Chapter 173-201A WAC; the "rule"). This includes the:

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1.1.1 Background

On April 2, 2021, the Soap Lake Conservancy and the Confederated Tribes of the Colville Reservation nominated Soap Lake as a Tier III(B) outstanding resource water (ORW). On June 24, 2021, several organizations, including the Pew Charitable Trusts, American Rivers, Cascade Forest Conservancy, Wild Salmon Center, American Whitewater, Washington Wild, and Trout Unlimited nominated portions of the Cascade River, Napeequa River, Green River, and their tributaries, as Tier III(A) ORWs. This is the first time that Ecology has received nominations for ORW designations.

ORWs are high-quality waters designated by the state due to their exceptional water quality, ecological or recreational significance, unique habitat, or cold-water refuge. ORWs can be

designated as a Tier III(A) or Tier III(B) water under WAC 173-201A-330. Tier III(A) prohibits any and all future degradation, and Tier III(B) allows only de minimis (below measurable amounts) under certain conditions.

To be eligible for consideration as an ORW in Washington, a waterbody must meet one or more of the following eligibility criteria listed under WAC 173-201A-330(1):

- Relatively pristine or possessing exceptional water quality and in a protected area such as a state or federal park, monument, preserve, wilderness area, or wild and scenic river designation.
- Unique aquatic habitat types that are not considered high water quality by conventional standards, such as dissolved oxygen, temperature, or sediment, but are unique and regionally rare.
- High water quality and regionally unique recreational value.
- Exceptional statewide ecological significance.
- Cold water thermal refuges critical to the protection of aquatic life.

The purpose of these rule amendments is to designate these ORWs under Chapter 173-201A WAC, Water Quality Standards for Surface Waters of the State of Washington (Standards).

The rule amendments designate the following waterbodies as Tier III(A) ORW**:**

- **Cascade River and tributaries (upper watershed; Skagit County):** The Cascade River is entirely located within Skagit county. It flows through lands historically inhabited by the Upper Skagit and Sauk-Suiattle Tribes. The river is a tributary of the Skagit River and merges with it at the town of Marblemount. The designation boundary is within federal land only, with the exception of one 21-acre private parcel that is within the Mount Baker-Snoqualmie National Forest.

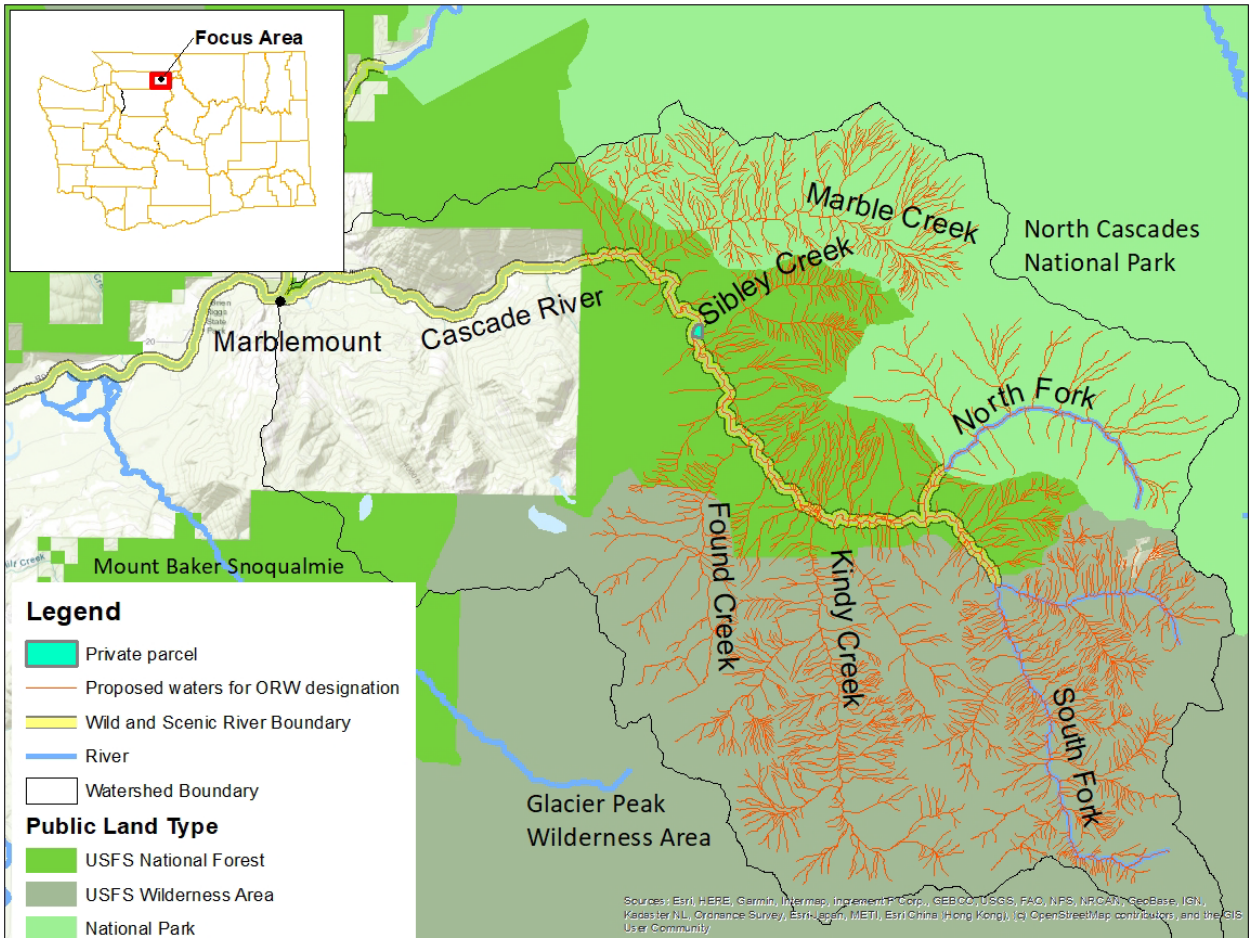

Figure 1. Outstanding resource water designation for the Cascade River and tributaries.

The Cascade River meets the following eligibility criteria as an ORW in WAC 173-201A-330(1):

- The water is in a relatively pristine condition (largely absent human sources of degradation) or possesses exceptional water quality, and also occurs in federal and state parks, monuments, preserves, wildlife refuges, wilderness areas, marine sanctuaries, estuarine research reserves, or wild and scenic rivers.
- The water has both high water quality and regionally unique recreational value.
- The water is of exceptional statewide ecological significance.

- **Green River and tributaries (upper watershed, Skamania County):** The Green River is part of the Cowlitz River basin and flows through the original homelands of the Confederated Tribes and Bands of the Yakama Nation and the Cowlitz Indian Tribe. The river originates near Spirit Lake in the Mount St. Helens National Volcanic Monument, within Skamania County. From there, it flows westward for about 37 miles, passing through the Gifford Pinchot National Forest and privately-owned timberlands in Lewis and Cowlitz counties. Eventually, it joins the North Fork Toutle River, which drains to the Cowlitz River. The designation boundary is within federal land only.

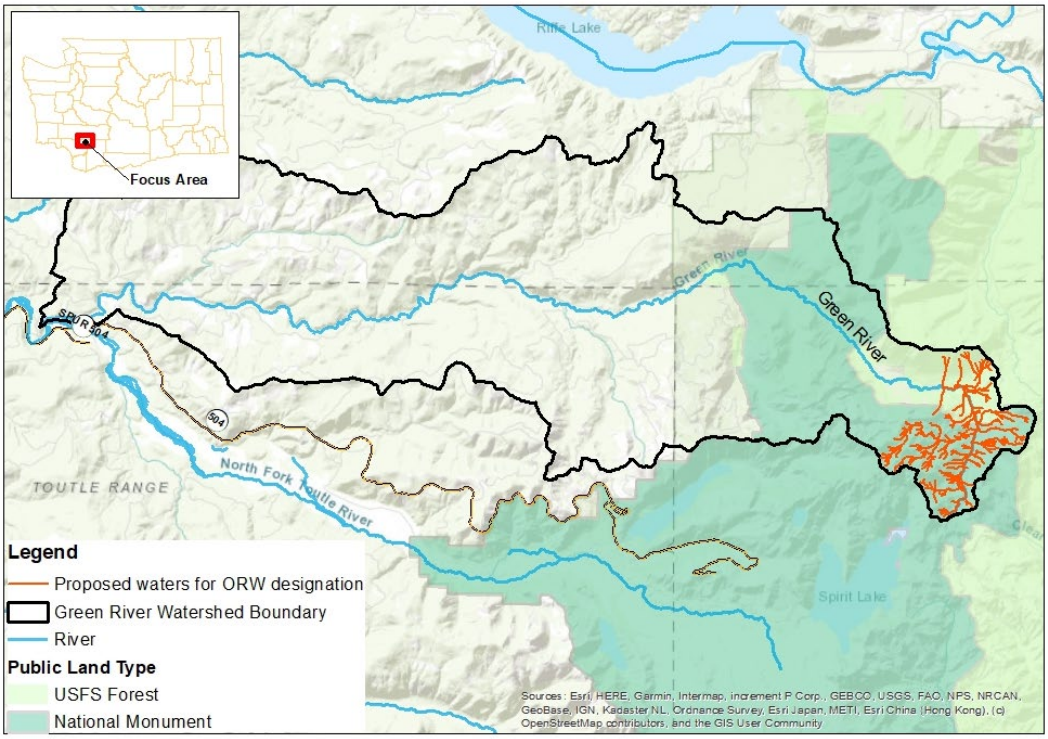

Figure 2. Green River watershed and outstanding resource water designation.

The Green River meets the following eligibility criteria as an ORW in WAC 173-201A-330(1):

- The water is in a relatively pristine condition (largely absent human sources of degradation) or possesses exceptional water quality, and also occurs in federal and state parks, monuments, preserves, wildlife refuges, wilderness areas, marine sanctuaries, estuarine research reserves, or wild and scenic rivers.
- The water has both high water quality and regionally unique recreational value.
- The water is of exceptional statewide ecological significance.

- **Napeequa River and tributaries (Chelan County):** The Napeequa River runs for 16 miles from Butterfly Glacier in the Glacier Peak Wilderness, joining the White River that eventually flows into Lake Wenatchee. The river flows through a narrow, steep valley within the Cascade Range, with the White Mountains to the west and the Chiwawa Range to the east. The river was named after a Salishan word that means “white water place,” possibly because of its silt-laden appearance resulting from glacial melt. The designation boundary is within federal land only.

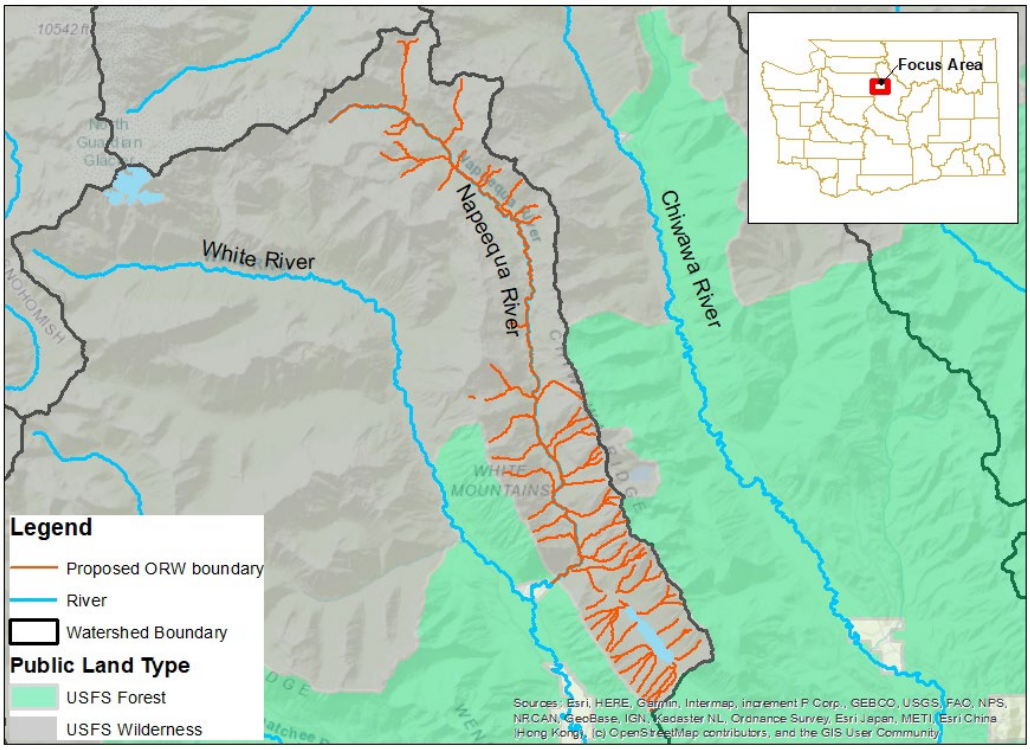

Figure 3. Waters of the Napeequa River watershed for outstanding resource water designation.

The Napeequa River meets the following eligibility criteria as an ORW in WAC 173-201A-330(1):

- The water is in a relatively pristine condition (largely absent human sources of degradation) or possesses exceptional water quality, and also occurs in federal and state parks, monuments, preserves, wildlife refuges, wilderness areas, marine sanctuaries, estuarine research reserves, or wild and scenic rivers.
- The water has both high water quality and regionally unique recreational value.
- The water is of exceptional statewide ecological significance.

The rule amendments designate the following waterbody as a Tier III(B) ORW**:**

- **Soap Lake (Grant County):** Soap Lake, in Grant County and Water Resources Inventory Area (WRIA) 42 – Grand Coulee Watershed, is located within the traditional territory of the Moses-Columbia Tribe on land that was not legally ceded through treaty by the Confederated Tribes of the Colville Reservation.[7] The city of Soap Lake, with a population of nearly 1,700, is located at the southern end of the lake. The shoreline beyond the city limits remains mostly undeveloped, with steep bedrock outcroppings on

[7] Confederated Tribes of the Colville Reservation, 2021. https://static1.squarespace.com/static/572d09c54c2f85ddda868946/t/60418e325d59c90d8abe0358/1614908979097/Resolution+Index+03-04-2021.pdf

the east and west banks. The lake is known for its healing properties and was originally call Smokiam.

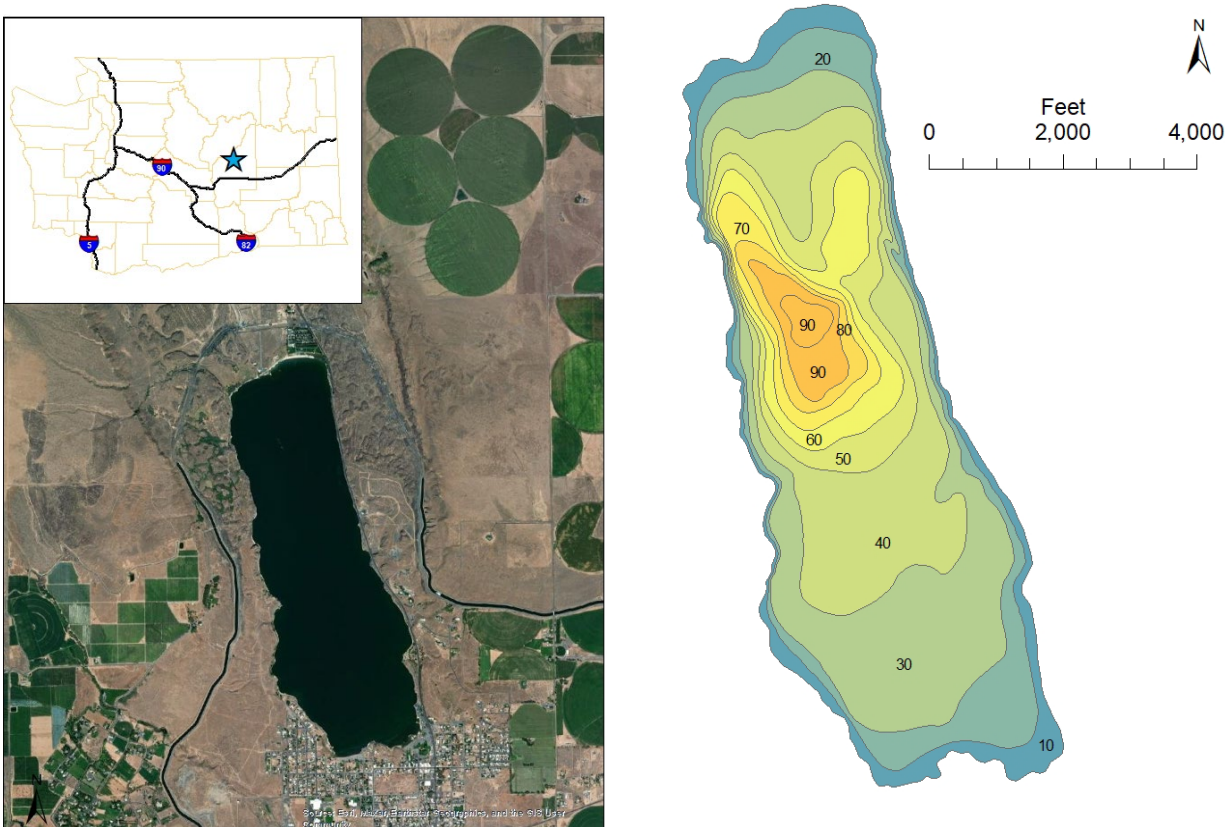

Figure 4. Aerial image (left) and depth profile (right) of Soap Lake.

Soap Lake meets the following eligibility criteria as an ORW in WAC 173-201A-330(1):

- The water has unique aquatic habitat types (for example, peat bogs) that by conventional water quality parameters (such as dissolved oxygen, temperature, or sediment) are not considered high quality, but that are unique and regionally rare examples of their kind.
- The water is of exceptional statewide ecological significance.
- The water has both high water quality and regionally unique recreational value.

1.2 Summary of the rule amendments

The rule amendments make the following changes:

- Adding the definition of "Outstanding resource waters."
  - "Outstanding resource waters" are high quality waters designated by the state due to their exceptional water quality, ecological or recreational significance, unique habitat, or cold-water refuge. Outstanding resource waters are given the highest level of protection under the state Antidegradation policy.

- Designating four waterbodies as outstanding resource waters.
    - Tier III(A) outstanding resource waters:
        - Cascade River and tributaries within the designation boundary (Upstream from the west boundary of Mount Baker Snoqualmie National Forest).
        - Green River and tributaries within the designation boundary (Upstream from the boundary of the Gifford Pinchot National Forest).[8]
        - Napeequa River and tributaries within the designation boundary (Upstream from the boundary of the Okanogan-Wenatchee National Forest and private land near river mile 1).
    - Tier III(B) outstanding resource waters:
        - Soap Lake
- Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.
    - In WAC 173-201A-330, the amendments delete "recognized" and "in the geographic vicinity of the water" from the sentence "The review will include a public process and consultation with recognized tribes in the geographic vicinity of the water" to reflect a more accurate description of Ecology's consultation policy. Ecology does not limit our invitation for consultation to recognized tribes, nor just to those in the vicinity of the water.
- Creating a new section listing waterbodies designated as ORWs.
    - Adding WAC 173-201A-332 Table 332- Outstanding Resource Water designations by water resource inventory area (WRIA). Table 332 lists waterbodies designated as Tier III(A) or Tier III(B) outstanding resource waters.
    - Adding notes for the Soap Lake ORW designation in the table:
        - Soap Lake measurable change is defined as a decrease in salinity as measured by conductivity of 639 microsiemens per centimeter (µS/cm) or greater.
        - In addition, human actions must not cause lake conductivity to decrease below 19,843 µS/cm as calculated as an annual average more than once in 10 years.
        - Annual average conductivity is calculated as the arithmetic average of seven or more samples collected April through October. Sampling should be distributed throughout this period.
- Making two minor changes in Table 602 to note the ORW designations.

[8] Upstream from the west section line of Section 17, Township 10 North, Range 06 East.

- WAC 173-201A-602: Added a note to Cascade River and Boulder Creek as reference that this waterbody or portions thereof has an ORW designation in Table 602: WRIA 4 - Upper Skagit.
- WAC 173-201A-602: Added a note to Green River as reference that this waterbody or portions thereof has an ORW designation in Table 602: WRIA 26 – Cowlitz.

1.3 Reasons for the rule amendments

Ecology received nominations to designate four water bodies as ORWs. Ecology collected information from local tribes and stakeholders, the U.S. Forest Service, and the National Parks Service about priorities and implementation strategies for managing and protecting the high-water quality and values for each nominated waterbody.

Ecology also met with local officials, including the Soap Lake City Council, the Skagit County Commissioners, the Skamania County Commissioners, Grant County Commissioners, and the Chelan County Natural Resources Director, to discuss implementation questions and concerns for this rulemaking. Based on the nominations, waterbody attributes, and stakeholder and local government outreach, Ecology decided to proceed with the rule amendments to designate these waterbodies as ORWs.

1.4 Document organization

The remainder of this document is organized in the following chapters:

- **Baseline and the rule amendments (Chapter 2):** Description and comparison of the baseline (what would occur in the absence of the rule amendments) and the rule requirements.
- **Likely costs of the rule amendments (Chapter 3):** Analysis of the types and sizes of costs we expect impacted entities to incur as a result of the rule amendments.
- **Likely benefits of the rule amendments (Chapter 4):** Analysis of the types and sizes of benefits we expect to result from the rule amendments.
- **Cost-benefit comparison and conclusions (Chapter 5):** Discussion of the complete implications of the CBA.
- **Least-Burdensome Alternative Analysis (Chapter 6):** Analysis of considered alternatives to the contents of the rule amendments.
- **Regulatory Fairness Act Compliance (Chapter 7):** When applicable. Comparison of compliance costs for small and large businesses; mitigation; impact on jobs.
- **APA Determinations (Appendix A):** RCW 34.05.328 determinations not discussed in chapters 5 and 6.

Chapter 2: Baseline and the Rule Amendments

2.1 Introduction

We analyzed the impacts of the rule amendments relative to the existing rule, within the context of all existing requirements (federal and state laws and rules). This context for comparison is called the baseline and reflects the most likely regulatory circumstances that entities would face if Ecology does not adopt the amended rule.

2.2 Baseline

The baseline for our analyses generally consists of existing rules and laws, and their requirements. This is what allows us to make a consistent comparison between the state of the world with and without the rule amendments.

For this rulemaking, the baseline includes:

- The authorizing law: Chapter 90.48 RCW, Water Pollution Control.
- The existing rule: Chapter 173-201A WAC, Water Quality Standards for Surface Waters of the State of Washington.
- Washington Department of Natural Resources (WDNR) law governing management of state-owned aquatic lands: Chapter 79.105 RCW, Aquatic Lands – General.
- Federal Clean Water Act (CWA): 33 U.S.C. §§1251-1387, Federal Water Pollution Control Act.
- 40 CFR 131.20, Water Quality Standards – State review and Revision of water quality standards.
- 40 CFR 131.12, Antidegradation policy and implementation methods.
- US Bureau of Reclamation and Quincy-Columbia Basin Irrigation District requirements related to:
    - The Columbia Basin Project.
    - The Soap Lake Protective Works.
- City of Soap Lake land use ordinances, Shoreline Master Program (SMP), and Comprehensive Plan.
- Grant County land use ordinances and SMP.
- US Forest Service and US National Parks Service laws and designations, including but not limited to:
    - Mt. Baker Snoqualmie National Forest designation as Late Successional Reserve, which is land “reserved for the protection and restoration of late successional

and old growth forest ecosystems and habitat for associated species" including for northern spotted owl.

- Glacier Peak Wilderness Area.
- Okanogan-Wenatchee National Forest.
- Mount St. Helens National Volcanic Monument.
- Gifford Pinchot National Forest.
- Northwest Forest Plan designation of land outside the National Monument as "matrix" where timber harvest and silvicultural activities are expected to occur.[9]
- Land purchases made with Land and Water Conservation funds, appropriated for conservation of recreation.
- Northwest Forest Plan designation as a riparian reserve, to maintain aquatic ecosystem functions and water quality.[10]

- Inventoried Roadless Areas under the federal Roadless Area Conservation Final Rule (2001), which restrict road construction and reconstruction and timber harvest.[11]
- Wild and Scenic River designation or eligibility under the National Wild and Scenic Rivers System.[12]
- Northwest Power and Conservation Council protection from hydroelectric development.[13]
- Shorelines of Statewide Significance.

Various laws and rules also govern management of wastes from human activities, and may include (as directly applicable or through local health department or municipal ordinances):

- WA Department of Health (DOH) requirements for management of on-site septic and wastewater, including vault toilets: Chapter 246-272A WAC.
- County on-site septic system management plans.

2.3 The rule amendments

The rule amendments make the following changes:

- Adding the definition of "Outstanding resource waters."
  - "Outstanding resource waters" are high quality waters designated by the state due to their exceptional water quality, ecological or recreational significance,

[9] https://www.fs.usda.gov/r6/reo/landuse/
[10] Ibid.
[11] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000250.pdf
[12] https://rivers.gov/wsr-act.php
[13] https://www.streamnet.org/home/data-maps/protectedareas/pa-documents/

unique habitat, or cold-water refuge. Outstanding resource waters are given the highest level of protection under the state Antidegradation policy.

- Designating four waterbodies as outstanding resource waters.
    - Tier III(A) outstanding resource waters:
        - Cascade River and tributaries within the designation boundary (Upstream from the west boundary of Mount Baker Snoqualmie National Forest).
        - Green River and tributaries within the designation boundary (Upstream from the boundary of the Gifford Pinchot National Forest).
        - Napeequa River and tributaries within the designation boundary (Upstream from the boundary of the Okanogan-Wenatchee National Forest and private land near river mile 1).
    - Tier III(B) outstanding resource waters:
        - Soap Lake.
- Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.
    - In WAC 173-201A-330, the amendments delete "recognized" and "in the geographic vicinity of the water" from the sentence "The review will include a public process and consultation with recognized tribes in the geographic vicinity of the water" to reflect a more accurate description of Ecology's consultation policy. Ecology does not limit our invitation for consultation to recognized tribes, nor just to those in the vicinity of the water.
- Creating a new section listing waterbodies designated as ORWs.
    - Adding WAC 173-201A-332 Table 332- Outstanding Resource Water designations by water resource inventory area (WRIA). Table 332 lists waterbodies designated as Tier III(A) or Tier III(B) outstanding resource waters.
    - Adding notes for the Soap Lake ORW designation in the table:
        - Soap Lake measurable change is defined as a decrease in salinity as measured by conductivity of 639 microsiemens per centimeter (µS/cm) or greater.
        - In addition, human actions must not cause lake conductivity to decrease below 19,843 µS/cm as calculated as an annual average more than once in 10 years.
        - Annual average conductivity is calculated as the arithmetic average of seven or more samples collected April through October. Sampling should be distributed throughout this period.
- Making two minor changes in Table 602 to note the ORW designations.
    - WAC 173-201A-602: Added a note to Cascade River and Boulder Creek as reference that this waterbody or portions thereof has an ORW designation in Table 602: WRIA 4 - Upper Skagit.

- WAC 173-201A-602: Added a note to Green River as reference that this waterbody or portions thereof has an ORW designation in Table 602: WRIA 26 – Cowlitz.

2.3.1 Adding the definition of "Outstanding resource waters"

Baseline

There is no definition of "Outstanding resource waters" in the baseline rule. There are, however, existing criteria and protections that would apply to waterbodies designated as ORWs, discussed in detail in Section 2.3.2.

Adopted

The amendment defines "Outstanding resource waters" as high-quality waters designated by the state due to their exceptional water quality, ecological or recreational significance, unique habitat, or cold-water refuge. Outstanding resource waters are given the highest level of protection under the state Antidegradation policy.

Expected impact

We do not expect this amendment to result in costs as compared to the baseline. The intent of this definition is to introduce a new term to provide clarity about what an ORW is when the term is used in other sections with amendments. Definitions in and of themselves do not result in costs or benefits outside of where the terms are used in the rule. Where any such impacts exist, they are an underlying part of the analysis of each respective rule amendment; please see below.

2.3.2 Designate four waterbodies as outstanding resource waters.

Baseline

Ecology has not designated any waterbody in the state as an ORW. There are multiple baseline rules that apply to the various land and water use activities in the adopted ORW boundaries:

- Soap Lake:
    - Washington Department of Natural Resources (WDNR) law governing management of state-owned aquatic lands: Chapter 79.105 RCW, Aquatic Lands – General.
    - US Bureau of Reclamation and Quincy-Columbia Basin Irrigation District requirements related to:[14]
        - The Columbia Basin Project.

[14] Transfer of operations and maintenance document from Bureau of Reclamation to QCBID (1976).

        - The Soap Lake Protective Works.
    - City of Soap Lake land use ordinances, Shoreline Master Program (SMP), and Comprehensive Plan.
    - Grant County land use ordinances and SMP.
- Cascade River:[15]
    - US Forest Service and US National Parks Service laws and designations, including but not limited to:
        - Mt. Baker Snoqualmie National Forest designation as Late Successional Reserve, which is land "reserved for the protection and restoration of late successional and old growth forest ecosystems and habitat for associated species" including northern spotted owl.
        - Glacier Peak Wilderness Area.
        - North Cascades National Park.
    - Inventoried Roadless Areas under the federal Roadless Area Conservation Final Rule (2001), which restrict road construction and reconstruction and timber harvest.[16]
    - Wild and Scenic River designation under the National Wild and Scenic Rivers System.[17]
    - Northwest Power and Conservation Council protection from hydroelectric development.[18]
- Napeequa River:
    - US Forest Service rules and designations, including but not limited to designation of the Glacier Peak Wilderness Area and Okanogan-Wenatchee National Forest.
    - Washington Department of Natural Resources (WDNR) law governing management of state-owned aquatic lands: Chapter 79.105 RCW, Aquatic Lands – General.

[15] We note that approximately one-third of total stream length in the ORW designation area is in a National Forest (rather than National Park or Wilderness Area), and much of the surrounding land is managed as a Late Successional Reserve. While these Late Successional Reserve areas have historic timber harvest properties, Ecology communication with the US Forest Service indicates that these lands are not actively being managed with intent to harvest. Short term activities such as road or culvert maintenance would not be affected by the ORW designation. We note also that tributaries of the mainstem Cascade River are not entirely within the protected areas but contribute to the protection of downstream water quality in the Cascade River.

[16] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000250.pdf

[17] https://rivers.gov/wsr-act.php

[18] https://www.streamnet.org/home/data-maps/protectedareas/pa-documents/

- Eligibility for Wild and Scenic River designation under the National Wild and Scenic Rivers System.[19]
- Northwest Power and Conservation Council protection from hydroelectric development.[20]

- Green River:
  - US Forest Service rules and designations, including but not limited to the:
    - Mount St. Helens National Volcanic Monument.
    - Gifford Pinchot National Forest.
    - Northwest Forest Plan designation of land outside the National Monument as "matrix" where timber harvest and silvicultural activities are expected to occur.[21]
    - Land purchases made with Land and Water Conservation funds, appropriated for conservation of recreation.
    - Northwest Forest Plan designation as a riparian reserve, to maintain aquatic ecosystem functions and water quality.[22]
  - Washington Department of Natural Resources (WDNR) law governing management of state-owned aquatic lands: Chapter 79.105 RCW, Aquatic Lands – General.
  - Inventoried Roadless Areas under the federal Roadless Area Conservation Final Rule (2001), which restrict road construction and reconstruction and timber harvest.[23]
  - Eligibility for Wild and Scenic River designation under the National Wild and Scenic Rivers System.[24]
  - Designation as a shoreline of statewide significance, beginning at the Gifford Pinchot National Forest boundary downstream to Cowlitz-Skamania County line.
  - Northwest Power and Conservation Council protection from hydroelectric development.[25]

Various laws and rules also govern management of wastes from human activities that may potentially discharge to waters, and may include (as directly applicable or through local health department or municipal ordinances):

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[19] https://rivers.gov/wsr-act.php
[20] https://www.streamnet.org/home/data-maps/protectedareas/pa-documents/
[21] https://www.fs.usda.gov/r6/reo/landuse/
[22] Ibid.
[23] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_000250.pdf
[24] https://rivers.gov/wsr-act.php
[25] https://www.streamnet.org/home/data-maps/protectedareas/pa-documents/

- WA Department of Health (DOH) requirements for management of on-site septic and wastewater, including vault toilets: Chapter 246-272A WAC.
- County on-site septic system management plans.

Adopted

The rule amendments designate four waterbodies as outstanding resource waters, including:

- Tier III(A) outstanding resource waters:
    - Cascade River and tributaries within the designation boundary (Upstream from the west boundary of Mount Baker Snoqualmie National Forest).
    - Green River and tributaries within the designation boundary (Upstream from the boundary of the Gifford Pinchot National Forest).[26]
    - Napeequa River and tributaries within the designation boundary (Upstream from the boundary of the Okanogan-Wenatchee National Forest and private land near river mile 1).
- Tier III(B) outstanding resource waters:
    - Soap Lake.

Expected impact

The rule amendments could result in both costs and benefits compared to baseline, though the scope of these exceptional impacts is uncertain, as they depend on exceptional or unexpected future potential land or water activities from which the ORWs are not sufficiently protected under the baseline. Costs could include expenditures on additional sampling or compliance requirements for some future leases, claims, or rights, or the expansion of existing claims, if and to the extent they would not be required under the baseline.

Benefits would include corresponding incremental protection over the baseline of:

- Values of exceptional water attributes, including relatively pristine and regionally unique waters and water quality of withdrawals.
- Recreational values.
- Fish and wildlife values, including endangered or threatened species and unique organisms.
- Cultural and use values to tribes.
- Educational and scientific values.
- State-specific regulatory protection of ORWs.

[26] Upstream from the west section line of Section 17, Township 10 North, Range 06 East.

2.3.3 Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.

Baseline

Under the baseline Ecology will consult with recognized tribes in the geographic vicinity of the water. As standard practice, however, Ecology consults with all tribes in the state.

Chapter 70A.02 RCW, Environmental Justice also requires Environmental Justice Assessments for significant agency actions, including but not limited to:

- Identification of whether a proposed action is expected to have any local or regional impacts to federally reserved tribal rights and resources, including but not limited to those protected by treaty, executive order, or federal law.
- Summary of community input and description of how the agency can further involve overburdened communities, vulnerable populations, affected tribes, and Indigenous populations in development of the action.
- Consultation with tribes if an action affects federal recognized tribal rights and interest in their tribal lands, including federally defined "Indian country"[27], sacred sites, traditional cultural properties, burial grounds, and other tribal sites protected by federal or state law. These requirements are currently being developed as part of the tribal consultation framework.

Adopted

The rule amendments expand tribal consultation to include all tribes, instead of just those that are federally recognized or located in the immediate geographic area of an action.

Expected impact

The rule amendments could result in additional costs to Ecology in the form of employees' salary and transportation and other expenses related to tribal consultation. No other parties would incur costs because of the rule amendments. There would not be costs imposed on parties outside of Ecology. These amendments would also generate benefits of broader inclusion of tribal interests in regulatory decisions.

We note that it is also Ecology's current practice to consult tribes regardless of their location, and that baseline requirements under Chapter 70A.02 RCW require consultation based on not only geography, but on interests and impacts, which could extend beyond the geography of an agency action.

[27] 18 U.S.C. Sec. 1151.

2.3.4 Creating a new section listing waterbodies designated as ORWs

Baseline

The baseline rule has no existing table providing information on waterbodies designated as ORWs.

Adopted

The rule amendments add the table and notes below to provide clarity and context in the ORW designations.

Table 1. Summary table of ORW designations by WRIA.

WRIA	County	Waterbody name	Designation boundary	Tier III(A) or III(B)
4 – Upper Skagit	**Skagit**	**Cascade River and tributaries within the designation boundary.**	**Upstream from the west boundary of Mount Baker Snoqualmie National Forest (latitude 48.5324, longitude -121.3078) at the west section line of Section 07, Township 35 North, Range 12 East, to headwaters, including tributaries**	**Tier III(A)**
26 – Cowlitz	**Skamania**	**Green River and tributaries within the designation boundary.**	**Upstream from the boundary of the Gifford Pinchot National Forest (latitude 46.3484, longitude -122.0938) at the west section line of Section 17, Township 10 North, Range 06 East, to headwaters, including tributaries**	**Tier III(A)**
42 – Grand Coulee	**Grant**	**Soap Lake**	**Latitude 47.4068, longitude -119.4969**	**Tier III(B)[1]**
45 – Wenatchee	**Chelan**	**Napeequa River and tributaries within the designation boundary.**	**Upstream from the boundary of the Okanogan-Wenatchee National Forest and private land near river mile 1 (latitude 47.9269, longitude -120.8870) within Section 17, Township 28 North, Range 16 East, to headwaters, including tributaries**	**Tier III(A)**

1. Notes for Soap Lake:
    a. Soap Lake measurable change is defined as a decrease in salinity as measured by conductivity of 639 microsiemens per centimeter (µS/cm) or greater.
    b. In addition, human actions must not cause lake conductivity to decrease below 19,843 µS/cm as calculated as a seasonal average more than once in 10 years.
    c. Seasonal average conductivity is calculated as the arithmetic average of seven or more samples collected April through October. Sampling should be distributed throughout this period.

Expected impact

We do not expect the table in this amendment to result in costs or benefits not already addressed in the previous section discussing designation of the four waterbodies as ORWs. There could be a benefit to some readers from providing clarity in the locations and designations of the ORWs.

The notes for Soap Lake define measurable change for conductivity based on the US Geological Survey (USGS) analysis of uncertainty for specific conductance measurements.[28] As compared to the baseline, which has no defined measurable change in salinity due to any cause, this rule amendment could result in costs associated with future development needing to perform modeling if it potentially affects the lake's salinity. These costs are discussed as part of overall costs and benefits, in Section 2.3.2, above.

2.3.5 Minor changes in Table 602

Baseline

Table 602 in the baseline rule lists designated uses of fresh waters by water resource inventory area (WRIA).

- Soap Lake or the Napeequa River designated uses are derived from general use provisions assigned in accordance with WAC 173-201A-600 and 173-201A-260(3).
- Designated uses for the "Cascade River and Boulder Creek" and "Green River" are specified in WAC 173-201A, Table 602.

Adopted

The amended rule adds notes to the Table 602 designated use listings for "Cascade River and Boulder Creek" and "Green River" to indicate that portions of the waterbodies are designated as ORWs.

Expected impact

The rule amendments would not result in costs, as they are cross-references to amendments designating waterbodies as ORWs. Inclusion of the notes in Table 602 provides a benefit of clarity for those reading the table, giving them full information on the listed waterbodies.

[28] U.S. Geological Survey (2019) Specific conductance: U.S. Geological Survey Techniques and Methods, book 9, chap. A6.3, 15 p., https://doi.org/10.3133/tm9A6.3. [Supersedes USGS Techniques of Water-Resources Investigations, book 9, chap. A6.3, version 1.2.

Chapter 3: Likely Costs of the Rule Amendments

3.1 Introduction

We analyzed the likely costs associated with the rule amendments, as compared to the baseline. The rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

3.2 Cost analysis

The rule amendments make the following changes:

- Adding the definition of "Outstanding resource waters."
- Designating four waterbodies as outstanding resource waters.
- Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.
- Creating a new section listing waterbodies designated as ORWs.
- Making two minor changes in Table 602 to note the ORW designations.

3.2.1 Adding the definition of "Outstanding resource waters"

We do not expect this amendment to result in costs as compared to the baseline. See Chapter 2 for discussion.

3.2.2 Designate four waterbodies as outstanding resource waters

Cascade, Napeequa, and Green rivers

The rule amendments designating the Cascade River, Napeequa River and Green River as Tier III(A) ORWs could result in future costs under very specific circumstances. While we do not expect current activities in the rivers and surrounding land to be required to change any behaviors or incur any costs, any potentially successful future leases, claims, or rights could be affected by the amendments, if and to the extent the amendments set more stringent requirements than baseline state water quality standards.

The following are current activities identified on or adjacent to each ORW-designated area:[29]

- Cascade River:
    - No active instream mining claims.

[29] WA Department of Ecology, 2023. Proposed Outstanding Resource Waters Designations for Soap Lake and Portions of the Cascade, Napeequa, and Green Rivers. Technical Support Document. July 2023.

    - 1 private inholding: special use permit; designated by the Skagit County Assessor as "designated/classified forest" under WAC 458-53-030.[30]
    - 1 surface water right: Short form claim (unverified documentation of rights established before permits were required) for non-consumptive domestic and mining purposes from the North Fork of the Cascade River within the North Cascades National Park.[31]
    - 2 federal campgrounds.
    - 7 hiking trails.
- Napeequa River:
    - No active instream mining claims.
    - No inholdings or permits.
    - No surface water rights.
    - Accessibility only by trail.
- Green River:
    - No active instream mining claims.
    - No inholdings or permits.
    - No surface water rights.
    - Trails including horseback riding trails.

Existing upland mineral claims[32] are required to get a Water Quality permit if they discharge to surface waters, under both the baseline and the amended rule.

Baseline regulations and the nature of ORW designation within existing land protections would mean the current exceptional qualities of the water could be "frozen in time" without affecting existing water and land activities.

- For the Napeequa and Green rivers, there are no such regulated activities, and other activities (such as recreation) have not been identified as affecting water quality in these rivers.
- Existing activities on the Cascade River are similarly not known to impact water quality, and in the case of private inholdings and water rights, are covered by baseline water quality regulations and regulations affecting private forestlands.

We do not, therefore, expect the amendments to impact current users of these rivers or surrounding lands.

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[30] https://skagitcounty.net/Search/Property/?id=P46326
[31] https://appswr.ecology.wa.gov/docs/waterRights/A446/A4460995.pdf
[32] We were able to identify one mining claim upland of the Green river, and are aware of potential residual upland claims near the Cascade River.

If future claims, inholdings, or permits for other regulated activities are approved, they could potentially be impacted by the rule amendments. In most likely cases, however, we do not expect such impacts to occur based on baseline protections and use trends:

- While mining was active in the Green River area until just before the eruption of Mount St. Helens, the most recent permit for exploratory drilling (a 2018 US Forest Service and Bureau of Land Management permit) was vacated by the courts.[33] Other exploration or claims have not been attempted since then.
- Expansion of current private land use (under special use permit) and water right use within the Cascade River ORW boundary would be regulated by various baseline regulations as applicable to the nature of the expansion. The indoor and outdoor domestic uses of the identified water right, even if expanded, are not likely to impact water quality given their scope. Expanded or more intensive use of designated timberland would be regulated by baseline regulations intended to prevent upland and shoreline impacts to water quality.
- The protected nature inherent to lands surrounding ORWs under the terms of the baseline rule make it unlikely that significant additional development or water rights would be issued in the future.
- While existing recreational activities have not been identified as impacting water quality in the rivers, expansion of these activities to a degree that would impact water quality could result in a need for additional resources or infrastructure for recreational users. These additional resources, however, would be required under baseline regulations for public lands and handling of waste.

The rule amendments would, however, provide additional protection in excess of the baseline in cases we do not expect as discussed above.

Example potential small-scale development

It is unlikely the rule amendments would limit a small scale claim, right, development, permit, or expansion but an illustrative example could be a mining claim that could have impacts to ORW-designated waters. These impacts could include surface water runoff, which would be addressed by baseline water quality standards and permitting requirements, as well as requirements for development of infrastructure such as roads. Any additional impacts (e.g., runoff of substances not covered by existing water quality standards) would be addressed by the ORW designation, but actions taken to address baseline requirements (e.g., runoff capture, berms, or other runoff-management best practices required under permit) could also address these needs.

Example potential large-scale development

[33] *Cascade Forest Conservancy v. Heppler*, 2022. No. 3:19-cv-00424-HZ (D. Or. Feb. 15, 2021). Final decision issued January 31,2022.

For unexpected large-scale development under multiple permits (e.g., if protected lands are sold or leased in larger quantities than they currently are) that could have a cumulative effect on water quality, the rule amendments could result in more stringent permit requirements distributed across permittees so they do not collectively impact water quality. We do not expect this to be the case, based on baseline regulations, but the rule amendments protect the ORWs from this type of unexpected situation.

Additional sources of uncertainty

There is also uncertainty in what water quality standards and other rules may be in the future. We could not confidently forecast which water quality standards will become more or less stringent in the future, whether water quality standard changes would be approved by the EPA, or how the relevant federal regulations would be interpreted in the future. By ensuring the current exceptional qualities of these rivers are protected regardless of future standards, the rule amendments mitigate this risk. See discussion of Washington State protection of ORWs, in Chapter 4, below.

Soap Lake

The rule amendments designating Soap Lake as a Tier III(B) ORW could result in future costs under similarly specific circumstances, though the circumstances under which these costs could occur differs from those of the three ORW-designated rivers above – the Tier III(B) designation addresses measurable change in salinity of the lake and the unique condition of the water. Similarly, to the three ORW-designated rivers, we do not expect current activities on the lake and surrounding land to be required to change any behaviors or incur any costs.

The following are current activities identified in and around Soap Lake:[34,35]

- Three private RV resorts.
- One lodge.
- Two public beaches.
- Private residences.
- Mineral water withdrawals of one cumulative cubic foot per second (cfs) for:
    - One residential property.
    - One multifamily property.
    - One commercial spa.
    - Two hotels.

[34] WA Department of Ecology, 2023. Proposed Outstanding Resource Waters Designations for Soap Lake and Portions of the Cascade, Napeequa, and Green Rivers. Technical Support Document. July 2023.
[35] We note that there have also been annual hydroplane races on Soap Lake, but as of this writing the 5-year right of entry authorization has expired without renewal.

Baseline rules and the nature of ORW designation within protections would mean that the current exceptional qualities of the water could be "frozen in time" without affecting existing water and land activities. Existing activities at Soap Lake, including of private inholdings and water rights, are covered by baseline water quality and shoreline regulations. We do not, therefore, expect the amendments to impact current users of this lake or surrounding lands.

Potentially successful future development or rights could be affected by the amendments if sufficient protection of the ORWs is not achieved under the baseline. Given the specification of measurable change in salinity and anthropogenic change in salinity, this could include additional sampling or modeling as part of a permitting process, if an action is likely to affect inflow or water removal from the lake in a way that would affect salinity.

The rule amendments would, however, provide additional protection in excess of the baseline in cases we do not expect as discussed above.

Example potential development

While it is unlikely a permitted development or expansion would occur and be in some way additionally limited by the rule amendments, given the current land and water activities above and the unbuildable nature of the east and west shorelines, an illustrative example could be a development with large discharge to, or withdrawals from, Soap Lake.

- Significant withdrawals affecting salinity are unlikely, as groundwater wells support most existing development in the area, and these wells are typically too deep to affect the groundwater to surface water interactions of the lake. Groundwater levels are also managed and sustained by the Soap Lake Protective Works.
- Discharges to the lake during commercial or residential development construction or subsequent use (such as stormwater runoff) would be covered by baseline surface water quality standards and implementation requirements via permit to prevent impacts to the lake, as well as the baseline Shoreline Master Plans and Comprehensive Plan.
- An upland agricultural development with irrigation could affect the quantity of water moving toward the lake. However, this water is likely to infiltrate into the ground before reaching the lake. The Quincy-Columbia Irrigation District monitors and operate wells that intercept irrigation water, preventing it from entering Soap Lake.

Example potential impact and response

While we do not expect the likely types of development and circumstances discussed above to be impacted by the rule amendments, there remains potential for the ORW attributes of the lake to change under the baseline. If this happened, due to human causes, naturally, or as a combination of the two, Ecology would investigate the cause of the change. These impacts would also be considered as part of ongoing management by the Soap Lake Protective Works

owned by the Bureau of Reclamation and operated by the Quincy-Columbia Basin Irrigation District under contract.[36]

In this situation, the rule amendments, in combination with water quality protection actions available under the baseline rule, could result in restrictions such that dischargers to the lake, groundwater, or through interconnection do not freshen the lake beyond thresholds. This would result in internal costs to Ecology of conducting a study of the cause(s) of lake freshening. Once cause(s) are identified, Ecology would use implementation options available to us to address the issue, potentially including permit limits. We could not confidently predict the specifics and external costs of such a situation, as it would inherently be exceptional and unexpected, but they might include working with the city or freshening sources or providing technical assistance.

Additional sources of uncertainty

There is also uncertainty in what water quality standards and other rules may be in the future. We could not confidently forecast which water quality standards will become more or less stringent in the future, whether water quality standard changes would be approved by the EPA, or how the relevant federal regulations would be interpreted in the future. By ensuring the current exceptional qualities of these rivers are protected regardless of future standards, the rule amendments mitigate this risk. See discussion of Washington State protection of ORWs, in Chapter 4, below.

In response to public comments received as part of this rulemaking, we also assessed hypothetical exceptional scenarios which, while not likely to occur (see pg. 36-37), reflect areas of commenter concern. Costs estimated for these scenarios are discussed in Appendix B.

3.2.3 Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.

The rule amendments could likely result in costs to Ecology in the form of employees' salary and transportation costs. When comparing with the baseline, these additional costs would not be included in the costs analysis according to Chapter 34.05 RCW: Administrative Procedure Act.

[36] United States Bureau of Reclamation. 1976. Transfer Report and Report of Joint Inspection in Connection with the Transfer of Operation and Maintenance Responsibilities of Bureau Constructed Works, Special Reserved Works (Quincy District) to the Quincy-Columbia Basin Irrigation District. August 30, 1976. Boise, Idaho.

3.2.4 Creating a new section listing waterbodies designated as ORWs

We do not expect this amendment to result in costs as compared to the baseline. See Chapter 2 for discussion.

3.2.5 Minor changes in Table 602

We do not expect this amendment to result in costs as compared to the baseline. See Chapter 2 for discussion.

Chapter 4: Likely Benefits of the Rule Amendments

4.1 Introduction

We analyzed the likely benefits associated with the rule amendments, as compared to the baseline. The rule amendments and the baseline are discussed in detail in Chapter 2 of this document.

4.2 Benefits analysis

The rule amendments make the following changes:

- Adding the definition of "Outstanding resource waters."
- Designating four waterbodies as ORWs.
- Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.
- Creating a new section listing waterbodies designated as ORWs.
- Making two minor changes in Table 602 to note the ORW designations.

4.2.1 Adding the definition of "Outstanding resource waters"

The benefit of adding this definition is to introduce a new term to provide clarity about what an ORW is when the term is used in other sections with amendments. Definitions in and of themselves do not result in costs or benefits outside of where the terms are used in the rule. Where any such impacts exist, they are an underlying part of the analysis of each respective rule amendment, below.

4.2.2 Designate four waterbodies as outstanding resource waters

The rule amendments could result in several benefits to the four designated waterbodies, if and to the extent that the amendments are ultimately more protective than the baseline, from future impacts that would affect the outstanding qualities of the designated ORWs.

Economic benefits may include: values of exceptional water attributes, including relatively pristine or unique waters and water quality of withdrawals; recreational values; fish and wildlife values; cultural and use values to tribes; educational and scientific values; and State-specific regulatory protection of ORWs (see table in Appendix B).

The rule amendments would result in an enhanced water quality protection for the designated waterbodies, but only in certain exceptional circumstances where the amendments set more stringent requirements than baseline state and water quality standards. If future claims, inholdings, or permits for other regulated activities are approved, they could potentially be impacted by the rule amendments. In most likely cases, however, we do not expect such impacts to occur based on baseline protections and use trends:

- While mining was active in the Green River area until just before the eruption of Mount St. Helens, the most recent permit for exploratory drilling (a 2018 US Forest Service and Bureau of Land Management permit) was vacated by the courts.[37] Other exploration or claims have not been attempted since then.
- Expansion of current private land use (under special use permit) and water right use within the Cascade River ORW boundary would be regulated by various baseline regulations as applicable to the nature of the expansion. The indoor and outdoor domestic uses of the identified water right, even if expanded, are not likely to impact water quality given their scope. Expanded or more intensive use of designated timberland would be regulated by baseline regulations intended to prevent upland and shoreline impacts to water quality.
- The protected nature inherent to lands surrounding ORWs under the terms of the baseline rule make it unlikely that significant additional development or water rights would be issued in the future.
- While existing recreational activities have not been identified as impacting water quality in the rivers, expansion of these activities to a degree that would impact water quality could result in a need for additional resources or infrastructure for recreational users. These additional resources, however, would be required under baseline regulations for public lands and handling of waste.

The rule amendments would, however, provide additional protection in excess of the baseline in cases we do not expect to occur based on the above information.

In response to public comments received as part of this rulemaking, we also assessed hypothetical exceptional scenarios which, while not likely to occur (see pg. 36-37), reflect areas of commenter concern. Benefits estimated for these scenarios are discussed in Appendix B.

State-specific regulatory protection of ORW waterbodies

The rule amendments establish Washington-controlled protections for the four ORWs. This means long-term protection of these waters and the values they hold and provide (discussed above), regardless of another regulatory context. As discussed in Chapter 3, uncertainty exists for federal rules, as they may change over time without state input and decisions, and we cannot forecast whether they might become more or less protective on their own. By designating areas of the Cascade River, Napeequa River, Green River, and Soap Lake as ORWs, the amendments mitigate external regulatory uncertainty.

A recent decision by the US Supreme Court on federal authority to regulate certain wetlands provides an example of the importance of state-level regulation in cases where the state is more protective or broader in scope. In *Sackett v Environmental Protection Agency (EPA)* – in which a property owner challenged EPA authority to require a permit, require restoration, or impose penalties for development that backfilled a wetland on their property – the Supreme

[37] *Cascade Forest Conservancy v. Heppler*, 2022. No. 3:19-cv-00424-HZ (D. Or. Feb. 15, 2021). Final decision issued January 31,2022.

Court ruling affected how federal agencies review and permit impacts on wetlands, narrowing the protections for some wetlands and streams.[38] The Court ruled that the federal Clean Water Act extends only to wetlands that have a continuous surface connection to waters of the United States (i.e., a relatively permanent body of water connected to traditional, interstate navigable waters).[39]

This ruling means that some wetlands and streams nationwide will have less federal protection than they were previously afforded if they are not protected by other regulations. However, Washington's wetlands, seasonal streams, and other waters remain protected under state law: the Water Pollution Control Act of 1945 and other state laws, as implemented through Ecology rules.[40] This means the services provided by the wetlands and streams that would otherwise lose protection are maintained, including contributions to water quality, flood protection and mitigation, and habitat for multiple species including those that are endangered or threatened.

The rule amendments mitigate the risk of similar changes in federal law, implementation, or interpretation affecting the degree to which the ORWs are protected in the future, particularly because many of their baseline protections rely on federal agency requirements (see Chapter 3 for detailed discussion).

4.2.3 Expanding tribal consultation to align with current practice, to support ORW designations and statewide interest in ORW protections.

Expanding tribal consultation brings a broader inclusion of tribal interests and benefit future policy making.

4.2.4 Creating a new section listing waterbodies designated as ORWs

Adding this new section provides more information on designated waterbodies.

4.2.5 Minor changes in Table 602

These two minor changes help to identify Cascade River and Green River are outstanding resource waters.

[38] Sackett et ux. v. Environmental Protection Agency et al., Certiorari to the United States Court of Appeals for the Ninth Circuit, No. 21–454. Argued October 3, 2022—Decided May 25, 2023
[39] https://www.scotusblog.com/case-files/cases/sackett-v-environmental-protection-agency/
[40] https://ecology.wa.gov/Water-Shorelines/Wetlands/Regulations/State-wetland-regulations?utm_medium=email&utm_source=govdelivery

Chapter 5: Cost-Benefit Comparison and Conclusions

5.1 Summary of costs and benefits of the rule amendments

We did not identify immediate or likely future impacts associated with the rule amendments, as implementation of baseline laws and rules is likely to be protective of the ORW-designated waters under likely current and future circumstances. We base this determination on current activities identified for each waterbody and surrounding lands, in conjunction with existing permitting requirements, federal and state laws and rules, and local regulations. We also identified potential development scenarios and broader trends in activities that could occur in the ORW areas.

The rule amendments could affect activities in unlikely or unforeseen circumstances if baseline requirements are not sufficiently protective of the outstanding qualities of the ORW-designated waterbodies. Such circumstances could include:

- Activities that affect inflow or water removal from Soap Lake in a way that affects salinity and is not prevented by state and local baseline regulations and permit requirements.
- Activities that create runoff to ORW-designated rivers, of substances not covered by baseline water quality or land use regulations and permit requirements, where runoff is not mitigated by actions otherwise required in permit.
- Changes to baseline requirements at the federal level, affecting management of federal lands and associated environmental protections.

Likely costs

In the exceptional circumstances listed above, the rule amendments could result in a permittee being required to do additional monitoring for permitted activities.

They could also result in:

- An Ecology investigation of degradation sources under the baseline requirements and procedures to identify potential human causes.
- Technical assistance in compliance.

Based on our understanding of baseline regulations and activities, we could not confidently forecast likely and specific circumstances in which an exceptional development would occur under the baseline, its attributes, and quantify additional costs (if any) imposed by this rule.

In response to public comments received as part of this rulemaking, we also assessed possible exceptional scenarios which, while not likely to occur, reflect areas of commenter concern. Costs estimated for these scenarios are discussed in Appendix B.

Likely benefits

As discussed above, the rule amendments are unlikely to affect current and foreseeable activities in the ORW-designated areas, as baseline requirements are likely to be protective of

ORW attributes in current and likely future circumstances. In the exceptional circumstances, with possible additional compliance requirements, discussed above, the rule amendments would generate benefits of additional protection of environmental values associated with ORWs, including incremental values of:

- Relatively pristine or exceptional quality waters and quality of withdrawals.
- Recreational values.
- Fish and wildlife values, including for endangered or threatened species and unique organisms.
- Cultural and use values for tribes.
- Educational and scientific values.

Based on our understanding of baseline regulations and activities, we could not confidently forecast likely and specific circumstances in which an exceptional development would occur under the baseline, its attributes, and quantify additional costs (if any) imposed by this rule.

In response to public comments received as part of this rulemaking, we also assessed possible exceptional scenarios which, while not likely to occur, reflect areas of commenter concern. Benefits estimated for these scenarios are discussed in Appendix B.

State-controlled protections

By creating state-controlled protections over and above the baseline for exceptional circumstances, the rule amendments also mitigate risk of changes to baseline requirements that are out of Washington's and Washingtonians' control. These risks include potential future administrative or court decisions that affect the level or scope of federal protections in ORW-designated areas.

5.2 Conclusion

We conclude, based on a reasonable understanding of the quantified and qualitative costs and benefits likely to arise from the rule amendments, as compared to the baseline, that the benefits of the rule amendments are greater than the costs.

Chapter 6: Least-Burdensome Alternative Analysis

6.1 Introduction

RCW 34.05.328(1)(c) requires Ecology to "…[d]etermine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection." The referenced subsections are:

(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements;

(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule;

(c) Provide notification in the notice of proposed rulemaking under RCW 34.05.320 that a preliminary cost-benefit analysis is available. The preliminary cost-benefit analysis must fulfill the requirements of the cost-benefit analysis under (d) of this subsection. If the agency files a supplemental notice under RCW 34.05.340, the supplemental notice must include notification that a revised preliminary cost-benefit analysis is available. A final cost-benefit analysis must be available when the rule is adopted under RCW 34.05.360;

(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

In other words, to be able to adopt the rule, we are required to determine that the contents of the rule are the least burdensome set of requirements that achieve the goals and objectives of the authorizing statute(s).

We assessed alternative rule content, and determined whether they met the goals and objectives of the authorizing statute(s). Of those that would meet the goals and objectives, we determined whether those chosen for inclusion in the rule amendments were the least burdensome to those required to comply with them.

6.2 Goals and objectives of the authorizing statute

The authorizing statute for this rule is Chapter 90.48 RCW, Water Pollution Control. Its goals and objectives include the state of Washington's policy of maintaining the highest possible standards to ensure the purity of all waters of the state consistent with public health, public enjoyment, the protection of wildlife, and the industrial development of the state. This requires the use of all known available and reasonable methods to prevent and control the pollution of the waters of the state of Washington.

RCW 90.48.035, Rule-making authority, specifically authorizes Ecology to promulgate, amend, or rescind rules and regulations as deemed necessary to maintain the highest possible standards of all waters in the state. Its goals and objectives include but are not limited to rules relating to standards of quality of waters of the state and regulating substances discharged into them.

6.3 Alternatives considered and why they were excluded

We considered the following alternative rule content and did not include it in the rule amendments for the reasons discussed in the subsection below.

- Not designating the Cascade River as an ORW.
- Excluding parts of the Cascade River flowing through National Forest from ORW designation.

6.3.1 Not designating the Cascade River as an ORW

During the rule development, it was suggested that an Outstanding Resource Water designation for the Cascade River may be redundant in light of the existing wilderness protections in Glacier Peak Wilderness Area and North Cascades National Park. This alternative would not have met the goals and objectives of the statute because Ecology determined that there was sufficient information for the Cascade River to be eligible for consideration as an ORW, maintaining the highest possible standards to ensure the purity of the waterbody. Ecology determined that while federal wilderness designations can offer protection for the River, an ORW designation provides the opportunity for Ecology to protect the exceptional values of the River and tributaries in a State rule. This action creates more resilient protection for the waterbody against potential federal land designation changes and future activities that might impact water quality.

6.3.2 Excluding parts of the Cascade River in National Forest

During the public comment period for this rulemaking, we received comments requesting that we change the Cascade River designation boundary, to exclude parts of the river that flows through National Forest. This would have limited the boundary to only National Park and Wilderness Areas. This request was based on the designation of some waters within areas of the National Forest being designated Late Successional Reserve (LSR), and waterbodies within LSRs do not meet eligibility criteria under WAC 173-201A-330(1).[41]

We decided not to alter the ORW boundary because the mainstem of the Cascade River within National Forest is designated as Wild and Scenic, which is an eligible category under WAC 173-201A-330(1). Including this proposed boundary change would not meet the goals and objectives of the authorizing statute related to protecting and preserving water quality. While

[41] Implements Chapter 90.48 RCW.

some tributaries within National Forest may not, alone, meet eligibility criteria, we include them in this rule as they are accompanied with the protection of the downstream ORW uses. This choice is consistent with WAC 173-201A-260(3)(b), which states that, “Upstream actions must be conducted in manners that meet downstream waterbody criteria...the criteria associated with the most upstream uses designated for a waterbody are to be applied to headwaters to protect the downstream uses."

6.4 Conclusion

After considering alternatives to the rule’s contents, within the context of the goals and objectives of the authorizing statute, we determined that the rule represents the least-burdensome alternative of possible rule contents meeting the goals and objectives.

Chapter 7: Regulatory Fairness Act Compliance

The Regulatory Fairness Act (RFA; RCW 19.85.070) requires Ecology to perform a set of analyses and make certain determinations regarding the rule amendments. We assessed the compliance costs of the rule amendments (see Chapter 3) and did not identify any necessary changes in compliance behavior by any identified business. We determined that Ecology is exempt from performing additional analyses under RCW 19.85.025(4), which states, "This chapter does not apply to the adoption of a rule if an agency is able to demonstrate that the proposed rule does not affect small businesses." Similarly, the rule amendments do not meet the criteria for the requirement to prepare a Small Business Economic Impact Statement under RCW 19.85.030(1)(a), which states, "In the adoption of a rule under chapter 34.05 RCW, an agency shall prepare a small business economic impact statement: (i) If the proposed rule will impose more than minor costs on businesses in an industry."

We examined the set of landowners around the ORW-designated waterbodies, including nine business locations.[42, 43] We also identified a special permit holder for annual hydroplane races on Soap Lake.[44] As these businesses have not been identified as affecting current qualities of the ORWs, we do not expect their activities to be impacted by the rule amendments.[45] We expect any likely future business expansion or development to be regulated by baseline laws and rules, and similarly not incur additional compliance costs under the rule amendments. The amendments protect the exceptional qualities of the for ORWs largely in cases of unexpected or exceptional developments or changes to the regulatory baseline.

[42] Grant County, 2023. TerraScan Mapsifter. https://grantwa-mapsifter.publicaccessnow.com/defaultHTML5.aspx
[43] RFA requirements do not apply to government entities or private parties.
[44] WA Department of Ecology, 2023. Proposed Outstanding Resource Waters Designations for Soap Lake and Portions of the Cascade, Napeequa, and Green Rivers. Technical Support Document. July 2023.
[45] We note that the WA Department of Natural Resources cannot prohibit public trust activities (including boating) as the authorizing authority for access to Soap Lake, but can place conditions on the activity (e.g., placement of buoys).

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n/a

Open review: Documented open public review process that is not limited to invited organizations or individuals

n/a

Legal and policy document: Documents related to the legal framework for the significant agency action including but not limited to federal and state statutes, court and hearing board decisions, federal and state administrative rules and regulations, and policy and regulatory documents adopted by local governments

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40 CFR 131.20, Water quality standards – State review and revision of water quality standards.

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- Okanogan-Wenatchee National Forest.
- Mount St. Helens National Volcanic Monument.

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Appendix A: Administrative Procedure Act (RCW 34.05.328) Determinations

A. RCW 34.05.328(1)(a) – Clearly state in detail the general goals and specific objectives of the statute that this rule implements.

See Chapter 6.

B. RCW 34.05.328(1)(b) –

1. Determine that the rule is needed to achieve the general goals and specific objectives of the statute.

See chapters 1 and 2.

2. Analyze alternatives to rulemaking and the consequences of not adopting this rule.

A rulemaking is the only way to adopt an ORW designation. If we don't adopt the designations, we would not be placing extra protections on the highest quality waterbodies that are nominated. As a consequence, the antidegradation review of future proposed actions would be limited to only those required in Tier I and Tier II of the water quality standards. For example, a new proposed discharge could be permitted if it were to meet less restrictive Tier II antidegradation requirements.

Please see the Least Burdensome Alternative Analysis, Chapter 6 of this document, for discussion of alternative rule content considered.

C. RCW 34.05.328(1)(c) - A preliminary cost-benefit analysis was made available.

When filing a rule proposal (CR-102) under RCW 34.05.320, Ecology provides notice that a preliminary cost-benefit analysis is available. At adoption (CR-103 filing) under RCW 34.05.360, Ecology provides notice of the availability of the final cost-benefit analysis.

D. RCW 34.05.328(1)(d) – Determine that probable benefits of this rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented.

See Chapters 1 – 5.

E. RCW 34.05.328 (1)(e) - Determine, after considering alternative versions of the analysis required under RCW 34.05.328 (b), (c) and (d) that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated in Chapter 6.

Please see Chapter 6.

F. RCW 34.05.328(1)(f) - Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

Under the Federal Clean Water Act, states are required to develop and adopt a statewide antidegradation policy consistent with the Code of Federal Regulations at § 131.12. These

regulations require that such a policy should, at minimum, be consistent with the following provision for protecting outstanding resource waters (131.12(a)(3):

"Where high quality waters constitute an outstanding national resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected."

Ecology updated our antidegradation policy in 2003 to be consistent with the federal requirements to protect outstanding resource waters. Any adopted designations are reviewed and approved by the EPA before becoming effective for Clean Water Act actions.

G. RCW 34.05.328 (1)(g) - Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law.

No, this rule does not impose more stringent performance requirements on private entities than on public entities. Any entity, whether public or private, must adhere to the rules protecting water quality in the state of Washington.

H. RCW 34.05.328 (1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter.

No.

If **yes**, the difference is justified because of the following:

☐ (i) A state statute explicitly allows Ecology to differ from federal standards. [If checked, provide the citation included quote of the language.]

☐ (ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated in Chapter 6.

[If checked, explain.]

I. RCW 34.05.328 (1)(i) – Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same subject matter.

We worked with EPA to ensure that the designations are approvable. We also worked with federal land managers to understand how the ORW designations could impact land use on federal lands and local jurisdictions to advise on how the rule could impact land use decisions adjacent to the outstanding resource waters.

Appendix B: Hypothetical scenarios

During the public comment period for this rulemaking, we received comments expressing concern that the rule amendments would restrict potential future industrial (including mineral extraction) or forestry activities. While baseline regulatory context, court decisions, current uses, and how uses have changed over time do not indicate these potential future scenarios are likely (see Chapter 3), we chose to assess what might happen if such new or expanded uses did, in fact, occur under the baseline, and how our rule amendments could affect costs and benefits beyond baseline requirements.

The specific attributes of any industrial or forestry project are difficult to predict, particularly as they would result from analytic processes and decisionmaking under regulations such as the National Environmental Policy Act (NEPA; 42 U.S.C. § 4321 et seq), and authorizations or approvals from relevant land managers (e.g., Bureau of Land Management, US Forest Service). These decisions would need to account for potential environmental impacts and impacts to the public, under baseline laws and rules (see Chapter 2).

We developed the following additional scenarios:

- Industrial activity potential for:
    - Direct: Industrial operation discharging directly to surface water, through instream activities or stream-adjacent activities affecting runoff.
    - Upland: Industrial operation impacting soils or groundwater that potentially impact surface waters through runoff or connected hydrogeology.
- Forestry activity potential for operations impacting riparian area contribution to water quality through harvest, access, or processing.

B.1 Industrial operation: Directly affecting surface waters

An industrial operation near or in surface waters, potentially including activities related to mineral resources, could potentially:

- Directly discharge chemicals or affect water quality parameters (e.g., temperature, suspended solids) through process water or spills.
- Disrupt sediments and other riparian habitat.

Baseline requirements

Such an operation would undergo review under NEPA, including assessment of the proposed action, a no-action alternative, and additional reasonable alternatives, with regard to:[46]

- Environmental impacts.

[46] 40 CFR Sec. 1502.16

- Unavoidable adverse environmental impacts.
- Short-term uses and long-term productivity.
- Irreversible or irretrievable resource commitments.
- Conflicts with Federal, regional, State, Tribal, and local land use plans, policies, and controls.
- Energy requirements and conservation potential.
- Natural or depletable resource requirements and conservation potential.
- Urban quality, historic and cultural resources, and the built environment.
- Mitigation of adverse environmental impacts.
- Economic and technical considerations, including economic benefits, where applicable.

This analysis would contribute to the ultimate determinations and any approvals issued by land managers. Based on the baseline regulations listed in Chapter 2, and as applicable to the ORW designated areas (see Chapter 3), any project or alternative that is approved would not violate existing requirements for impacts to surface waters, ground water, riparian areas, habitat, and water or land uses such as recreation.

Combining NEPA requirements above, additional evaluation steps by land managers, the absence of such existing uses, and their decline from historic levels as land management and regulations have changed over time (see Chapter 3), we do not expect an industrial project with direct in-stream or near-stream impacts to be approved over an alternative project that avoids or appropriately mitigates these impacts. This may result in a project relocating upland or changing in scope from its original proposed form.

We note also that various forms of appropriately avoiding or mitigating such impacts (e.g., by limiting operational scope, changing impacted areas, or altering plans for access) may not be considered reasonable alternatives if they are not financially or technically viable for the project proponent, or would affect worker safety. Reasonable alternatives could include some, but not all, alternative project scopes.[47] Additional uncertainty is introduced in cases of exploratory or investigative projects (e.g., prospecting) that may or may not result in subsequent additional industrial operations (which would also undergo separate environmental review).[48] Such uncertainty affects the perceived financial viability of initial exploratory work.

[47] See, e.g., discussion of alternatives that were considered but eliminated, in US Bureau of Land Management, 2018. Decision record for the Goat Mountain Hardrock Prospecting Permit Applications (DOI-BLM-ORWA-0000-2016-0001-EA), pp. 8-9.

[48] Cascade Forest conservancy v. Heppler et al. Opinion no. 3:19-cv-00424-HZ. 02-15-2021. The court noted that defendant US Forest Service cites US Department of Agriculture estimates of one in 5,000 to 10,000 prospects developing into producing mines. The court found that, "the Federal Defendants were not required to consider a future mine in their cumulative impacts analysis. As in Jones, there are no existing decisions, funding, or proposals for the development of a mine in the area. NAR 189; see also Chilkat Indian Vill. Of Klukwan v. Bureau of Land

Based on the above scenario, processes, baseline regulatory context, and potential limitations to mitigating impacts or adjusting project scope, we do not believe this type of project is likely to occur under the baseline.

Under the ORW rule amendments

We do not expect this type of project to occur under the baseline, due to existing regulations, analytic requirements, and land management practices, in combination with limitations to avoidance or mitigation of project impacts. We therefore do not expect the ORW rule amendments to result in costs or benefits, relative to the baseline, to such projects.

B.2 Industrial operation: Upland

An industrial operation occurring upland, impacting soils or groundwater that potentially impact surface waters, could potentially:

- Create surface runoff to surface waters.
- Contaminate groundwater or transport contaminants across aquifers.

Baseline requirements

Such an operation would undergo review under NEPA, including assessment of the proposed action, a no-action alternative, and additional reasonable alternatives, with regard to:[49]

- Environmental impacts.
- Unavoidable adverse environmental impacts.
- Short-term uses and long-term productivity.
- Irreversible or irretrievable resource commitments.
- Conflicts with Federal, regional, State, Tribal, and local land use plans, policies, and controls.
- Energy requirements and conservation potential.
- Natural or depletable resource requirements and conservation potential.
- Urban quality, historic and cultural resources, and the built environment.
- Mitigation of adverse environmental impacts.
- Economic and technical considerations, including economic benefits, where applicable.

This analysis would contribute to the ultimate determinations and any approvals issued by land managers. Based on the baseline regulations listed in Chapter 2, and as applicable to the ORW

Mgmt., 399 F.Supp.3d 888, 922 (D. Alaska 2019) (finding no error in declining to consider a future mine in its cumulative effects analysis where there was no "specific, quantifiable information about the parameters of future mine development")."

[49] 40 CFR Sec. 1502.16

designated areas (see Chapter 3), any project or alternative that is approved would not violate existing requirements for impacts to surface waters, ground water, riparian areas, habitat, and water or land uses such as recreation.

We note that various forms of appropriately avoiding or mitigating such impacts (e.g., by limiting operational scope, changing impacted areas, or altering plans for access) may not be considered reasonable alternatives if they are not financially or technically viable for the project proponent, or would affect worker safety. Reasonable alternatives could include some, but not all, alternative project scopes.[50] Additional uncertainty is introduced in cases of exploratory or investigative projects (e.g., prospecting) that may or may not result in subsequent additional industrial operations (which would also undergo separate environmental review).[51] Such uncertainty affects the perceived financial viability of initial exploratory work.

An upland industrial operation could have more flexibility with regard to project location, scope, operations, or means of access, while still meeting baseline regulatory requirements and private financial needs, given its distance from surface waters. This could include altering project footprint or adjusting operating variables such as excavation, tree removal. drilling, fill, water use, or other disruption.

It is unclear that such an industrial project would occur under the baseline. Based on our assessment of current uses, land management, how uses have changed over time, and court decisions (see Chapter 3), we do not believe it is likely. We note, however, that there is uncertainty resulting from the most recent court ruling on an industrial project proposal (mineral prospecting) in an area designated ORW under the amended rule, as this court ruling identified inadequate environmental review of project and alternative impacts under NEPA.[52] It is uncertain whether a more comprehensive environmental review accounting for additional scientific information would result in an approved project. It is also possible that during a hypothetical future assessment, additional viable and reasonable project alternatives could be identified.

Under the ORW rule amendments

If a proposed project or alternative is able to meet baseline requirements, and receives necessary approvals, it may incur cost under the ORW rule amendments. Such costs, if any, would be specific to the industrial project and its location within ORW boundaries. Any

[50] See, e.g., discussion of alternatives that were considered but eliminated, in US Bureau of Land Management, 2018. Decision record for the Goat Mountain Hardrock Prospecting Permit Applications (DOI-BLM-ORWA-0000-2016-0001-EA), pp. 8-9.

[51] Cascade Forest conservancy v. Heppler et al. Opinion no. 3:19-cv-00424-HZ. 02-15-2021. The court noted that defendant US Forest Service cites US Department of Agriculture estimates of one in 5,000 to 10,000 prospects developing into producing mines. The court found that, "the Federal Defendants were not required to consider a future mine in their cumulative impacts analysis. As in Jones, there are no existing decisions, funding, or proposals for the development of a mine in the area. NAR 189; see also Chilkat Indian Vill. Of Klukwan v. Bureau of Land Mgmt., 399 F.Supp.3d 888, 922 (D. Alaska 2019) (finding no error in declining to consider a future mine in its cumulative effects analysis where there was no "specific, quantifiable information about the parameters of future mine development")."

[52] Ibid.

environmental review would be incorporated into the baseline NEPA process, including groundwater sampling and procedures.

- If, under the baseline, the approved project was not likely to impact surface runoff or impact groundwater, the ORW rule amendments would not result in costs or benefits as compared to the baseline. This would occur if project attributes (including geographic and hydrogeological context), permit requirements, and best management practices that would have been required under the baseline, would also mitigate groundwater or runoff impacts.
- If the approved project would have met baseline requirements, but impacts surface runoff or groundwater, the ORW rule amendments could result in costs and benefits. These would depend on whether:
    a. Additional project alternatives could meet ORW requirements: This could result in the project proponent undertaking a more expensive or lower-revenue alternative. As these impacts would be highly specific to the hypothetical project, and to potential alternatives, we could not develop a representative project with sufficient detail to estimate costs. This cost, and associated benefits, would depend on:
        i. Specific project attributes and how they differ from baseline.
        ii. Costs associated with additional effort to avoid ORW impacts, or with reduced opportunity to collect resources or revenues due to changes in project attributes.
    b. There is no additional, viable, reasonable alternative that could met ORW requirements, including both practical and financial viability: This could result in a project not being approved. This would result in opportunity costs of not being able to do the project, as well as benefits of avoided impacts to the ORW that would have resulted from the project.

As we could not confidently develop a scenario reflecting the situation discussed in (a) above, we focused on the worst-case scenario in (b) above, of an upland industrial project not being approved in the vicinity of an ORW.

Inability to proceed with a project would result in a need to invest funds and resources that would have been used on the project elsewhere. Associated costs could include:

- Investigation of alternative sites outside ORW boundaries: The University of Arizona indicates mineral prospecting and exploration can take two to eight years, and cost between $500,000 and $15 million.[53] A prospecting project proponent would reassess their portfolio to determine whether to invest these resources in prospecting and

[53] University of Arizona, 2023. Copper Mining and Processing: Life Cycle of a Mine. https://superfund.arizona.edu/resources/modules/copper-mining-and-processing/life-cycle-mine#:~:text=Prospecting%20and%20Exploration%20(%E2%80%9CFinding%20and,the%20region%20for%20mineral%20deposits.

exploration elsewhere, or whether to make other investments with it. The act of reassessment and planning could be part of regular, ongoing portfolio assessment, which would not result in additional administrative costs. If the industrial project had already completed exploratory steps, and was to be a revenue-generating operation, its funds could be reinvested in a location where initial exploratory work was already complete. Otherwise, they may need to spend additional exploratory funds.

- Different rates of return or success in other investments:
    - Exploratory projects are inherently not revenue-generating. Their goal is to determine whether it is likely worthwhile to undertake and invest in a revenue-generating project. In this sense, their value is in reduction of uncertainty and risk. Prospecting and exploration do not necessarily result in identification of viable mineral projects or development of mineral extraction operations.[54] The reduction in uncertainty and risk, of spending exploratory project funds elsewhere, depends on the relative attributes of locations in which mineral deposits are suspected or inferred.
    - If the industrial project had completed exploratory steps, and was to be part of a revenue-generating operation, this investment of between $1 million and $1 billion[55] would similarly be reinvested elsewhere. Rates of return on different projects, particularly as balanced with other types of investment in a portfolio, will vary considerably. There is no indication of the size or profitability of a hypothetical revenue-generating mineral operation that would be approvable under baseline regulations. Solely for illustration, a 1% difference in return rate on $1 million is $10,000, while the same difference on a $1 billion project would be $10 million.
- It may be the case that an upland industrial project approved under the baseline has existing resource rights in the ORW. The costs associated with these rights are a form of sunk cost, as they have already been incurred and are not clearly recoverable, regardless of future decision-making. There may be prospects of using these resources for future profitability, but this depends on factors such as timing, alternatives, pricing, and flexibility or viability of alternative project options in compliance with regulation, as discussed above. The inability to assess or access claims to resources in a specific project scope or financial viability at a point in time does not necessarily equate with loss of resources that are potentially present.
- Finally, while some alternatives that would have met ORW requirements are not viable as in (a), above, in the short run, they may become viable as circumstances change. For example, if market prices for natural resource goods increase, it may become more

[54] Cascade Forest conservancy v. Heppler et al. Opinion no. 3:19-cv-00424-HZ. 02-15-2021. The court noted that defendant US Forest Service cites US Department of Agriculture estimates of one in 5,000 to 10,000 prospects developing into producing mines."
[55] Ibid.

financially viable to undertake a project with reduced scope and impacts. For exploratory or investigative projects, additional data and information may become available over time that better inform risk and financial decision-making. Technology may also change over time, affecting the size or scope of environmental impacts and any necessary project scoping or mitigation. If a project is delayed, rather than cancelled, project proponents would incur opportunity costs in the interim, of the difference between rates of return on different projects, as discussed above.

B.3 Forestry operation

A forestry operation impacting riparian areas, through harvest, processing, or access roads could potentially:

- Disturb soils and increase runoff into surface waters.
- Change habitat in waters, including logs.
- Increase riparian erosion.
- Reduce riparian shade.

Baseline requirements

Under the baseline, multiple federal regulations and land management approaches affect the locations, size, and timing of timber harvest. Expanded or more intensive use of designated timberland in designated ORW areas would be regulated by baseline regulations intended to prevent upland and shoreline impacts to water quality:

- Inventoried Roadless Areas under the federal Roadless Area Conservation Final Rule (2001), which restricts road construction and reconstruction, and timber harvest.
- Northwest Forest Plan designation of land outside the National Monument as "matrix" where timber harvest and silvicultural activities are expected to occur (Green River). https://www.fs.usda.gov/r6/reo/landuse/
- Approximately one-third of total stream length in the Cascade River ORW designation areas is in a National Forest (rather than National Park or Wilderness Area), and much of the surrounding land is managed as a Late Successional Reserve. While these Late Successional Reserve areas have historic timber harvest properties, Ecology communication with the US Forest Service[56] indicates that these lands are not actively being managed with intent to harvest.
- The above regulations and planning also overlap. Of the land designated as Late Successional Reserve in the Cascade River ORW designation area, most is protected

[56] Communication w/Forest Service staff on July 14, 2022 (Virtual meeting).

under the Roadless Area Conservation Rule. Approximately 65 percent of the roadless area is also designated to prohibit road construction or reconstruction.[57]

The objective of Late-Successional Reserves is to protect and enhance conditions of late successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl. These reserves represent a network of existing old-growth forests that are retained in their natural condition with natural processes, such as fire, allowed to function to the extent possible. The reserves are designed to serve a number of purposes. First, they provide a distribution, quantity, and quality of old-growth forest habitat sufficient to avoid foreclosure of future management options. Second, they provide habitat for populations of species that are associated with late-successional forests. Third, they will help ensure that late-successional species diversity will be conserved.[58]

Late Successional Reserves may be "treated" (harvested) for purposes of:

- Risk reduction, including removal of live and dead wood, to reduce risk of large-scale disturbance (fire).
- Salvage, including removal of dead trees only, in disturbances over ten acres in size.
- Silviculture, including thinning of stands of live trees only that are younger than 80 years.

Timber harvest activities are required to meet all existing requirements, including baseline surface water quality standards and antidegradation requirements (see Chapter 2).

The USFS applies forestry Best Management Practices (BMPs) using a process defined under the Forest Service Nonpoint Source Strategy. This strategy "involves applying approved BMPs, monitoring the implementation and effectiveness of the BMPs, and using the monitoring results to inform and improve management activities."[59] At a high level, the process is:

1. Approved BMPs are applied to all management activities to comply with state or national water quality goals. This may involve prescribing state-specific BMPs that are consistent with National Core BMPs, developed using state BMPs and land management plan direction.
2. National Core BMP monitoring protocols are used to monitor implementation and effectiveness.

[57] US Forest Service, 2000. Mt. Baker-Snoqualmie National Forest, Inventoried Roadless Areas. Map inset: Categories of National forest System Lands within the Mt. Baker-Snoqualmie N.F. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsmrs_072459.pdf

[58] US Forest Service, 1997. Gifford Pinchot National Forest Late-Successional Reserve Assessment. https://www.fs.usda.gov/detailfull/giffordpinchot/landmanagement/?cid=stelprdb5370602&width=full.

[59] US Forest Service, 2012. National Best Management Practices for Water Quality Management on National Forest System Lands. Volume 1: National Core BMP Technical Guide. Us Department of Agriculture Forest Service. FS-990a. April 2012.

3. Monitoring results are used to improve management activities, using the best available science. This may include collaboration with federal, state, and local agencies, and may result in corrective actions where BMP objectives were not met.
4. Monitoring results and findings are shared with federal, state, and local agencies.

National Core BMPs are "deliberately general and nonprescriptive" and the USFS notes in its Technical Guide that, "Each BMP in this document has a list of recommended practices that should be used, as appropriate or when required, to meet the objective of the BMP. Not all recommended practices will be applicable in all settings, and there may be other practices not listed in the BMP that would work as well, or better, to meet the BMP objective in a given situation… State BMPs, Forest Service regional guidance, land management plans, BMP monitoring information, and professional judgment should be used to develop site-specific BMP prescriptions.".[60]

Under the ORW rule amendments

Given the scope and coverage of baseline requirements, it is unlikely that activities in most forested areas will change under the amended rule. Potential differences in management are not likely to occur in ORW-designated areas that are already protected under baseline regulations and land management (e.g., the Roadless Area Conservation Rule, National Parks, and Wilderness Areas).

It is possible, however, that given the variable and site-specific nature of USFS process for prescription of BMPs, baseline BMPs may differ from those prescribed with the amended rule in effect. This could potentially occur if, in future, Late Successional Reserve or "matrix" forests within ORW boundaries, but not covered by the Roadless Area Conservation Rule, are managed unexpected ways (i.e., for harvest, contrary to current indications from USFS staff[61]). We could not identify the breadth or scope of this difference, however, precisely because federal BMPs are "deliberately general and nonprescriptive," and their development process accounts for state requirements and site-specific attributes. Depending on the forestry site they are applied to, federal BMPs may, in fact, be sufficient to protect ORWs. In other cases, the BMPs required accounting for ORWs could potentially be more stringent.

If such a circumstance occurs, state BMPs would drive requirements for a forestry operation performing allowable types of harvest in a Late Successional Reserve (rather than a broader definition of BMPs). There is uncertainty inherent in identifying the difference between baseline BMPs in such a case, though more stringent requirements could include:

- Forestry buffers consistent with Forest and Fish rules[62].

[60] Ibid.
[61] Communication w/Forest Service staff on July 14, 2022 (Virtual meeting).
[62] In 1999, the state Legislature passed Forest and Fish legislation as part of the 1999 Salmon Recovery Act (Chapter 4, Laws of 1999, 1999 1st Special Session, "Forest Practices – Salmon Recovery"). This legislation was designed to comply with the federal Endangered Species and Clean Water Act to protect fish and other aquatic species by protecting the temperature and quality of surface waters. It affected multiple RCWs, including our authorizing statute, Chapter 90.48 RCW, and laws applying to forestry practices.

- Other BMPs associated with road management found the Forest and Fish rules.

Potential costs associated with state BMPs, as compared to federal BMPs would depend on site-specific and project-specific factors, including but not limited to water quality, species present, and riparian land and forest qualities. Generally, however, more-protective BMPs would be associated with reduced degree, frequency, or type of harvest. For example, a 2007 study of ten sample locations estimated the baseline "soil expectation value" (the value of land by itself for the purpose of timber, starting with bare ground) of forests in Washington and Oregon at between $82 and $1,420 per acre ($125 to $2,158 in current dollars[63]), and estimated that shifting from no buffers to buffers under the Forest and Fish rules (regulated, non-zero harvest) reduced forest values by between 17.5 and 41.5 percent, depending on the attributes of the property.[64] Soil expectation values were found to decrease between 22.9 and nearly 80 percent (with one outlier of 114.8 percent), reflecting reduced incentives to continue with long-term forestry planting and harvest activities. These ranges, however, reflect shifting from no buffers to entire managed buffers that may significantly reduce harvestable area, particularly of smaller private parcels. The higher range for soil expectation value is also not likely to accurately reflect values in federally managed forests with existing timber resources. These therefore likely significantly overestimate the costs of incremental expansions of buffer widths, or of maintenance of existing widths with additional harvest restrictions, in public forests.

In a 2002 Report to the Legislature, the WA Department of Revenue (DOR) assessed the value of "leave tree" timber (trees required to be left in place instead of harvested, for which landowners may be compensated) in areas where harvest was restricted by previous forest practices rules, and areas affected by new forest practices rules reflecting "enhanced aquatic resource requirements".[65] This report similarly focused on privately owned forest land, and its findings may not be fully applicable to incrementally more protective BMPs in federal forests. DOR found that the value of leave trees in 88 previously restricted harvest units in western Washington was approximately $1.0 million, and additional leave trees valued at $2.8 million would be protected from harvest under new rules establishing minimum 50-foot buffers (a difference of $3.2 million in current dollars[66], or $36,385 per harvest unit, on average).

It is important to note that the above types of costs could be incurred under the baseline as well. The amended rule provides clarity in which BMPs apply, reducing the likelihood of insufficiently protective federal BMPs being implemented, though we reiterate that the ultimate forestry management may not be materially different.

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[63] US Bureau of Labor Statistics, 2023. Consumer Price Index, CPI-U. October 2023. https://www.bls.gov/cpi/tables/supplemental-files/.

[64] Zobrist, KW and BR Lippke, 2007. Economic costs of different riparian management regulations in the Pacific Northwest. Western Journal of Applied Forestry 22(1) 2007, pp. 36 – 41.

[65] WA Department of Revenue, 2002. Comparing the value of "Forest and Fish" leave-trees with the Forest Excise Tax Credit. Report to the Legislature, pursuant to Section 402, Chapter 4, Laws of 1999, 1st Special Session, Engrossed Substitute House Bill 2091.

[66] US Bureau of Labor Statistics, 2023. Consumer Price Index, CPI-U. October 2023. https://www.bls.gov/cpi/tables/supplemental-files/.

B.4 Benefits of Outstanding Resource Waters

Due to the hypothetical, project-specific, site-specific, and highly variable potential environmental impacts of projects potentially approved under the baseline, that also do not meet ORW requirements, we could not quantify the benefits of the ORW amendments. Benefits would occur in circumstances where:

- A project or alternative assessed under the baseline is approved, but would affect surface waters or groundwater in the ORW.
- ORW requirements, over and above baseline requirements, result in either:
    - Choice of a different project alternative, when a viable alternative is identified with lower impacts.
    - Project cancellation or relocation.
- The adjustment, cancellation, or relocation of a project results in avoided impacts to the ORW.

Potential benefits arise from avoided:

- Direct contamination of surface waters.
- Increases in runoff.
- Contamination of groundwater, or transport of contaminants across groundwater.

In the adopted ORW areas, based on the hypothetical types of projects discussed in sections B.1 through B.3, the above benefits would likely be associated with reduced:

- Metals contamination. Contamination with metals such as copper can damage fish and other animal organs, their immune systems, and nervous systems.[67] Copper also affects the ability of young fish to avoid predation. Industrial activities can also transport naturally occurring metals, and metalloids such as arsenic, into groundwater and connected surface waters.
- Suspended solids in the water. Suspended solids can decrease dissolved oxygen levels in the water, reducing the oxygen available to organisms, and increase water temperature.
- Nutrient contamination. Excess nutrients contribute to harmful blooms of algae and low oxygen levels.

[67] See, e.g.: Eisler, R., 1998. Copper hazards to fish, wildlife, and invertebrates: a synoptic review (No. 33). US Department of the Interior, US Geological Survey; Brix, K.V., De Boeck, G., Baken, S. and Fort, D.J., 2022. Adverse outcome pathways for chronic copper toxicity to fish and amphibians. Environmental toxicology and chemistry, 41(12), pp.2911-2927; and Smriti, Aman Ahmed, Samiksha Lodhi, Sanjive Shukla. Copper toxicity in aquatic ecosystem: A Review. Int J Fish Aquat Stud 2023;11(4):134-138. DOI: https://doi.org/10.22271/fish.2023.v11.i4b.2835.

In this section, we provide illustrative values of environmental goods and services, for consumptive and non-consumptive purposes. These values include cultural and existence values held for wildlife, as well as for the waters themselves.

Table 2. Benefits to Cascade River, Napeequa River, Green River and Soap Lake.

Benefit Category	Cascade River	Napeequa River	Green River	Soap Lake
Values of exceptional water attributes, including relatively pristine waters and water quality of withdrawals	**The headwaters of the Cascade River are undeveloped and free from human sources of degradation.**	**The boundary of the Napeequa River outstanding resource water designation is entirely absent of human development**	**The upper Green River watershed has experienced little human disturbance and the majority of the boundary is protected within the Mount St. Helens National Volcanic Monument.**	**Exceptionally high in levels of calcium, chloride, magnesium, sodium, and sulfate; unique lower layer of water that has been isolated from the rest of the lake for at least 2,000 years.**
Recreational Values	**Whitewater kayaking, hiking trails, and campgrounds**	**Hiking**	**Hiking, camping; mountain biking; horseback riding and Green River Horse Camp at Mount St. Helens National Volcanic Monument; Green river trail; and "Valley of the Giants".**	**A destination for those seeking to soak in the water to treat numerous conditions such as rheumatism, liver and kidney diseases, and skin conditions.**
Fish and Wildlife Values, including endangered or threatened species and unique organisms	**Threatened spring and summer chinook, fall chum, coho, sockeye, resident coastal cutthroat trout, bull trout, and odd-year pink salmon. Endangered species protected: state endangered northern spotted owl, state endangered lynx, state endangered grizzly bear, and wolverine**	**Sockeye, spring Chinook, Westslope cutthroat, rainbow trout, mountain whitefish, and bull trout. Other species protected: federally threatened northern spotted owl, wolverine (Endangered Species Act candidate for listing), mule deer, federally threatened lynx, and gray wolf**	**Fall Chinook, winter steelhead, cutthroat trout, summer steelhead, and North Fork Toutle River steelhead, and Wild steelhead gene bank by Washington Department of Fish and Wildlife. Other species protected: federally threatened northern spotted owl habitat)**	**Shorebirds and waterfowl, such as: eared grebes, ruddy ducks, red-necked phalarope, western sandpiper, and lesser yellowlegs. Home to bacteria that are particularly well-adapted to these extreme high saline, high sulfide environments.**

Benefit Category	Cascade River	Napeequa River	Green River	Soap Lake
Cultural and use values to tribes	**Maintenance and restoration of tribal lifeways and fisheries statewide. This includes local Upper Skagit and Sauk-Suiattle tribes.**	**Maintenance and restoration of tribal lifeways and fisheries statewide.**	**Maintenance and restoration of tribal lifeways and fisheries statewide. This includes local Confederated Tribes and Bands of the Yakama Nation and the Cowlitz Indian Tribe**	**Maintenance and restoration of tribal lifeways and fisheries statewide. This includes local Confederated Tribes and Moses-Columbia Tribe. Tribes gathered on the shores of the lake for ceremonies and used the waters to heal those suffering from ailments.**
Educational and scientific values	**e.g., Biodiversity and Ecological study**	**e.g., Biodiversity and Ecological study**	**Extremely unique opportunity for scientists studying the ecological processes of recovery from an eruption, and for the public to learn about and recreate in such a singular landscape**	**Soap Lake was designated as a Microbial Observatory by the National Science Foundation. At least four species of bacteria have been identified as endemic to the lake.**
State-specific regulatory protection of ORW	**Mitigating uncertain future changes in federal regulations**	**Mitigating uncertain future changes in federal regulations**	**Mitigating uncertain future changes in federal regulations**	**Mitigating risk of future point sources that may degrade outstanding lake attributes through permitted discharge.**

B.5.1 Values of exceptional water attributes, including relatively pristine waters and water quality of withdrawals

The literature has estimated the economic values of water quality. For instance, Papenfus (2019) conducted a study using data from Washington State to estimate the impact of water quality impairments on residential housing prices in Puget Sound. This research revealed that properties located adjacent to impaired (listed as persistently exceeding water quality standards) waterbodies experienced an annualized depreciation of $1,942 in 2011 dollars[68] compared to properties that were along unimpaired waterbodies.

A recent judge's order further underscores the economic values of improved water quality. Electron Hydro, LLC, located near Mount Rainier National Park in Washington state, has been instructed to pay a total of 1 million dollars as a result of a spill of synthetic field turf and its associated rubber particles into the Puyallup River, an important habitat for salmon rearing, in 2020.[69] This is also the most substantial financial penalty ever imposed in an environmental criminal case in Washington State's history.

We also note that the exceptional nature of the water quality in the ORW waterbodies makes them differ from other waterbodies, potentially resulting in a higher value held for their unique qualities. The high mineral content, salinity, alkalinity, and layered waters of Soap Lake are extraordinary, to the extent that the water and mud are valued for their healing properties. The relatively pristine nature of the water in the river ORWs contributes to a thriving ecosystem and supports all the related benefits discussed below.

B.5.2 Recreational values

We were unable to quantify the degree to which the amendments will attract more recreational visits to the outstanding resource waters compared to the baseline. However, we can offer insights into the value individuals place on recreational activities in freshwater settings. In a 2008 study focused on the rivers and lakes within the Puget Sound Basin, aesthetic and recreation values were estimated to be $19,700 per acre per year in 2006 dollars.[70] This demonstrates the significant value people attach to these natural resources for recreational purposes. Similarly, a separate study conducted in 2020 examined the recreational values associated with fresh water in Florida. The research found that recreation in the St. Johns River

[68] Papenfus M. 2019. Do housing prices reflect water quality impairments? Evidence from the Puget Sound. Water Resource Economics. 27:1-10. Available online at: https://pubmed.ncbi.nlm.nih.gov/36419526/

[69] Electron Hydro dam owner ordered to pay largest financial penalty in an environmental criminal case in state history. Available online at: https://www.atg.wa.gov/news/news-releases/electron-hydro-dam-owner-ordered-pay-largest-financial-penalty-environmental

[70] Earth Economics 2008. A new view of the Puget Sound Economy. Available online at: https://www.sierraclub.org/sites/default/files/sce-authors/u591/AI-Puget-Sound-Economics.pdf

Basin was valued at $212 per household per year.[71] This indicates the importance placed on engaging in recreational activities within such environments.

B.5.3 Fish and Wildlife Values, including endangered or threatened species and unique organisms

Fish values include use values and non-use values. The use value of fish includes value of commercial fish harvest (market priced) and value of recreational fish trips (market and nonmarket values). According to the report "State of salmon in watershed 2022",[72] domestic commercial fisheries create nearly 23,000 jobs in Washington, with salmon harvest alone worth almost $14 million a year. People fishing and harvesting shellfish recreationally in Washington spend an estimated $1.5 billion annually on equipment and trip-related costs, supporting many rural families and businesses.

Non-use values of fish may include existence value (the species existing in and of itself) and bequest value (the ability of future generations to have a species). Many of these values are difficult to quantify, particularly non-use values that are not reflected in expenditures such as spending on travel or recreational fishing.

Endangered or threatened species and unique organisms play vital roles in maintaining ecosystem balance and functioning. Their presence or absence can have great impacts on other species and the overall health of ecosystems. In terms of its economic values, according to a 2011 study, the total annual value of ecosystem services in the United States was estimated to be approximately $1.6 trillion. This study also revealed that the economic value of ecosystem services provided by National Wildlife Refuges was more than $32 billion each year.[73]

We note that the ORWs include tributaries for which there is limited or lacking documentation of salmonid spawning, although non-salmonid fish and other aquatic organisms in these waters are equally protected under the Clean Water Act. However, fish including endangered and threatened salmonids are present in larger tributaries and mainstem rivers fed by high-quality headwater streams. Headwater quality and habitat in small tributaries upstream provide for additional spawning and rearing areas for these fish. Outstanding water quality in headwaters and tributaries to productive spawning waters, unlike degraded waters, carries less risk of fish exposure to pollutants throughout their lifecycle. This contributes to improved spawning and survival rates.

[71] Borisova et al., 2020. Economic value of Florida water resources: value of freshwater-based recreational experiences. Available online at: https://edis.ifas.ufl.edu/publication/FE1067

[72] State of salmon in watershed 2022. Report. https://stateofsalmon.wa.gov/salmon-101/.

[73] Southwick Associates. The economics associated with outdoor recreation, natural resource conservation and historic preservation in the United States. 2011. Available online at: https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/121205/references/NFWF_EconomicValueofOutdoorRecreation.pdf

Other wildlife species, such as birds, also have both use and non-use values. Birds have been valued for their consumptive uses such as feathers and protein, and they contribute to recreational experiences in nature. For example, a recent study found that individuals are willing-to-pay an average of $56.74 for bird watching in 2020 dollars.[74]

We were unable to quantify the degree to which the amendments will improve the population of fish and wildlife compared to the baseline. Thus, we were unable to confidently quantify improved fish and wildlife values resulted from the rule amendment.

We also considered the expenditures spent on nearby conservation efforts, including nearby conservation easements.[75] These are not necessarily specific to any particular type of value, and likely include various recreation values and value contributions from land habitat protection, instream species protection, and other values collectively held in the lands and waters. The Tall Timbers Ranch easement protects critical areas on the White River and Napeequa River at River Mile 11, and was funded by salmon recovery grants. The easement extinguished all development rights and limited land uses (similar to existing camp use on the property) of a total of three 20-acre easement areas (across two phases) that collectively include over 2,500 feet of riverbanks on the Napeequa, and its confluence with the White River as well as over 5,500 feet along the White River. Between 2009 and 2015, nearly $850,000 was allocated in grants supporting the Tall Timbers Ranch project.[76]

B.5.4 Cultural and use values to tribes

Tribal values for waters designated as ORWs include both use values and non-use values for the waters and areas themselves, as well as the environment and wildlife they support:

- Use values, include but are not limited to use of traditional locations, resources, and foods in maintenance and restoration of traditional lifeways. Use values also include tribal fisheries in usual and accustomed areas, for sale, or for consumption including ceremonial and subsistence.
- Non-use values, such as spiritual value (intrinsic worth and significance that a resource holds in spiritual, religious, or tribal context), existence value (the value held for the continued existence of ORW attributes and the values they support, even if they are not directly used), and bequest value (the value of maintaining these resources and ORW qualities for future generations.

[74] Bonacquist-Currin, M. 2020. The economic value of birdwatching: a meta-analysis and summary of stated preference studies. Available online at: https://ecommons.cornell.edu/bitstream/handle/1813/103338/BonacquistCurrin_cornell_0058O_11101.pdf?sequence=1

[75] Note that these are on private property on segments of the river outside the ORW boundary.

[76] WA Recreation and Conservation Office, 2023. Salmon Recovery Project database. https://srp.rco.wa.gov/project/290/14508. Over $650,000 in 2015-dollars converted to current dollars using US Bureau of labor Statistics, 2023. CPI Inflation Calculator. https://www.bls.gov/data/inflation_calculator.htm.

Both use and non-use values are difficult to quantify, as they encompass broad, complex, and interrelated values connected to history, culture, economics, spiritual beliefs, identity, and protection of these values for future generations.

B.5.5 Educational and scientific values

Educational and scientific values have both monetary values and non-monetary values, such as cultural appreciation and scientific knowledge growth. The rule amendments would increase the educational and scientific research opportunities in ORWs. We were not able to quantify direct monetary value to educational benefits. To illustrate the value of maintaining the ORWs, we look to their attributes and investments made in them:

In 2002 – 2007, the National Science Foundation awarded over $840,000 in grants to researchers to study the lake to learn about the possibility of extraplanetary life.[77] Addressing the unique nature of Soap Lake, the ORW designation applicants (Soap Lake Conservancy and Confederated Tribes of the Colville Reservation) indicated that:

- Soap Lake is an alkaline meromictic lake, with very high salinity and an exceptional mineral profile. Research by Bennet summarized various study results for Soap Lake and found 22 constituents of salts, minerals, free elements, and an unusual oil (ichthyol).[78]
- As a result of the unusual water chemistry, specialized bacteria evolved in Soap Lake and have created a unique environment worth conserving.[79] The chemocline between the upper and lower layer contains a bacterium unique to Soap Lake, named Thioalkalimicrobium microaerophilum sp. nov.;[80] and a unique bacterium of a newly described genus was isolated from driftwood in Soap Lake and named Nitrincola lacisaponensis gen. nov., sp. nov.[81]
- Soap Lake was studied by scientists at Central Washington University through National Science Foundation grants due to potential similarities with possible lakes on subsurface Mars; the lake was given a rare designation as a National Science Foundation Microbial Lab in 2002. Over 100 scientific research studies have referenced Soap Lake microbial life, algae, minerals, or its element profile; many of these references pertain to direct research conducted on the lake.[82]

[77] https://www.nsf.gov/awardsearch/showAward?AWD_ID=0132158
[78] Bennett, WAG. 1962. Saline lake deposits in Washington. In Washington Division of Mines and Geology Bulletin 49.
[79] Paul VG and MR Mormile. 2017. A case for the protection of saline and hypersaline environments: a microbiological perspective. FEMS Microbiology Ecology, 93.
[80] Sorokin DY, Foti M, Pinkart HC and G Muyzer. 2007. Sulfur-oxidizing bacteria in Soap Lake (Washington State), a meromictic, haloalkaline lake with an unprecedented high sulfide content. Appl. Environ. Microbiol, 73(2): 451-455
[81] Dimitriu PA, Pinkart HC, Peyton BM and MR Mormile. 2008. Spatial and temporal patterns in the microbial diversity of a meromictic soda lake. Washington State. Appl. Environ. Microbiol., 74: 4877–4888
[82] https://scholar.google.com/scholar?as_vis=0&q=%22soap+lake%22&hl=en&as_sdt=1,48