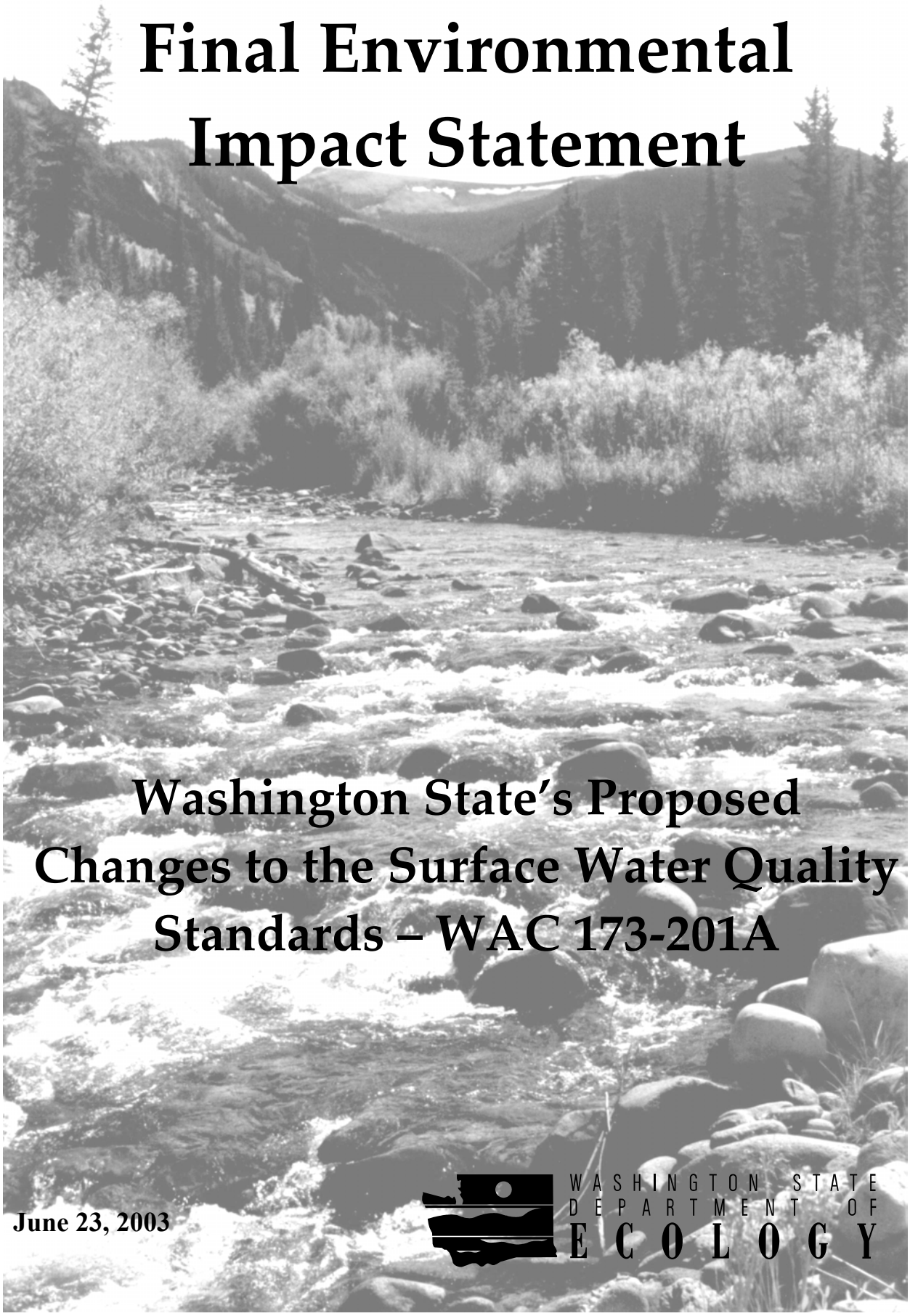
Final Environmental Impact Statement



Washington State's Proposed Changes to the Surface Water Quality Standards – WAC 173-201A

June 23, 2003

WASHINGTON STATE DEPARTMENT OF ECOLOGY

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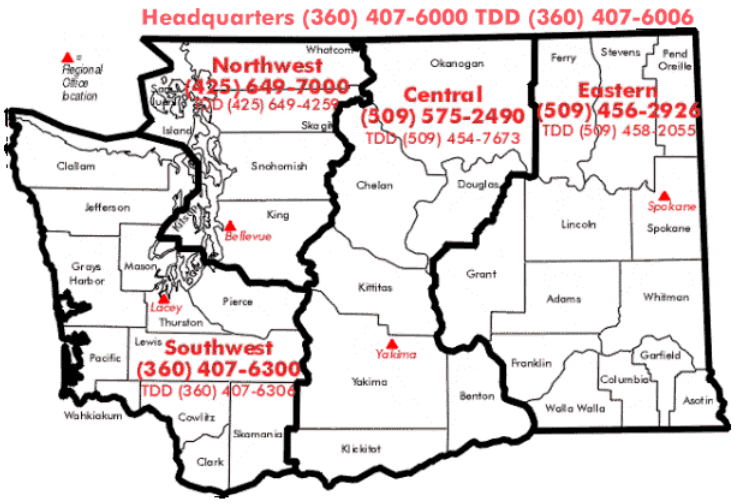

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June 23, 2003

To Interested Party:

The Washington Sate Department of Ecology (Ecology) is pleased to issue this Final Environmental Impact Statement (FEIS) on the changes to the surface water quality standards (WAC 173-201A). The FEIS was prepared to satisfy the requirements of the State Environmental Policy Act (SEPA).

The state's surface water quality standards set limits on pollution in our lakes, rivers and marine waters in order to protect beneficial uses, such as swimming and fishing. The Draft Environmental Impact Statement and rule received considerable comments and the FEIS alternatives are based on the feedback that we received.

This FEIS addresses only the key parts of the water quality standards that Ecology is proposing to change. Comments were received on other parts of the rule but since they are not part of the change they were not included in this FEIS. The key environmental issues and options facing Ecology that are addressed in this FEIS are:

Restructuring the Standards

Antidegradation Implementation Plan:

- Analysis for degrading waters that are higher quality than water quality standards (Tier II)
- Designation of Outstanding Resource Waters (Tier III)
- Adaptive management for general permits

Temperature Criteria:

- Char criteria – adding temperature requirements to protect spawning and rearing life-stages
- Salmon, steelhead and trout criteria – adjusting temperature requirements to protect spawning and rearing life-stages

Dissolved Oxygen Criteria for salmonids

Bacteria Criteria

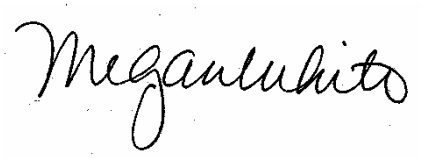
Ammonia Criteria

Miscellaneous:

- criteria to protect agricultural water supply
- compliance schedules for dam relicensing
- allowance for human structural changes that cannot be effectively remedied
- application of the dissolved oxygen and temperature criteria

Please visit the water quality standards Web site for a comprehensive discussion of the proposed changes at: www.ecy.wa.gov/programs/wq/swqs. For assistance or questions, please contact Susan Braley at (360) 407-6414.

Sincerely,



Megan White, P.E., Manager
Water Quality Program

Fact Sheet

Title:	Washington State's Proposed Changes to the Surface Water Quality Standards, WAC 173-201A
Description:	Chapter 173-201A WAC Water Quality Standards for Surface Waters of the State of Washington. These amendments would modify the existing surface water quality standards for Washington. This rule making will propose to revise the surface water quality standards by: • Moving from the current class-based system to a use-based system for designating beneficial uses of waters (for example swimming and aquatic life habitat) in Washington. • Making changes to criteria (for example temperature and bacteria) for designated uses of the waters. • Providing more clarity and detail on implementing the regulation, including the state's antidegradation policy. • Organizing the structure and sections of the regulation to make it easier to use. These changes are being undertaken to incorporate new science, provide more detail and clarity on implementing the regulations, and better tailor the criteria assigned to our waters to the characteristic uses that actually exist in those waters. This FEIS addresses only the key environmental parts of the water quality standards that Ecology is proposing to change.
Lead Agency and Responsible Official:	Megan White, P.E. Program Manager, Water Quality Program Washington State Department of Ecology PO Box 47600 Olympia, WA 98504-7600
Person to contact for more information:	Susan Braley Water Quality Standards Unit Supervisor Washington Dept. of Ecology, Water Quality Program subr461@ecy.wa.gov (360) 407-6414 (360) 407-6426 – facsimile
Principle contributors to the EIS:	Cheryl Niemi, Andrew Kolosseus, Mark Hicks, Melissa Gildersleeve, Susan Braley
Date DEIS was issued	January 2, 2003
Date DEIS Comments Due:	March 7, 2003.
Public Hearings were held:	January 27 6-9 PM

	Chelan Co. Auditorium, Wenatchee, WA 400 Douglas (corner of Washington & Douglas) January 28 6-9 PM Spokane Falls Community College, Spokane, WA SUB #17, Lounge AB 3410 W. Fort George Wright Dr. January 29 6-9 PM Columbia Basin College, Pasco, WA Bldg. H, Gjerde Facility 2600 N. 20th Ave. January 30 6-9 PM Department of Ecology - Central Regional Office, Yakima, WA 15 W. Yakima Ave., Suite 200 February 3 6-9 PM Whatcom County Courthouse, Bellingham, WA Council Chambers 311 Grand Ave. February 4 6-9 PM Seattle Center, Seattle, WA NW Rooms: Lopez Room 305 Harrison St. February 5 6-9 PM Vern Burton Memorial Community Center, Port Angeles, WA 308 E. 4th St, February 6 6-9 PM Water Resource Center, Vancouver, WA 4600 SE Columbia Way
Commenting on DEIS	Comments on DEIS could have been submitted by postal mail, facsimile (fax), or e-mail. All comments were to be post marked or date stamped no later than March 7, 2003.
FEIS Date of Issuance:	June 23, 2003
Proposed Date of Implementation:	The rule will be adopted by the Department of Ecology by July 1, 2003. It is then sent to the Environmental Protection Agency (EPA) for approval under the Clean Water Act and to the federal fish agencies for approval under the Endangered Species Act (ESA).
Subsequent Environmental	Any future rule-makings (such as completion of Use

Review:	Attainability Analysis) must go through separate SEPA processes.
Location of FEIS Information:	FEIS Information is available from the Department of Ecology at the address above. Additional information is also available on Ecology's website at www.ecy.wa.gov/programs/wq/swqs.
Cost of FEIS:	Free for the initial printing of the FDEIS. Once the initial printing supply has been exhausted, standard reproduction costs exist.

Table of Contents

Reference Material (all materials are available on-line at www.ecy.wa.gov/programs/wq/swqs)

- Proposal to Change to Use-Based Standards Decision Process Memo by Megan White
- ***Water Quality Antidegradation Implementation Plan – Draft Discussion Paper*** **(Department of Ecology publication number 00-10-069).**
- Proposed Antidegradation Implementation Plan Decision Memo by Megan White
- ***Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary*** **(Department of Ecology publication number 00-10-070)**
- Proposed Temperature Criteria Decision Process Memo by Megan White
- ***Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary*** **(Department of Ecology publication number 00-10-071)**
- Proposed Dissolved Oxygen Decision Process Memo by Megan White
- ***Setting Standards for the Bacteriological Quality of Washington's Surface Water – Draft Discussion Paper and Literature Summary*** **(Department of Ecology publication number 00-10-072)**
- Proposed Bacteria Criteria Decision Process Memo by Megan White
- **Department of Ecology's draft discussion document** ***Review of USEPA's 1999 Ammonia Criteria for Fresh Waters***
- Proposed Ammonia Criteria Decision Process Memo by Megan White
- ***Establishing Surface Water Quality Criteria for the Protection of Agricultural Water Supplies – Draft Discussion Paper*** **(Department of Ecology publication number 00-10-073)**
- Proposed Agricultural Water Supply Criteria Decision Process Memo by Megan White
- Proposed Language Addressing Regulation of Dams Decision Process Memo by Megan White
- **Chapter 173-201A WAC 173-201A – Water Quality Standards for Surface Waters of the State of Washington**

- *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards,* EPA document number 910-B-03-002, April 2003

Summary

The purpose of this Final Environmental Impact Statement (FEIS) is to identify the potential environmental impacts of the changes to the water quality standards and to identify and analyze reasonable alternatives and mitigation measures. An Environmental Impact Statement provides an impartial discussion of significant environmental impacts. It is used to inform decision makers and the public of reasonable alternatives, including mitigation measures, which would avoid or minimize adverse impacts or enhance environmental quality.

The purpose of the FEIS is not to address every possible alternative. Although not specifically designed to meet the requirement of "least burdensome" (which is evaluated in the draft Administrative Procedures Act (APA) material), each alternative has incorporated cost considerations because of the broad, multi-year stakeholder involvement process used to develop them. Drafts of the APA materials are available on the Water Quality Standards Web site.

This FEIS is for a nonproject activity. Nonproject actions are governmental actions involving decisions on policies, plans or programs that contain standards controlling use or modification of the environment. This includes the adoption or amendment of comprehensive plans, ordinances, rules and regulations, WAC 197-11-704(20(b).

Purpose and Need of the Proposal

The state's surface water quality standards set limits on pollution in our lakes, rivers and marine waters in order to protect beneficial uses, such as swimming and aquatic life. The federal Clean Water Act requires states to review and revise as necessary their water quality standards every three years. The majority of changes in this proposal have been analyzed and discussed with stakeholders over the past ten years.

FEDERAL REQUIREMENT

> **Clean Water Act 303(c) (2)(A) states:**
> "…Such standards shall be such as to protect the public health or welfare, enhance the quality of the water and serve the purposes of this Chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes and agricultural, industrial and other purposes and also taking into consideration their use and value for navigation.

In addition to the federal requirements the Department of Ecology is required under State Statute to "retain and secure high quality waters".

WASHINGTON STATUTORY REQUIREMENTS:

WATER POLLUTION CONTROL ACT

90.48.010 Policy enunciated.

It is declared to be the public policy of the state of Washington to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all waters of the state. The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington.

90.48.035 Rule-making authority.

The department shall have the authority to, and shall promulgate, amend, or rescind such rules and regulations as it shall deem necessary to carry out the provisions of this chapter, including but not limited to rules and regulations relating to standards of quality for waters of the state and for substances discharged therein in order to maintain the highest possible standards of all waters of the state in accordance with the public policy as declared in RCW 90.48.010.

90.48.260 Federal Clean Water Act – Department designated as state agency, authority – Powers, duties and functions.

The Department of Ecology is hereby designated as the State Water Pollution Control Agency for all purposes of the federal clean water act as it exists on February 4, 1987, and is herby authorized to participate fully in the programs of the act. . .

WATER RESOURCES ACT OF 1971

RCW 90.54.020 General declaration of fundamentals for utilization and management of waters of the state.

(b) Waters of the state shall be of high quality. Regardless of the quality of the waters of the state, all wastes and other materials and substances proposed for entry into said waters shall be provided with all known, available, and reasonable methods of treatment prior to entry. Notwithstanding that standards of quality established for the waters of the state would not be violated, wastes and other materials and substances shall not be

allowed to enter such waters which will reduce the existing quality thereof, except in those situations where it is clear that overriding considerations of the public interest will be served.

After a lengthy public process, several important changes to the state's water quality standards are being made. The changes are based on new science, public feedback at statewide workshops, special work sessions, and new water quality data.

Regulatory Framework

The Department of Ecology is conducting a formal revision of the state regulations. The process included holding public hearings around the state. The hearings and the associated written comment period served as a crucial opportunity for the public to comment on the proposal before it was adopted as the state's revised water quality standards. After adoption, Ecology is required to submit the rule to the United States Environmental Protection Agency (EPA) for approval. The federal fish and wildlife agencies will determine if the rule meets the Endangered Species Act (ESA). The federal approval and consultation process follows the following steps:

1. Ecology submits the adopted rule to the United States Environmental Protection Agency (EPA).
2. EPA reviews the submittal for acceptability under the Clean Water Act (CWA).
3. At the same time, EPA develops a biological assessment if there are threatened and endangered species involved and issues a draft determination of whether or not Endangered Species Act (ESA) will be satisfied.
4. If EPA believes harm to threatened and endangered species does not rise to jeopardy they would pass along the biological assessment to United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS).
5. If USFWS and NMFS agree with the biological assessment then ESA would not be used to deny the rule, but if harm is great enough they can make conditions for approval.
6. If Ecology's draft rule rises to jeopardy then the federal fish agencies must identify alternative reasonable and prudent measures.
7. If either the Clean Water Act or the Endangered Species Act would be violated EPA would reject Ecology's rule.

Summary of the Proposal

Restructuring the Water Quality Standards
Ecology proposes to change the way it categorizes beneficial uses (aquatic life habitat, recreation and water supply). Uses are now assigned in pre-determined sets, or "classes." The proposed change is to reorganize the standards so that individual beneficial uses are assigned independently to waterbodies.

Water Quality Antidegradation Plan

The existing water quality standards contain an antidegradation policy that is required by federal regulation. The proposed revisions clarify how beneficial uses (aquatic life habitat, recreation and water supply) are to be protected and the conditions under which water quality can be degraded. Also included is a process for designating waterbodies having both exceptional water quality and public value for protection from all future sources of degradation.

Temperature Criteria
The existing temperature criteria for protecting aquatic life have been criticized as being too stringent by some and too lenient by others. These concerns led the Department of Ecology (Ecology) to conduct a detailed review of the temperature requirements for Washington's aquatic species. As a result of this review, Ecology is proposing to revise the existing temperature criteria. The new criteria are based on current scientific understanding of the effects of temperature on aquatic species. The criteria would apply to the following key species groupings: char (bull trout and Dolly Varden), salmon and coastal trout, eastern redband trout, and indigenous warm water fish.

Dissolved Oxygen Criteria
The existing state criteria were developed many years ago, and concerns were raised that they might be out of date. As a result, Ecology has conducted a detailed review of the current technical literature and proposed alternatives to the dissolved oxygen criteria.

Bacteria Criteria
The existing state criteria for bacteria use fecal coliform concentrations as an indicator of the safety of the water for human health protection. EPA has requested states using fecal coliform as a bacterial indicator switch to indicators that are more indicative of human pathogens, such as *E.coli* and enterococci.

Ammonia Criteria
In 1999, the EPA published updated criteria for ammonia that were less stringent than Ecology's existing criteria. Ecology is proposing to adopt EPA's 1999 updated acute (short-term effects) criteria in all fresh water and adopt EPA's 1999 updated fresh water chronic (long-term effects) criteria for waterbodies without salmonids. Ecology is proposing to continue to use its existing chronic criteria in waterbodies with salmonids.

Agricultural Water Supply Criteria
The existing water quality standards include a narrative statement that says the quality of agricultural water supplies must be protected. However, there are no numeric criteria to ensure that protection occurs. Ecology proposed adding specific numeric criteria for conductivity, total suspended solids and bicarbonate to protect the use of water for irrigated agriculture.

Dam Relicensing
New language will clarify that a compliance schedule can be used to issue water quality certifications for relicensing existing dams. In the compliance schedule, dams need to implement technical and operational changes in an effort to meet standards. If standards cannot be met through the application of such changes, dams can pursue a site-specific standard or changes to the beneficial uses designated for the waterbodies in the standards.

Other Changes
There is an analysis on language allowing for human structural changes that cannot be effectively remedied and language on how to apply dissolved oxygen and temperature criteria. There are numerous typos being fixed that are not a part of this analysis. In addition, language

referencing federal requirements for existing tools such as site specific criteria, use attainability analysis and variances have been included but not analyzed in this EIS.

History of the Proposal

The Clean Water Act requires that states hold public hearings to review their Water Quality Standards at least once every three years and make changes as appropriate. This effort is often called the "Triennial Review."

Ecology began its Triennial Review to revise the Water Quality Standards in the early 1990s. The process started with outreach to our stakeholders to identify issues that needed to be reviewed and revised in the Water Quality Standards. Ecology held a series of public advisory panels and focused technical and policy workgroups. Over the next few years, these groups developed proposed changes to the Water Quality Standards.

In 1997, Ecology moved forward on several revisions to the Water Quality Standards. The rule-making process was completed in November 1997. These revisions included updating toxics criteria, adopting state-specific criteria for cyanide and copper in marine waters, and developing lake nutrient criteria guidelines. Work continued with stakeholders to address the more complex and controversial issues.

In 1998 and again in January 2001, Ecology held public workshops around the state to hear feedback and alternative ideas on major parts of this proposal. Over the past three years, the proposed revisions to the Water Quality Standards have continued to be improved through:

- public feedback at the workshops,
- a series of in-depth stakeholder meetings, and
- the collection of new water quality data.

Ecology is completing the formal rulemaking process. Eight formal public hearings were held.

Summary of Environmental Impacts

The water quality standards contain numeric and narrative criteria that address the following uses:

- Aquatic life
- Water contact
- Water supply (domestic, agricultural, industrial, and stock watering)
- Miscellaneous (wildlife habitat, commerce and navigation, and fish harvesting)

The Water Quality Standards are used to:

- determine the health of waterbodies through an assessment and listing of impaired waterbodies - 303(d) list

- condition discharge permits
- set the level at which the water must be cleaned for impaired waterbodies

Summary of Alternatives

This FEIS addresses 14 issues in-depth. For each issue, the December 2002 proposed alternative, the no-action alternative, an alternative with lower environmental impact and the preferred alternative (final) proposed alternative are analyzed. The following table outlines the alternatives considered in the FEIS and references the page in the FEIS that gives a more detailed discussion of the issue.

Restructuring the Standards (page 16)

Proposed December 2002 Alternative and Preferred Alternative	No-Action Alternative
Organize the fresh water standards by uses that are protected (aquatic life, recreation, water supply)	The current standards are organized by classes (AA, A, B); there are designated uses assigned to each class

Antidegradation Implementation Plan (page 20)

1. Analysis for degrading waters that are higher quality than water quality standards (Tier II)

Proposed December 2003 Alternative and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
The proposed alternative is to limit the activities that would undergo an antidegradation alternatives analysis based on (1) the type of activity and (2) the amount of pollution produced by the activity.	The existing antidegradation policy does not contain any details regarding the antidegradation alternatives analysis. The existing language leaves open to agency judgment what types of activities would need to comply with Tier II.	The alternative with a lower environmental impact would be to require all new or expanded activities to undergo an antidegradation analysis.

2. Designation of Outstanding Resource Waters (Tier III)

Proposed December 2003 Alternative	No-Action Alternative	Lower Environmental Impact Alternative	Preferred Alternative
In the proposed alternative, waterbodies can be designated as Tier III waters by following a procedure that includes scientific, economic, and social factors, and level of support from citizens and governments. Waterbodies would be designated by name in a revised rule through the APA process.	The existing standards contain little information on designating Tier III waters. Waterbodies would be designated by name through the APA process.	An alternative with a lower environmental impact would be to add a category that would capture waterbodies that were between Tier II and Tier III. They would have less eligibility requirements but would still have to be designated in a revised rule through the APA process.	Provide two options under Tier III designation. Option A would require no-degradation of Tier III waters and Option B would allow deminimus degradation. Waters would still have to be designated in a revised rule through the APA process

3 Adaptive Management for General Permits		
Proposed December 2002 Alternative and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
In the proposed alternative, the antidegradation requirements are considered to be met for general permits and control programs if a formal process has been established to select, develop, adopt, and refine control practices for protecting water quality.	The existing water quality standards do not address adaptive management in the context of meeting antidegradation requirements.	Alternative with a lower environmental impact would be to place a ten-year cap on the length of time for coming into full compliance with the water quality standards.

Temperature Criteria for Freshwater (page 40)

note: The 7-DADMax is approximately 1ºC less than a one day maximum

1. Char Criteria - Spawning and Rearing Life-Stages			
Proposed December 2002 Alternative	No-Action Alternative	Lower Environmental Impact Alternative	Preferred Alternative
The proposed alternative uses a single, year-round criterion (13ºC 7-DADMax) to protect both rearing and spawning. It does not establish separate spawning criteria for char.	The existing criteria are not designed to protect char. The existing criteria (16ºC for Class AA and 18ºC for Class A, one-day maximums) also apply year-round. The existing criteria do not specifically designate char as a subcategory of aquatic life.	The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs: 7.5ºC 7-DADMax – Spawning of Char (when it occurs) and 13ºC 7-DADMax -Rearing of Char (rest of the year)	The preferred alternative uses a single, year-round criterion (12ºC 7-DADMax) to protect both rearing and spawning, except: Where there is data that shows this number does not protect char spawning when and where spawning occurs Ecology will apply 9ºC 7-DADMax.

2. Char Criteria – Protection of Migratory Char		
Proposed Alternative December 2002 Alternative and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
The proposed alternative is to rely on the	The existing criteria are not designed to protect	The alternative with a lower environmental

salmon, steelhead and trout criterion of 16ºC as a 7-DADMax to protect migratory char.	char. Most char migration waters would be Class AA (16ºC one-day maximum) or Class A (18ºC one-day maximum).	impact would be to protect migratory char in waterbodies used for the entire summer. 7-DADMax of 14ºC.

3. Salmon, Steelhead and Trout Criteria – Spawning and Rearing Life-Stages

Proposed December 2002 Alternative	No-Action Alternative	Lower Environmental Impact Alternative	Preferred Alternative
The proposed alternative uses a single, year-round criterion (16ºC 7-DADMax) to protect both rearing and spawning. It does not establish separate spawning criteria but relies on natural cooling to meet the spawning criteria.	The existing criteria (16ºC for Class AA and 18ºC for Class A, one-day maximums) also apply year-round.	The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs: 13ºC 7-DADMax for spawning (when it occurs) and 17ºC 7-DADMax for rearing (rest of the year).	The proposed alternative uses a single, year-round criterion (16ºC 7-DADMax) to protect both rearing and spawning, except: Where there is data that shows this number does not protect spawning when and where spawning occurs Ecology will apply 13ºC 7-DADMax.

Dissolved Oxygen Criteria for Fresh Water (page 55)

Proposed December 2002 Alternative	Preferred (No-Action) Alternative	Lower Environmental Impact Alternative
The proposed alternative uses year-round dual criteria (9.5 mg/L 90-day average of the daily minimums and 7.0 mg/L one-day minimum) to protect both rearing and spawning. It does not establish separate spawning criteria.	The existing criteria apply year-round. **Category** — **Lowest 1-Day Minimum** Char — 9.5 mg/L Salmon and Trout Spawning, Core Rearing, and Migration — 9.5 mg/L Salmon and Trout Spawning, Non-Core Rearing, and Migration — 8.0 mg/L Salmon and Trout Rearing and Migration Only — 6.5 mg/L Non-anadromous Interior Redband Trout — 8.0 mg/L Indigenous Warm Water Species — 6.5 mg/L	The alternative with a lower environmental impact is to adopt criteria (90-day averages of the daily minimums) to specifically protect spawning where and when it occurs: 10.5 mg/L for spawning (when it occurs) and 8.5 mg/L for rearing (rest of the year).

Bacteria Criteria (page 61)			
Proposed December 2002 Alternative	No-Action Alternative	Lower Environmental Impact Alternative	Preferred Alternative
-*Fresh water* Primary Contact - *E. coli* at 100 cfu/100ml. Secondary Contact - *E. coli* at 200 cfu/100ml. -*Marine Water* Shellfish Harvesting and Primary Contact – fecal coliform at 14 cfu/100ml Where shellfish is not a use Enterococci at 35/100ml Secondary Contact. - enterococci at 70 cfu/100ml.	-*Fresh water* Primary Contact fecal coliform at 50 cfu/100ml (Class AA) and 100 cfu/100ml (Class A) Secondary Contact fecal coliform at 200 cfu/100ml (Class B) -*Marine Water* Shellfish Harvesting and Primary Contact fecal coliform at 14 cfu/100ml. Secondary Contact. fecal coliform at 100 cfu/100ml (Class B) and 200 cfu/100ml (Class C).	Same as proposed alternative but eliminate all secondary contact.	-*Fresh water* Extraordinary Primary Contact fecal coliform at 50 cfu/100ml (former class AA waters) Primary Contact 100 cfu/100ml (former class A) Secondary Contact fecal coliform at 200 cfu/100ml (former class B) -*Marine Water* Shellfish Harvesting and Primary Contact fecal coliform at 14 cfu/100ml. Secondary Contact. enterococci at 70 cfu/100ml (former class B and C)

Ammonia Criteria (page 69)		
Proposed December 2002 and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
Use existing chronic criteria for waters with salmonids. Use the EPA 1999 update criteria for other situations.	Use existing ammonia criteria in all situations.	The no action is the most protective.

Miscellaneous (page 72)

1. Selection of Criteria for Agricultural Water Supply		
Proposed December 2002 Alternative	Preferred (No-Action) Alternative	Lower Environmental Impact Alternative
Adopt numeric criteria for electrical conductivity, bicarbonate, total suspended solids and pH to protect agricultural water supply.	The existing criteria have narrative criteria but no numeric.	Adopt numeric criteria for electrical conductivity, bicarbonate, total suspended solids and pH that are more stringent than the criteria in the proposed alternative.
2. Compliance Schedules to Address Relicensing of Existing Hydropower Dams		
Proposed December 2002 and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
The proposed alternative allows for compliance schedules for dams to be used in 401 certifications if they endeavor to meet standards.	The language in the existing standards on compliance schedules is not explicit for dams.	Require all dams to fully comply with water quality standards before the certifications are issued.
3. Allowance for Irreversible Human Structural Changes		
Proposed December 2002 and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
If a waterbody does not meet temperature or dissolved oxygen criteria due to human structural changes that can not be effectively remedied then human actions considered cumulatively may not exceed temperature criteria by more than 0.3C	Current standards do not address irreversible human effects.	Do not give an allowance to irreversible human effects.

4. Application of the Dissolved Oxygen and Temperature Criteria		
Proposed December 2002 and Preferred Alternative	No-Action Alternative	Lower Environmental Impact Alternative
Temperatures are not to exceed the criteria (and dissolved oxygen is not to fall below the criteria) at a probability frequency of more than once every ten years on average.	In the existing standards, there is no language addressing probability frequencies. It simply states that waterbodies must meet the criteria.	Temperatures are not to exceed the criteria (and dissolved oxygen is not to fall below the criteria) at a probability frequency of more than once every twenty years on average.

Summary of Mitigation Measures

The five broad categories of mitigation measures in the proposal are:

- Increased monitoring
- Increased water clean-up
- Increased pollution prevention
- Systematic process for updating the Water Quality Standards
- Training on the water quality standards

Increases in any of these five categories would help mitigate any potential negative environmental impacts associated with the current proposal.

Alternatives

An EIS is a tool for identifying and analyzing probable adverse environmental impacts, reasonable alternatives and possible mitigation. Fourteen issues were identified that warranted in-depth discussion in this FEIS. These include aspects of the restructuring of the standards, antidegradation implementation plan, temperature criteria, dissolved oxygen criteria, bacteria criteria, ammonia criteria, agricultural water supply criteria, compliance schedules for dam relicensing, and allowances for human structural changes that cannot be effectively remedied. There are other changes to the rule that did not warrant discussion in the FEIS because they were not considered environmentally significant.

The FEIS analyzes the proposed December 2002 alternative, the no-action alternative, and a "reasonable lower environmental impact alternative" and the Preferred Alternative. A reasonable alternative is a feasible alternate course of action that meets the proposal's objective at a lower environmental impact. Reasonable alternatives may be limited to those that an agency with jurisdiction has authority to control either directly or indirectly through the requirement of mitigation. When adopting final water quality standards, Ecology considered comments received on all three of the alternatives that were in the draft EIS.

The proposed alternative and the alternative with lower environmental impact were developed in a multi-year process. That process included a large amount of public comment from stakeholders, including the regulated community, environmental groups, tribes, and other interested parties. As such, these alternatives incorporated many concerns of cost, feasibility, and environmental protection. The no-action alternative is the existing rule language. Because all alternatives were developed in consideration of cost, complexity, effectiveness of implementation, and level of environmental protection, all are considered to be "reasonable."

The issues can be loosely grouped into two categories: those that contain numeric criteria levels with accompanying language on application and implementation, and those that are purely narrative, implementation language and do not include numeric values. Examples of the first type are the proposed criteria for temperature and bacteria; examples of the second include language describing antidegradation requirements. This FEIS examines the overall protectiveness of these types of criteria by looking not only at the context of the proposed value or description, but also examines how effectively each alternative can be managed in a regulatory context to provide protection. Each section within the FEIS contains a table summarizing the information used in the evaluation.

The characteristics of each rule alternative are evaluated using three characteristics: simplicity, usability, and environmental protection. These three elements are ranked independent of each other. However, the reader may want to balance the pros and cons of all three categories when determining what they believe would be the best alternative, or when determining the

environmental consequences of any single alternative. Usability as a characteristic was critical in recommending the proposed alternative. The specific characteristics evaluated for each alternative include:

- **Simplicity** (How easy is it for the reader to understand the rule and what is required by the rule?) Simplicity of the alternatives is evaluated according to the following system:
    - **High** – Easily understood by persons with no prior experience with water quality issues. Does not require supplemental data or information, and contains little or no subjective elements which could be interpreted in different ways. For example, an alternative with a single number, a single concept, or a concrete concept and only minor caveats.
    - **Moderate** – May be slightly confusing to persons with no prior experience with water quality issues. Requires a moderate understanding of water quality standards and implementation programs to understand. For example, an alternative with two numbers, a moderately complex concept, or a slightly abstract concept accompanied by caveats.
    - **Low** – The meaning of the requirements are not obvious to most persons. Contains requirements that cannot be determined based solely on what is in the rule. Relies heavily on abstract or subjective determinations, or contains complex formulas that require a good knowledge of mathematics or water chemistry. For example, an alternative with multiple numbers, a complex concept, or an abstract concept and many caveats.

- **Usability** (Can the alternative be used effectively to protect water quality?) This characteristic has an implementation focus that asks the question: is there something about this alternative that would make it unable to be implemented effectively? Would something about an alternative lead to incorrect uses, thus providing less protection? This does not address the stringency of the alternative for the regulated community – that analysis is in the draft APA documentation. Usability of the alternatives is evaluated according to the following system:
    - **High** – A very easy alternative to use. There are no expected obstacles to implementing the alternative that would diminish its effectiveness. For example, the alternative could be effectively written into permits and TMDLs.
    - **Moderate** – A moderately easy alternative to use. There are no or few expected major obstacles to implementing the alternative that would diminish its effectiveness. For example, the alternative could usually be effectively written into permits and TMDLs, though it may require additional complex modeling or analysis.
    - **Low** – A more difficult alternative to fully and effectively use. There may be obstacles to implementing the alternative that would diminish its effectiveness. For example, it might require complex modeling, multi-party negotiations, long-term data collection, or detailed analysis before the alternative could be used in permits and TMDLs. Complexity might affect the intended function.

- **Level of Environmental Protection**. This characteristic is a best assessment of what level of protection the criteria would provide, and is based on the information presented. The intent is to describe how close each alternative comes to meeting the objective of the rule. The level

of environmental protection does not factor in issues of simplicity and usability. The reader should evaluate simplicity, usability, and level of environmental protection when determining the consequences of adopting any single alternative. The level of environmental protection of the alternatives is evaluated according to the following system:

- **High** – The alternative would have a high likelihood of fully protecting the beneficial uses. The alternative addresses nearly all of the potential risks to the beneficial use for that issue. There are no or few exemptions that might reduce the level of protection. The protection the alternative provides is effective immediately.
- **Moderate** – The alternative would most likely provide full protection for the beneficial uses. The alternative addresses most of the potential risks to the beneficial use for that issue, but there are some exemptions or simplifying assumptions that might reduce the level of protection. The protection the alternative provides is effective immediately or in the near future.
- **Low** – The alternative might fully protect the beneficial uses. The alternative addresses many, but not all, of the potential risks to the beneficial use for that issue. There are many exemptions or simplifying assumptions that might reduce the level of protection. The protection the alternative provides might not be effective immediately, allowing for possible degradation in the short-term.

Issues Not Addressed in FEIS

Unchanged Parts of the Water Quality Standards

There are many parts of the water quality standards that Ecology is not proposing to change. This rule revision is just focused on:

- Moving from the current class-based system to a use-based system for designating beneficial uses of waters (for example swimming and aquatic life habitat) in Washington.
- Making changes to criteria (for example temperature and bacteria) for designated uses of the waters.
- Providing more clarity and detail on implementing the regulation, including the state's antidegradation policy.
- Organizing the structure and sections of the regulation to make it easier to use.

The vast majority of the rule language in the sections on toxic substances, mixing zones and special conditions to specific waterbodies are not being changed so they are not addressed in this FEIS.

Corrections and other Minor Modifications

Numerous corrections and other minor modifications are being proposed for the water quality standards. For example, the acute and chronic cyanide criteria were reversed in the previous edition of the water quality standards. In this proposal, Ecology corrects this error.

Modifications were made to the rule to improve readability or to fit together with other changes to the water quality standards. Sections of the rule have moved location but the substance has not been materially altered.

These corrections and minor modifications are not deemed significant enough to warrant in-depth discussion in this FEIS.

Inserting federal language and implementation language

The draft rules include language on tools that are available under the Clean Water Act. The addition of these tools which are already available for use did not warrant an in-depth discussion in this FEIS.

Postponing the Implementation of the Proposal

The federal Clean Water Act requires states to review their water quality standards every three years. The last revision to Washington's water quality standards occurred in 1997. Some of the changes in this proposal have been discussed for ten years. At this time, Ecology sees no benefit to postponing the implementation of the proposal. The proposal is based on the current science and is more up-to-date than the existing water quality standards. As a whole, the proposed water quality standards will do a better job of protecting the beneficial uses of Washington's waterbodies.

Although parts of the proposal could be postponed, many parts of the proposal are intertwined and postponing only certain parts would be logistically difficult. Ecology additionally sees no benefit to postponing the implementation of only certain parts of the proposal. The agency has received significant feedback from a variety of stakeholders including business, environmental representatives and federal agencies that they want to see the rule process move forward.

In the future, if new scientific information indicates that the water quality standards are not able to sufficiently protect the beneficial uses, the water quality standards can be revised through a new rule-making.

Restructuring the Standards

Background

The surface water quality standards for Washington are organized in a "class-based" system where each waterbody is assigned to one of five classes: Class AA, A, B, C, and Lake Class. The existing standards link specific waterbodies with specific uses (e.g., aquatic life habitat, recreation and water supply), that are protected by water quality criteria. Class AA is for the highest quality waters. Ecology is proposing to restructure the way uses are assigned for fresh waters, away from the "class-based" system, to a "use-based" system. A "use-based" system assigns designated uses to waterbodies independent of each other, not as pre-defined sets as in the existing "class-based" system. The "class-based" format has a narrative description that links classes with waterbodies, while the proposed "use-based" format is a table listing uses across the top (first row of the table) and individual waterbodies down the first column (see draft rule WAC 173-201A-602).

Ecology is proposing this change for fresh waters for two main reasons: to make the standards less complicated and to increase Ecology's ability to change (add, delete, or refine) designated uses in the future as the existing and potential uses of waterbodies are evaluated. It is anticipated that the switch from a class-based to use-based format for marine waters will occur in another rule-making. This proposed rule change would result in little immediate change in the levels of protection afforded to waters in Washington (slight differences are discussed below).

This part of the proposed rule change has confused many people because of a perception that the proposed format change would be accompanied by substantial changes (i.e., use removal) in the uses designated for waterbodies. This rule does not reduce the level of use protection by removing uses from waterbodies. Use removal will be considered by Ecology after this rule-making is finalized, and can only be done through a Use Attainability Analysis (a UAA is a structured scientific process defined by the federal regulations, followed by a formal public rule-making process by Ecology). Ecology has developed draft guidance for UAAs, and plans to further develop and finalize that guidance after this rule revision is completed. The guidance will be developed with input from the public.

Another source of some confusion in the rule-making process has been the process of refining some existing fresh water uses. An example of this is the use "salmonid migration, rearing, spawning, and harvesting". In this rule-making process Ecology has worked extensively with

the public to refine this use to delineate the areas used by char (bull trout and Dolly Varden), which are salmonids that require colder water. The proposed rule also includes the use refinements of "warm water fish" (refined from the existing use of "other fish migration, rearing, spawning, and harvesting") and "red band trout" (also a refinement of the salmonid use described above).

For more information on go to the Proposal to Change to Use-Based Standards Decision Process Memo by Megan White.

Proposed December 2002 and Preferred Alternative

Ecology's proposed alternative is to change to a "use-based" format for fresh waters, represented by a table in the proposed rule. This alternative retains all existing uses for specific waterbodies that are designated in the existing standards, with some refinements to uses as discussed above. In the use-based system, uses will be assigned to waterbodies independently of each other, not in pre-defined classes.

The proposed change in format should increase the ease with which the standards are used. For example, in order to link waterbodies with uses in the "class-based" format, the reader must first refer to the existing rule in WAC 173-201A-120 where specific waterbodies are linked with their class. The reader must then refer to WAC 173-201A-030 to determine which uses belong to each of the different classes. The proposed "use-based" format is composed of a table linking specific waterbodies directly to specific uses, thus the two-step process described above for the "class-based" format would be changed to a direct, one-step process by the proposed alternative. In cases where the specific waterbody is not listed, default uses are specified. Both systems are relatively simple to use, but the use-based format is most direct.

The proposed change in format will make it easier to represent any future changes in uses for a waterbody because they could simply be indicated on the table described above. Under the existing system any changes in uses would need to be described for a specific waterbody in narrative terms (for instance, as a "special condition") in WAC 173-201A-120. This approach is more cumbersome than simply adding or deleting uses in a table.

No-Action Alternative

The no-action alternative is to keep the existing "class-based" system for fresh waters. The system, although slightly more cumbersome to use, is still not overly complicated. The current rule would continue to function adequately, although any future use changes would likely be accomplished by addition of lengthy narrative descriptions and probably continue to cause delays in removing uses that are not existing or attainable.

Alternative with Lower Environmental Impact

The alternative with lower environmental impact is to keep the existing "class-based" system. A different format restructuring system that would add significantly greater protection has not been identified during the 8-10 year stakeholder involvement period that helped develop alternatives for this rule-making. Ecology considers the two alternatives discussed in this section to be the most viable alternatives available to designate uses in the water quality standards.

Comparison of Alternatives – Restructuring the Standards

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	Organize the fresh water standards by uses that are protected (aquatic life, recreation, water supply)	The current standards are organized by classes (AA, A, B); there are designated uses assigned to each class	Organize the standards by classes (AA, A, B); there are designated uses assigned to each class
Simplicity of Alternative (how easy is it for the reader to understand the rule?)	High • A single table for fresh waters will link waterbodies with their designated uses.	Medium • A two-step process leads the reader from a waterbody to the uses and criteria associated with that waterbody.	Medium • A two-step process leads the reader from a waterbody to the uses and criteria associated with that waterbody.
Usability (can the alternative be used effectively to protect water quality?)	High • It would more directly link fresh waters with their criteria and attainable uses. Future use changes would be easy to describe during rule-making. Would be able to assign the most appropriate uses to a waterbody independently of other uses.	Medium • It functions adequately to link uses with waterbodies, and the structure could accommodate future rule changes, although it would be more complicated and difficult to determine use changes.	Medium • It would function adequately to link uses with waterbodies, and the structure could accommodate future rule changes, although it would be more complicated and difficult to determine use changes.

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	High • The table format would help clearly link uses to waterbodies for fresh waters.	High • The existing format indirectly links waterbodies with uses, but also adds some additional protection for specific uses in some waterbodies	High • The existing format indirectly links waterbodies with uses, but also adds some additional protection for specific uses in some waterbodies

Antidegradation Implementation Plan

Introduction

For detailed information on the antidegradation implementation plan, please see Ecology's *Water Quality Antidegradation Implementation Plan – Draft Discussion Paper* (Department of Ecology publication number 00-10-069).

The EPA requires all states to develop rules and programs to protect waterbodies against degradation, or harm. As directed by the federal Clean Water Act, states not only are mandated to fully protect beneficial uses (e.g., aquatic life habitat, recreation and water supply), but also must "restore and maintain the chemical, physical, and biologic integrity of the nation's waters." This means where water quality is better than the assigned water quality standards, it should not be degraded without first demonstrating the degradation is necessary to avoid unreasonable economic and social impact. The antidegradation implementation plan establishes a formal process for accomplishing this important goal.

Federal regulations (40 CFR 131.12) require that states include a water quality policy for antidegradation in their Water Quality Standards and identify methods for implementing the policy. Ecology is proposing an antidegradation implementation plan because the existing antidegradation policy is unclear and is not consistently implemented. The proposed alternative is meant to satisfy the federal requirement for an implementation plan.

Washington's proposed antidegradation implementation plan follows the framework of the federal regulation on antidegradation (40 CFR 131.12), and consists of three tiers of protection:

Tier I - existing instream uses
All beneficial in-stream uses (e.g., fishing, swimming, and aquatic life) that have occurred in a specific waterway since 1975 must be fully protected.

Tier II – waters that are higher quality than water quality standards
In addition to protecting all in-stream beneficial uses, new and expanded activities that would further harm water quality can only be allowed when they are:

a) Providing social or economic benefits that are in the overriding public interest; and
b) Using all reasonable and appropriate techniques to reduce pollution.

Tier III – Outstanding Resource Waters
Waters of unique quality and character that constitute an outstanding resource must be eligible to be set aside from all future degradation.

The existing antidegradation policy is in WAC 173-201A-070 through 080. The proposed alternative antidegradation plan is proposed in WAC 173-201A-300 through 330.

Three different aspects of the proposed antidegradation implementation plan, alternatives for each of them, and the effects of each alternative are addressed in this section.

1. Analysis for degrading waters that are higher quality than water quality standards (Tier II)

Background

Tier II requires an analysis of two factors before Ecology allows new or expanded activities that would degrade or lower water quality. Tier II protection occurs on a high quality water that is better than the numeric and narrative criteria in the water quality standards and includes an evaluation of alternatives and a determination of overriding public interest.

In some cases, this "Tier II analysis" might be very simple. This would include situations where alternatives have already been evaluated. In other cases, however, this analysis might require more work and time.

Given the requirements of the Tier II analysis, Ecology has determined that it must carefully consider which activities should undergo a Tier II analysis and which activities would not go through a Tier II analysis.

Proposed December 2002 and Preferred Alternative

The proposed alternative is to limit the activities that would undergo a Tier II analysis based on both (1) the type of activity and (2) the amount of new pollution produced by the activity.

Type of Activities
In the proposed alternative, only certain new or expanded activities would require a Tier II analysis. The activities are:

1. National Pollutant Discharge Elimination System (NPDES) waste discharge permits;
2. State waste discharge permits to surface waters;
3. Section 401 water quality certifications for federal activities; and
4. Other water pollution control programs authorized, implemented, or administered by the department.

Any other activity, such as SEPA determinations, local permits, water rights and shoreline permits would not undergo a Tier II analysis.

Amount of New Pollution
In the proposed alternative, only new or expanded activities with a measurable effect on water quality would require a Tier II analysis. Combining this requirement with the previous requirement, the only activities that would undergo a Tier II analysis would be the four types of activities described above that also have a measurable effect on water quality.

Measurable changes would be determined based on a predicted change in water quality at a point outside the source area, at the edge of any mixing zone.[1] In the context of the proposed regulation, a measurable change would reefs to:

(i) Temperature change of 0.3°C;
(ii) Dissolved oxygen change of 0.2 mg/L,
(iii) Bacteria level change of 2 cfu/100 mL,
(iv) pH change of 0.1 units
(v) Turbidity change of 0.5 NTU, or
(vi) Any detectable change in the concentration of a toxic or radioactive substance.

For more information go to the Proposed Antidegradation Implementation Plan Decision Memo by Megan White.

No-Action Alternative

The existing antidegradation policy does not contain any details regarding the Tier II analysis. It does not spell out specific actions that must undergo a Tier II analysis but instead is written broadly in terms of the goals for the waterbody. The existing language specifies that "Whenever waters are of a higher quality than the criteria assigned for said waters, the existing quality shall be protected and pollution of said waters which will reduce the existing quality shall not be allowed…." Thus the existing regulation establishes a zero threshold for action on the part of Ecology, and leaves open to agency judgment what types of activities would need to comply. However, because it is open-ended, Ecology has difficulty interpreting and implementing Tier II.

Ecology will be required to develop guidance on how to implement this part of the antidegradation policy.

Alternative with Lower Environmental Impact

Type of Activities
An alternative with a lower environmental impact would be to require new or expanded activities of any kind that are likely to cause a lowering of water quality to undergo a Tier II analysis. This

[1] A mixing zone is the portion of a waterbody downstream of a pollution source where mixing results in the dilution of pollution in the receiving water.

would include the four activities described in the proposed alternative (NPDES, Section 404, Section 101, and other water pollution control programs authorized, implemented, or administered by Ecology) as well as other activities such as SEPA determinations, local permits, water rights and shoreline permits. In this alternative, far more activities would be required to undergo a Tier II analysis. Having additional activities undergo a Tier II analysis should result in less degradation to Tier II waters.

Amount of New Pollution
Similarly, an alternative with a lower environmental impact would require new or expanded activities to undergo a Tier II analysis regardless of the amount of pollution they produce.

Comparison of Alternatives – Analysis for degrading waters that are higher quality than water quality standards (Tier II)

	Proposed 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	The proposed alternative is to limit the activities that would undergo an antidegradation alternatives analysis based on (1) the type of activity and (2) the amount of pollution produced by the activity.	The existing antidegradation policy does not contain any details regarding the antidegradation alternatives analysis. The existing language leaves open to agency judgment what types of activities would need to comply with Tier II.	The alternative with a lower environmental impact would be to require all new or expanded activities to undergo an antidegradation analysis.
Simplicity (how easy is it for the reader to understand the rule?)	Low Requires an activity to be both measurable and be a specific Water Quality program related activity.	Moderate It is not clear what activities and how it will apply.	High Is clear that all activities that might degrade water will need to go through analysis.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • In some cases, detailed modeling or analysis might be required to determine the exact effect on water quality, in order to determine if it is measurable. • In the proposed alternative, only certain activities would have to complete a Tier II analysis. Ecology would be able to focus its resources on a limited number of Tier II analyses.	Low • The lack of detail in the existing standards regarding which activities should undergo a Tier II analysis makes it difficult to implement.	Low • Requiring all activities to undergo a Tier II analysis would make it difficult to focus Ecology's resources on those activities that individually have a significant environmental effect. • Conducting a Tier II analysis on all activities would lengthen the amount of time required to complete these activities. • If other entities are evaluating

	Proposed 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
			Tier II analyses, there must be training and coordination. Can not require other agencies to implement Tier II analysis.
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • By focusing its resources, Ecology believes it can make significant improvements in water quality. • Activities not required to undergo a Tier II analysis might cause degradation of water quality. • Multiple activities that have a measurable cumulative effect, but do not have a measurable effect individually, are not required to undergo a Tier II analysis.	Low • The lack of detail in the existing standards regarding which activities should undergo a Tier II analysis makes it difficult to assure environmental protection.	High • All activities would be required to undergo Tier II analysis. This would result in a lower environmental impact. • Every action would undergo a Tier II analysis, which should help prevent significant cumulative impacts from multiple sources, even if each activity's individual effects are not measurable.

2. Designation of Outstanding Resource Waters (Tier III)

Background

Tier III sets aside waters of both unique quality and character that constitute an outstanding resource from all future degradation. Activities such as temporary actions and hazard response are the only exemptions.

Tier III is the highest level of protection. It sets up a no-degradation tier that prevents any lowering of water quality. Tier III protection for a waterbody will prevent many new or expanded activities from discharging at their expected levels of pollution. Since Tier III is a stringent tier of protection, designation of waters as Tier III must be done very carefully.

Proposed December 2002 Alternative

In the proposed alternative, waterbodies can be nominated for Tier III protection by the public or any entity. The nomination must include sufficient information to show how the waterbody meets the eligibility criteria.

Waterbodies are eligible for designation if they meet one of the requirements in proposed WAC 173-201A-330 (1):

(1) To be eligible for designation as an outstanding resource water in Washington, one or more of the following must apply:
    (a) Waters in a relatively pristine condition (largely absent human sources of degradation) or possessing exceptional water quality, and also occur in federal and state: parks, monuments, preserves, wildlife refuges, wilderness areas, marine sanctuaries, estuarine research reserves, or wild and scenic rivers.
    (b) 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 which are unique and regionally rare examples of their kind;
    (c) The water has both high water quality and regionally unique recreational value.
    (d) The water has areas of thermal refuge created by cold water seeps, springs, and groundwater emergence areas that have been determined through biological and physical habitat studies to be critical to the long-term protection of aquatic species (for this type of outstanding resource water, the non-degradation protection would apply only to temperature).

The following conditions are proposed for designating Tier III waterbodies:

- In determining whether or not to designate an outstanding resource water, the department will consider factors relating to the difficulty of maintaining the current quality of the waterbody.
- Outstanding resource waters should not be designated where substantial and imminent social or economic impact to the local community will occur, unless the public support is overwhelmingly in favor of the designation.
- The department will carefully weigh the level of support from the public and affected governments in assessing whether or not to designate the water as an outstanding resource water.

For more information on go to the Proposed Antidegradation Implementation Plan Decision Memo by Megan White.

No-Action Alternative

In the existing standards, a waterbody may be nominated for Tier III if it meets one the following eligibility requirements:

1) Waters in national parks, national monuments, national preserves, national wildlife refuges, national wilderness areas, federal wild and scenic rivers, national seashores, national marine sanctuaries, national recreation areas, national scenic areas, and national estuarine research reserves;
2) Waters in state parks, state natural areas, state wildlife management areas, and state scenic rivers;
3) Documented aquatic habitat of priority species as determined by the department of wildlife;
4) Documented critical habitat for populations of threatened or endangered species of native anadromous fish;
5) Waters of exceptional recreational or ecological significance.

The existing water quality standards contain little information on the designation procedures for Tier III waters. Waterbodies are designated by name in the water quality standards through a formal rule-making process as defined by the APA. There are no Tier III waterbodies in the existing water quality standards.

Ecology will be required to develop guidance on how to implement this part of the antidegradation policy.

Alternative with Lower Environmental Impact

An alternative with a lower environmental impact would be to use the proposed language on Tier III and add a "Tier II½" category. Tier II½ is an application of the antidegradation policy that has implementation requirements that are more stringent than for Tier II, but somewhat less stringent than the prohibition against any lowering of water quality in Tier III. The Tier II½ approach provides a very high level of water quality protection without precluding unforeseen future economic and social development considerations Tier II½ would be a new tier of protection that is not in the existing water quality standards or in the current proposal. Waters placed in Tier II½ would receive more protection than waters in Tier II. Since Tier II½ does not have Tier III's prohibition against any lowering water quality, it should be easier to place waterbodies in Tier II½ than in Tier III.

There are many possible ways to set up a Tier II½ category. The most effective Tier II½ would contain the following elements:

1. A waterbody would be eligible for nomination if it met any of the following characteristics:
    - It is in a federal or state park, monument, preserve, wildlife refuge, wilderness area, marine sanctuary, estuarine research reserves, or wild and scenic rivers
    - It is a unique habitat type that is exceptional and regionally rare
    - It has exceptional recreational value
    - It has high water quality and is imperative to the survival of a species of aquatic life

2. The goal for new and expanded discharges to Tier II½ waters is to have no measurable effect on the quality of the water after dilution. Discharges would have to use advanced waste treatment technologies and implement the most stringent BMPs that are economically reasonable.

3. Water quality offsets would be allowed in Tier II½ waterbodies.

4. There would be allowances for temporary activities and hazard response actions similar to the allowances in Tier III.

5. Waterbodies would be nominated for Tier II½ and designated by name in the water quality standards. This designation would require a rule-making and would include full public review.

Preferred Alternative

This is a combination of the Proposed December 2002 alternative and the Lower Environmental Impact Alternative. This alternative allows for two options under Tier III designation. Option A

is the same as the Proposed December 2002 Alternative. Option B would go through the same review and approval process but would allow for de minimus pollution from actions using state-of-the-art controls to allow communities and proponents a more manageable alternative that still provides outstanding protection for these special under Tier III.

Where a high quality water is designated as an outstanding resource water, the water quality and the uses of those waters must be protected. As part of the public process, a qualifying waterbody may be designated as Tier III(A) which prohibits any and all future degradation, or Tier III(B) which allows for de minimis (below measurable amounts) degradation from well-controlled activities.

Comparison of Alternatives – Designation of Outstanding Resource Waters (Tier III)

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
Summary of Alternative	In the proposed alternative, waterbodies can be designated as Tier III waters by following a procedure that includes scientific, economic, and social factors, and level of support from citizens and governments. Waterbodies would be designated by name in a revised rule through the APA process.	The existing standards contain little information on designating Tier III waters. Waterbodies would be designated by name through the APA process.	An alternative with a lower environmental impact would be to add a category that would capture waterbodies that were between Tier II and Tier III. They would have less eligibility requirements but would still have to be designated in a revised rule through the APA process.	Provide two options under Tier III designation: Option A would allow no degradation of Tier III waters and Option B would allow de minimis degradation. Both would still have to be designated in a revised rule through the APA process
Simplicity (how easy is it for the reader to understand the rule?)	Moderate • Required to weigh economic and scientific information and show that water can be maintained in pristine condition.	Moderate • Existing language does not provide enough information to understand how to designate these waters.	Low • Adding an extra Tier of protection (Tier II½) makes the water quality standards more complicated.	Low • Adding an extra option under Tier III makes the water quality standards more complicated.
Usability (can the alternative be used effectively to protect water quality?)	Low • Ecology must address the difficulty of maintaining the current quality of the waterbody and the	Low • The only requirement to designating a Tier III is to complete a rule-making according to APA regulations. But in	Low • Implementing Tier II½ in addition to Tier III would require more resources. • Designation will have	Low • Implementing Option A in addition to Option B might require more resources. • Ecology must address

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
	economic impacts.	order to get through the APA process will also have to address economic impacts.	to go through rulemaking. In order to get through the APA process will also have to address economic impacts.	the difficulty of maintaining the current quality of the waterbody and the economic impacts
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • Few waters are absent multiple sources of point and nonpoint source pollution, which would significantly limit the waters of the state that are eligible for designation. Even waterbodies in national parks can have multiple sources of pollution.	Moderate • There is little information to use to show how to implement Tier III.	High • Tier II½ provides for a high level of protection. A waterbody in Tier II½ would receive more protection than a waterbody in Tier II. • Conversely, placing a waterbody in Tier II½ would allow more human activity than placing it in Tier III.	High • Tier III Option provides for a high level of protection. A waterbody in Tier III Option B would receive more protection than a waterbody in Tier II. • More waterbodies might get this level of protection because few will be able to get protection under Tier III Option A.

3. Adaptive Management for General Permits

Background

General permits and control programs present a unique situation. Many of these programs lack necessary information regarding the exact effectiveness and costs of control practices for reducing pollution. General permits are issued on a state-wide basis for an entire sector, not to each individual activity. Designing programs state-wide that protect water quality for each individual activity is challenging.

In these situations, adaptive management is a tool to address water quality programs. Pollution control practices are implemented and their effectiveness is monitored. If the pollution controls are not working, new or different pollution controls are implemented. This adaptive management approach will eventually lead to effective and efficient controls for general permits and control programs. The obvious downside to adaptive management is that it does not guarantee immediate compliance with the water quality standards.

The proposed adaptive management allowance for general permits and control programs are proposed in WAC 173-201A-320.

Proposed December 2002 and Preferred Alternative

In the proposed alternative, the antidegradation requirements of this section can be considered met for general permits and programs that have a formal process to select, develop, adopt, and refine control practices for protecting water quality and meeting the intent of this section. This adaptive process must:

1. Ensure that information is developed and used expeditiously to revise permit or program requirements;
2. Review and refine management and control programs in cycles not to exceed 5 years;
3. Include a plan that describes how information will be obtained and used to ensure full compliance with this chapter. The plan must be developed and documented in advance of permit or program approval under this section.

In other words, general permits and control programs can use adaptive management to meet the requirements of antidegradation. Ultimately, all of these programs must meet the numeric and narrative criteria in the water quality standards.

The proposed alternative allows adaptive management to work effectively. The general permits and control programs will implement the pollution control practices that are the most efficient and effective.

For more information go to the Proposed Antidegradation Implementation Plan Decision Memo by Megan White.

No-Action Alternative

The existing water quality standards do not address adaptive management in the context of meeting antidegradation requirements. WAC 173-201A-160 allows for schedules of compliance for use in bringing entities in compliance with the standards, and also includes a discussion on how adaptive management is used for nonpoint sources and storm water pollution. Thus the key elements of the proposal are in the standards currently, but their application in meeting the antidegradation requirements is not addressed.

Alternative with Lower Environmental Impact

Using adaptive management means it may take time for general permits and control programs to meet the water quality standards. An alternative with a lower environmental impact would be to place a maximum ten-year cap on the length of time allowed for coming into full compliance with the water quality standards. In some situations, this alternative could speed up the amount of time it takes for general permits and control programs to meet the water quality standards.

Comparison of Alternatives – Adaptive Management for General Permits

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	In the proposed alternative, the antidegradation requirements are considered to be met for general permits and control programs if a formal process has been established to select, develop, adopt, and refine control practices for protecting water quality.	The existing water quality standards do not address adaptive management in the context of meeting antidegradation requirements.	Alternative with a lower environmental impact would be to place a ten-year cap on the length of time for coming into full compliance with the water quality standards.
Simplicity (how easy is it for the reader to understand the rule?)	Moderate • Adaptive management and antidegradation are complex and require additional information.	High • Current rules do not address this complex concept	Moderate • Adaptive management and antidegradation are complex and require additional information.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • Determining when general permits and control programs have met the requirements of the proposed alternative may be challenging.	Low • It is unclear if and how adaptive management can be used in the context of antidegradation.	Low • There is often insufficient knowledge to identify and implement all of the necessary BMPs within ten years. Requiring this compliance would be unrealistic in many situations for which general permit programs are used.

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • Adaptive management demands that general permits and control programs identify and use control practices to, over time, meet the water quality standards. • In some situations, the process of adaptive management might allow more time than necessary to meet the water quality standards and protect beneficial uses.	Low • There is no current requirement that general permits will have to do anything to meet antidegradation requirements.	Moderate • Not allowing adaptive management to evolve over a longer time-period will create more demand to place the proper mixture of BMPs on the ground immediately. This inflexible process for new programs may discourage trying new BMPs or technologies.

Temperature Criteria for Freshwater

Introduction

For detailed information on the temperature requirements of Washington's native fish, please see Ecology's *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070). This document contains in-depth analyses of the technical issues associated with the alternatives discussed in this FEIS. Also look at *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature WaterQualityStandards,*EPA document number 910-B-03-002, April 2003

This proposed rule revision only addresses temperature criteria for fresh water, not marine water.

Water temperature is very important for the health and survival of native fish. Each species in the aquatic community responds differently to water temperature. Thus, temperature plays a large part in influencing the health of aquatic communities. Temperature affects embryonic development, juvenile growth, adult migration, competition with non-native species, and the relative risk and severity of disease.

As part of a public review of its water quality standards in the early 90's, Ecology convened a technical work group to evaluate the water quality criteria established to protect fresh water aquatic communities. One of the recommendations of the work group was for Ecology to re-evaluate the existing criteria for temperature. This re-examination was also necessitated by Ecology's decision to propose a change from a class-based to a use-based system for identifying uses of a waterbody. The current class-based system is based on a group of uses with accompanying criteria that are assigned as a "class" to a waterbody, while a use-based system assigns criteria to individual uses, and then each use is assigned to a waterbody.

The existing state surface water quality standards contain three separate single daily maximum temperature criteria limits that can be applied to rivers:

Class AA - 16°C
Class A - 18°C
Class B - 21°C

Class AA and Class A provide two different levels of protection for the same set of beneficial uses, and are intended to protect salmonid spawning, rearing, and migration. Class AA is predominately established within forested upland areas, but Class A waters is found broadly throughout the state. Class B, is designed only to protect salmonid rearing and migration, and was not intended to fully protect spawning. There are only a small number waterbodies in the

state that have been assigned the Class B designation. With each class, the criteria are applied as the highest single daily maximum measurement of temperature occurring in the waterbody. The current rule also has a lake class, which does not apply temperature criteria limits, but requires that lakes are maintained at natural levels.

The following two tables provide a summary of the existing and proposed temperature criteria:

Existing Water Quality Criteria for Temperature	
Class and Key Species or Life-Stage Protected	One-Day Maximum Temperature
Class AA (Extraordinary Salmon Spawning and Rearing)	16ºC (60.8ºF)
Class A (Excellent Salmon Spawning and Rearing)	18ºC (64.4ºF)
Class B (Salmon Rearing)	21ºC (68ºF)
Lakes and Reservoirs	No change from natural levels

Proposed December 2002 Alternative Water Quality Criteria for Temperature	
Key Species or Life-Stage Protected	7-Day Average of Daily Maximum Temperatures
Char (bull trout and Dolly Varden) Spawning and Early Tributary Rearing	13ºC (55.4ºF)
Spawning and Rearing of Salmon, Steelhead, and Trout	16ºC (60.8ºF)
Rearing only of Salmon, Steelhead, and Trout	17.5ºC (63.5ºF)
Redband Trout	18ºC (64.4ºF)
Indigenous Warm Water Fish	20ºC (68ºF)

In addition to setting criteria to protect specific species and their life-stages, the proposal includes criteria for barriers to migration and short-term lethality.

Water temperature can be calculated in many different metrics. The rolling seven-day average of the daily maximum temperature (7-DADMax) is the metric chosen for the current proposal. This metric represents a period of time over which biological consequences in response to water temperature can be expected to occur, and by focusing on the daily maximum temperatures it can prevent unhealthy fluctuations in temperature. By averaging temperatures over a week, however, this metric is less sensitive to individual daily fluctuations in water temperature then the single daily maximum limit currently used in the state standards. This means the metric can be used to set biologically relevant criteria that, when exceeded, can be viewed with more confidence as representing a period of biological impairment. The 7-DADMax is also the metric used by Oregon and Idaho and is supported by the EPA in their recently developed regional temperature guidance.

Existing temperature criteria are in WAC 173-201A-030 and 130. The proposed alternative temperature criteria are in proposed WAC 173-201A-200 and 602.

Three different issues, alternatives for each of the issues, and the effects of each alternative are addressed in this section.

1. Char Criteria – Spawning and Rearing Life-Stages

Background

The temperature requirements of char vary according to life stage. Char are more tolerant of warmer temperatures while rearing than they are during spawning.

Two methods that can be used to set temperature criteria are:

1. Use a single criterion designed to protect both rearing and spawning.
2. Use one criterion to protect rearing and a different criterion to protect spawning where and when it occurs.

Spawning generally begins in early fall and continues until late spring. Char require the temperature to be below about 7.5ºC 7-DADMax at the time spawning begins. This spawning requirement is the bar that each alternative will be evaluated against.

Proposed December 2002 Alternative

The proposal uses a single year-round criterion to protect both rearing and spawning. It does not establish separate spawning criteria for char. The proposed temperature criteria of 13ºC 7-DADMax for char is established to protect both rearing and spawning.[2]

The proposed criterion applies year-round. Spawning and incubation, which require water even colder than this criterion, usually occurs in the fall, winter, and spring. To meet the existing year-round criteria would generally mean that temperatures would be cooler in the fall when spawning begins due to normal seasonal weather patterns. The effectiveness of the criterion in protecting char is dependent on the ability of waterbodies that meet the 13ºC 7-DADMax criteria to cool down to 7.5ºC 7-DADMax at the start of spawning

The ability of waterbodies that meet the proposed 13ºC 7-DADMax char criterion to meet an spawning initiation temperature of 7.5ºC 7-DADMax is unknown. There is a lack of data addressing where and when spawning of char occurs. There is also a lack of continuous temperature monitoring data to evaluate how much a stream cools down if the summer maximum meets the 13ºC 7-DADMax criterion. Thus the protection afforded by this alternative cannot be

[2] For information on where the proposed criteria would apply, please see Ecology's *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070). This document contains two alternatives addressing where the proposal would be applied.

quantitatively estimated. In general, however, studies have found that a waterbody that stays below 13ºC 7-DADMax year-round is healthy char habitat.

For more information go to the Proposed Temperature Criteria Decision Process Memo by Megan White.

No-Action Alternative

The existing criteria also apply year-round. Spawning, which require water even colder than these criteria, usually occur in the fall, winter, and spring. To meet the existing year-round criteria would generally mean that temperatures would be cooler in the fall when spawning begins due to normal seasonal weather patterns.

The no-action alternative is to use the existing criteria of 16ºC (one-day maximum) for Class AA streams and 18ºC (one-day maximum) for Class A streams.

Neither the Class AA nor Class A temperature criteria would be expected to adequately protect char spawning. There are not enough data to analytically determine exactly how well these criteria would protect spawning requirements of char, but the criteria are well above even the upper estimates of stream temperatures that provide for healthy char rearing habitats.

Alternative with Lower Environmental Impact

The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs. In this alternative, the following criteria would apply to protect the char life-stages:

7.5ºC 7-DADMax – Spawning of Char (when it occurs)
13ºC 7-DADMax – Tributary Rearing of Char (rest of the year)

These criteria will have to be applied where and when spawning occurs. This alternative assures that specific criteria are set to protect critical life stages of salmon, steelhead and trout.

Implementing this alternative would have difficulties. There is not readily available information indicating when char spawning occurs. Extensive work would have to be done before this criterion could be accurately implemented statewide.

Preferred Alternative

The preferred alternative uses a single year-round criterion to protect both rearing and spawning. The temperature criteria of 12ºC 7-DADMax is established to generally protect both rearing and spawning

The proposed criterion is focused on the summer maximum temperature conditions. Spawning and incubation, which require water even colder than this criterion, usually occurs in the fall and winter. To meet the existing year-round criteria would generally mean that temperatures would be cooler in the fall when spawning begins due to normal seasonal weather patterns. The effectiveness of the criterion in protecting char is dependent on the ability of waterbodies that meet the 12ºC 7-DADMax criteria to cool down to at least 9ºC 7-DADMax at the start of spawning

The ability of waterbodies to meet a spawning initiation temperature of 9ºC 7-DADMax is unknown. Therefore, in this preferred alternative Ecology will:

- Lower the rearing number to better protect the general habitat quality as well as to better ensure that spawning conditions will be protected in waters that are currently capable of providing waters at or below 9°C (48.2°F) when needed.

- Include a narrative criteria statement that directs that 9°C (48.2°F) would apply to protect char spawning on a site specific basis where Ecology determines applying the summer maximum criteria (12°C) would not also protect early season spawning populations. The 9°C (48.2°F) is consistent with recently released EPA guidance and is considered by Ecology to be the highest temperature appropriate to fully supporting the spawning initiation of char.

- Develop methodology outside this rulemaking to be used to apply the narrative criteria. This methodology would be a similar process as our process for developing the list of impaired water bodies. It would involve stakeholders and set the data requirements that Ecology will use to solicit information and make determinations on when and where spawning occurs and whether the existing criteria does not protect that spawning.

Comparison of Alternatives – Char Criteria Spawning and Rearing Life-Stages

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
Summary of Alternative	The proposed alternative uses a single, year-round criterion (13ºC 7-DADMax) to protect both rearing and spawning. It does not establish separate spawning criteria for char.	The existing criteria are not designed to protect char. The existing criteria (16ºC for Class AA and 18ºC for Class A, one-day maximums) also apply year-round. The existing criteria do not specifically designate char as a subcategory of aquatic life.	The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs: 7.5ºC 7-DADMax – Spawning of Char (when it occurs) and 13ºC 7-DADMax -Rearing of Char (rest of the year)	The preferred alternative uses a single, year-round criterion (12ºC 7-DADMax) to protect both rearing and spawning, except:. Where the department determines this number would not protect char spawning when and where spawning occurs Ecology will apply 9ºC 7-DADMax.
Simplicity (how easy is it for the reader to understand the rule?)	High • There is one criterion that applies year-round.	Moderate • There is one criterion for Class AA waterbodies a different criterion for Class A waterbodies.	Low • Each waterbody would have two criteria. Which criterion applies depends on the time of year and where spawning is identified. • The spawning time periods would be listed in the water quality standards. Spawning locations would	Moderate • There is one criterion that applies year-round but an additional narrative that is used when spawning is not protected.

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
			be listed in the waterbody table of designated uses.	
Usability (can the alternative be used effectively to protect water quality?)	High • There is only one criterion that needs to be used. Year-round criteria mean that there is a single critical condition – this is easier to monitor and model.	Moderate • There are two criteria that need to be used. Year-round criteria mean that there is a single critical condition – this is easier to monitor and model.	Low • The spawning criterion would apply where and when spawning occurs. This would necessitate having knowledge of spawning periods in a watershed in order to accurately apply the criteria. While general assessments are available, precise knowledge of spawning time periods and spawning locations in individual waterbodies are not readily known and available. Extensive work will have to be done to establish accurate spawning time periods and spawning locations in some watersheds. • Two criteria make temperature modeling to determine compliance limits more difficult.	Moderate • For most waterbodies there will be only one criterion that needs to be used. Year-round criteria mean that there is a single critical condition – this is easier to monitor and model. • Ecology will have to develop a process to apply char spawning number.

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • It does not have a numeric criterion solely for protecting spawning. • The protection afforded to char by this alternative cannot be reliably quantified.	Low • The current standards would not be expected to protect char.	High • It has a numeric criterion explicitly designed to protect spawning. It does not rely on a summer criterion and subsequent cooling to protect spawning. • Identification of spawning locations would ensure that spawning areas are protected.	High • This alternative sets a cooler year round temperature - 12ºC • This alternative will protect spawning when and where it is not protective by itself.

2. Char Criteria – Protection of Migratory Char

Background

Some char may remain in the area of their natal stream for one to three years and then migrate significant distances to more productive waters for greater growth opportunities. The larger size of these migrants is generally believed to allow them to better compete for resources, and to make use of a larger prey base that includes the juvenile fish of other species. This may be a very important survival trait of these migratory populations, and serve to free up food resources in the tributary system for juvenile char. In Washington, char may migrate all the way from headwater streams to the Puget Sound to feed and rear. Relatively little is known about the temperature preferences and requirements of these migratory fish which makes setting temperature criteria for them problematic.

For more information on migratory char, see:

- *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070).
- *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards,* EPA document number 910-B-03-002, April 2003

Proposed December 2002 and Preferred Alternative

The proposed alternative is to rely on the salmon, steelhead and trout criterion of 16ºC as a 7-DADMax to protect migratory char.

The migratory char are predominantly in salmon, steelhead and trout strongholds. Favorable year-round temperatures in char migration waters might not be necessary if char use the waters for only part of the year. In other words, since the criterion is 16ºC (7-DADMax), char will encounter 7-DADMax temperatures less than 16ºC as long as they avoid the waterbody during the hottest year and the hottest time of that year.

There does not seem to be sufficient foundation in the scientific literature to justify setting temperature criteria in lower main stem rivers below those appropriate for the protection of salmon, steelhead and trout.

No-Action Alternative

The existing criteria, the no-action alternative, are not designed to protect char. Most char migration waters would be Class AA (16ºC one-day maximum) or Class A (18ºC one-day maximum). These criteria are similar to the 16ºC 7-DADMax in the proposed alternative. There is not enough research to show how well these different criteria might protect the migratory char.

Alternative with Lower Environmental Impact

The alternative with a lower environmental impact would be to protect migratory char in waterbodies used for the entire summer. Determining a numeric criterion would be difficult considering the paucity of data. A 7-DADMax of 14ºC might be appropriate as this is the uppermost estimate of the temperature regime that may be protective of juvenile rearing.

Implementing this criterion would have difficulties. The migratory char use waters that are strongholds of salmon, steelhead, and trout which have different temperature requirements. There is also little information indicating which rivers are used by migratory char during the summer. This would make assigning this criterion to rivers very problematic. Extensive work would have to be done before this criterion could be accurately implemented statewide.

Comparison of Alternatives – Char Criteria Protection of Migratory Char

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	The proposed alternative is to rely on the salmon, steelhead and trout criterion of 16ºC as a 7-DADMax to protect migratory char.	The existing criteria are not designed to protect char. Most char migration waters would be Class AA (16ºC one-day maximum) or Class A (18ºC one-day maximum).	The alternative with a lower environmental impact would be to protect migratory char in waterbodies used for the entire summer. 7-DADMax of 14ºC.
Simplicity (how easy is it for the reader to understand the rule?)	High • There are no new criteria for migratory char.	High • There are no new criteria for migratory char.	Medium • Having a separate criterion for migratory char makes the standards slightly more complicated, but only one new criterion is added.
Usability (can the alternative be used effectively to protect water quality?)	High • There are no new criteria for migratory char.	High • There are no new criteria for migratory char.	Low • This alternative would require the identification of waterbodies used for migratory char. • There is a paucity of data for determining a migratory char criterion. Applying a criterion without a sound scientific basis is problematic.

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • The criterion for salmon, steelhead, and trout might not be sufficient to protect migratory char in all situations.	Moderate • The Class AA and Class A criteria might not be sufficient to protect migratory char in all situations.	Moderate to High • Having a numeric criterion for migratory char might help their survival. The 14ºC 7-DADMax is more protective than the proposed criterion of 16ºC 7-DADMax (for salmon, steelhead and trout).

3. Salmon, Steelhead and Trout Criteria – Spawning and Rearing Life-Stages

Background

The temperature requirements of salmonids vary according to life stage. Salmon, steelhead and trout are more tolerant of warmer temperature while rearing than they are during spawning.

Two methods that can be used to set temperature criteria are:

1. Use a single criterion designed to protect both rearing and spawning.
2. Use one criterion to protect rearing and a different criterion to protect spawning where and when it occurs.

Spawning generally begins in early fall and continues until late spring. Salmon, steelhead and trout require the temperature to be below 13ºC 7-DADMax for initiating healthy spawning. This spawning requirement is the bar that each alternative will be evaluated against.

For more information, see:

- *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070).
- *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards,* EPA document number 910-B-03-002, April 2003

Proposed December 2002 Alternative

The proposal uses a single year-round criterion to protect both rearing and spawning. It does not establish separate spawning criteria for salmon, steelhead and trout. The proposed temperature criterion of 16ºC 7-DADMax for salmon, steelhead, and trout is designed to protect both rearing and spawning. Spawning, which requires water even colder than this criterion, usually occurs in the fall, winter, and spring. To meet the existing year-round criteria would generally mean that temperatures would be cooler in the fall when spawning begins due to normal seasonal weather patterns.

In order to determine a year-round criterion to protect both rearing and spawning on a statewide basis, a multiple lines of evidence approach which provided ranges of spawning and rearing temperatures was used as a comparison with continuous monitoring data available to Ecology.

Using the multiple lines of evidence approach (described in the discussion document) to determine criteria that will fully protect salmonids, water temperature at spawning should be in a

range of 12.5-14ºC (7-DADM). During non-spawning and non-incubating times, the temperature should be less than 16-17.5ºC (7-DADM). These ranges were then compared with the available temperature data. This comparison showed that 55% of streams with a summer 7-DADMax of 15-16ºC were 12.5ºC (7-DADMax) or less by the time spawning occurred, 64% were 13ºC or less, 82% were 13.5ºC or less, and all of the streams were 14ºC or less. Based on this data assessment and comparison with the multiple lines of evidence, Ecology is proposing a single year-round criteria of 16ºC to protect both spawning and rearing of salmonids on a statewide basis.

See *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070) for a more detailed analysis of this data set.

For more information on go to the Proposed Temperature Criteria Decision Process Memo by Megan White

No-Action Alternative

The existing criteria also apply year-round. Spawning, which requires water even colder than these criteria, usually occurs in the fall, winter, and spring. To meet the existing year-round criteria would generally mean that temperatures would be cooler in the fall when spawning begins due to normal seasonal weather patterns.

The no-action alternative is to use the existing criteria of 16ºC (one-day maximum) for Class AA streams and 18ºC (one-day maximum) for Class A streams.

A limited data set exists for determining if the existing criteria protect spawning of other salmonids.

- Nine of the fourteen streams (64%) with a summer maximum of 15-16ºC (one-day maximum) met the spawning requirement of 13ºC 7-DADMax by the time spawning occurred.
- Only five of the thirteen streams (38%) with a summer maximum of 17-18ºC (one-day maximum) met the spawning requirement of 13ºC 7-DADMax by the time spawning occurred. Thus the existing Class A criterion is much less able to protect spawning.

For a more detailed analysis of this data set, see *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070).

Alternative with Lower Environmental Impact

The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs. In this alternative, the following criteria would apply to protect the salmon, steelhead and trout life-stages:

> 13ºC 7-DADMax – Spawning of Salmon, Steelhead, and Trout (where and when it occurs)
> 17ºC 7-DADMax – Rearing of Salmon, Steelhead, and Trout (rest of the year)

This alternative assures that specific criteria are set to protect the critical life stages of salmon, steelhead, and trout.

Implementing this alternative would have some difficulties, as it would require identification of where and when spawning occurs. While spawning information and data exists through the Washington Department of Fish and Wildlife, determining more precise spawning times and spawning locations will require some work to be done before this criterion could be accurately and consistently implemented statewide.

Preferred Alternative

The criteria are designed to control the summer temperatures. Two criteria are provided as is consistent with the system of support provided in the existing regulation. A core-rearing level criterion of 16°C would be applied similar to our existing Class AA temperature criteria, and a non-core rearing level criteria of 17.5°C would be applied similar to our existing Class A temperature criteria Spawning and incubation, which require water even colder than these criteria, usually occurs in the fall, winter, and spring. To meet the summer-based criteria would generally mean that temperatures would be cooler in the fall when spawning begins due to normal seasonal weather patterns. The effectiveness of the criteria in protecting salmon and trout is dependent on the ability of waterbodies that meet the summer maximum criteria to cool down to 13ºC 7-DADMax at the start of spawning.

In this preferred alternative Ecology will:

- Include a narrative criteria statement that directs that 13°C (55.4°F) would apply to protect salmon spawning on a site specific basis where Ecology determines applying the summer maximum criteria (16 or 17.5°C) would not also protect early season spawning populations.

- Develop methodology outside this rulemaking to be used to apply the narrative criteria. This methodology would be a similar process as our process for developing the list of impaired water bodies. It would involve stakeholders and set the data requirements that Ecology will use to solicit information and make determinations on when and where spawning occurs and whether the existing criteria does not protect that spawning.

Comparison of Alternatives – Salmon, Steelhead and Trout Criteria Spawning and Rearing Life-Stages

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
Summary of Alternative	The proposed alternative uses a single, year-round criterion (16ºC 7-DADMax) to protect both rearing and spawning. It does not establish separate spawning criteria but relies on natural cooling to meet the spawning criteria.	The existing criteria (16ºC for Class AA and 18ºC for Class A, one-day maximums) also apply year-round.	The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs: 13ºC 7-DADMax for spawning (when it occurs) and 17ºC 7-DADMax for rearing (rest of the year).	The preferred alternative uses a single, year-round criterion (16ºC 7-DADMax) to protect both rearing and spawning, except:. Where the department determines this number would not protect salmon spawning when and where spawning occurs Ecology will apply 13ºC 7-DADMax.
Simplicity (how easy is it for the reader to understand the rule?)	High • There is one criterion that applies year-round.	Moderate • There is one criterion for Class AA waterbodies a different criterion for Class A waterbodies.	Low • Each waterbody would have two criteria. Which criterion applies depends on the time of year. • The spawning time periods would be listed in the water quality standards. Spawning	Moderate • There is one criterion that applies year-round but an additional narrative that is used when spawning is not protected.

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
			locations would be listed in the waterbody table of designated uses.	
Usability (can the alternative be used effectively to protect water quality?)	High • There is only one criterion that needs to be used. Year-round criteria mean that there is a single critical condition – this is easier to monitor and model.	Moderate • There are two criteria that need to be used. Year-round criteria mean that there is a single critical condition – this is easier to monitor and model.	Low • The spawning criterion would apply where and when spawning occurs. This would necessitate having knowledge of spawning periods in a watershed in order to accurately apply the criteria. While general assessments are available, precise knowledge of spawning time periods and locations in individual waterbodies are not always known. Extensive work will have to be done to establish accurate spawning time periods and spawning locations in some watersheds. • Two criteria make temperature modeling to determine compliance limits more difficult.	Moderate • For most waterbodies there will be only one criterion that needs to be used. Year-round criteria mean that there is a single critical condition – this is easier to monitor and model. • Ecology will have to develop a process to apply salmon spawning number.

	Proposed December 2002 Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • It does not have a numeric criterion solely for protecting spawning. In some waterbodies, the desired spawning temperature might not be met by relying on natural rates of cooling.[3]	Low • It does not have a numeric criterion solely for protecting spawning. In some waterbodies, the desired spawning temperature might not be met by relying on natural rates of cooling. • The Class AA criterion (16ºC one-day maximum) would more likely to protect spawning than the Class A criterion (18ºC one-day maximum).	High • It has a numeric criterion explicitly designed to protect spawning. It does not rely on a summer criterion and subsequent cooling to protect spawning. • Identification of spawning locations would ensure that spawning areas are protected.	High • This alternative sets a cooler year round temperature - 12ºC • This alternative will protect spawning when and where it is not protective.

[3] For a more detailed analysis, see *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070).

Dissolved Oxygen Criteria for Fresh Water

Introduction

For detailed information on the dissolved oxygen requirements of Washington's native fish, please see Ecology's *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-071). This document contains in-depth analyses of the technical issues associated with the alternatives discussed in this FEIS.

This proposed rule revision only addresses dissolved oxygen criteria for fresh water, not marine water.

Maintaining adequate dissolved oxygen levels in water is critical to the health of our native fish and aquatic life. Fish need a certain amount of oxygen in the water in order to survive. Ecology received many comments suggesting the existing dissolved oxygen criteria are out of date and should be reviewed.

In response to this concern, Ecology conducted a detailed review of the technical literature and is now proposing changes to the state standards. Federal regulations require that states adopt criteria to fully protect beneficial uses. Washington's dissolved oxygen criteria were developed to fully protect aquatic life from inadequate levels of dissolved oxygen.

The following two tables provide a summary of the existing and proposed December 2002 alternative dissolved oxygen criteria:

Existing Water Quality Criteria for Dissolved Oxygen		
Class and Key Species or Life-Stage Protected	One-Day Minimum	90-Day Average of Daily Minimum (90-DAMin)
Class AA – Extraordinary Salmonid Spawning and Rearing	9.5 mg/L	None
Class A – Excellent Salmonid Spawning and Rearing	8.0 mg/L	None
Class B – Salmonid Rearing Only	6.5 mg/L	None
Lakes and Reservoirs	No change from natural levels	None

Proposed December 2002 Alternative Water Quality Criteria for Dissolved Oxygen		
Key Species or Life-Stage Protected	One-Day Minimum	90-Day Average of Daily Minimum (90-DAMin)
Salmonid Spawning and Rearing Waters	7.0 mg/L	9.5 mg/L
Salmonid Rearing Only Waters	6.0 mg/L	8.5 mg/L
Warm Water Fish Habitat	5.0 mg/L	7.0 mg/L

Like temperature, dissolved oxygen criteria can be expressed in many different metrics. On average, the one-day minimum is about 1 mg/L lower than the 90-day average of the daily minimums (90-DAMin).

Including both the long term daily minimum average and the daily minimum component was found to allow the highest rate for achieving the biological goal with a minimum increase in stringency over the current state oxygen criteria. The average daily minimum value is based on long-term laboratory and field testing, and on recognizing the biological importance of the daily minimum oxygen concentrations to long-term performance. The limit on the single daily minimum values acts in essence as an insurance policy against short-term (e.g., 30-60 days) depressions of oxygen that could otherwise negate the benefits of maintaining more favorable long-term average minimum oxygen levels. The single daily minimum values generally represent oxygen levels that have had mixed performance in long-term laboratory tests; sometimes showing strong protection for the biota but sometimes significantly reducing biological performance.

Existing dissolved oxygen criteria are in WAC 173-201A-030 and 130. The proposed alternative dissolved oxygen criteria are in proposed WAC 173-201A-200 and 602.

Dissolved Oxygen Criteria for Salmonids

Background

The dissolved oxygen requirements of salmonids vary according to life stage. In many ways, the dissolved oxygen requirements are very similar to the temperature requirements. Salmonids are more tolerant of lower dissolved oxygen while rearing than they are during spawning.

Two methods that can be used to set dissolved oxygen criteria are:

1. Use a single criterion designed to protect both rearing and spawning.

2. Use one criterion to protect rearing and a different criterion to protect spawning where and when it occurs.

Spawning generally begins in early fall and continues until late spring. Salmonids require the dissolved oxygen to be above 10-11 mg/L as a 90-DAMin during spawning. This spawning requirement is the bar that each alternative will be evaluated against.

Proposed December 2002 Alternative

The proposal uses year-round criteria to protect both rearing and spawning. It does not establish separate spawning criteria. The proposed dissolved oxygen criterion (9.5 mg/L as a 90-DAMin) is intended to protect both rearing and spawning. The proposed alternative also includes a year-round one-day minimum criterion of 7.0 mg/L. This one-day minimum is designed to prevent unusual situations where very short-term, low dissolved oxygen levels would be harmful to aquatic life, but might not be reflected in the longer-term 90-DAMin. The 7.0 mg/L one-day minimum would be used in conjunction with, not instead of, the 90-DAMin.

The proposed criteria apply year-round. Spawning, which requires water with more dissolved oxygen that this criterion, usually occurs in the fall, winter, and spring. Most of the streams that meet this criterion during the summer would have enough dissolved oxygen to protect spawning when it occurs.

The ability of the proposal to protect salmonid spawning was estimated from a limited data set. About 77% of the streams that had a 90-DAMin of 9.5-10 mg/L met a spawning goal of 10.5 mg/L 90-DAMin during spawning. In other words, the majority of the streams that met the annual minimum criterion of 9.5 mg/L (90-DAMin) also provided good support for spawning. For a more detailed analysis of this data set, see *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-071).

For more information on go to the Proposed Dissolved Oxygen Decision Process Memo by Megan White

No-Action and Preferred Alternative

The existing criteria also apply year-round. Spawning, which require water with more dissolved oxygen than these criteria, usually occur in the fall, winter, and spring.

The no-action alternative is to use the existing criteria of 9.5 mg/L (one-day minimum) for previous Class AA streams and 8.0 mg/L (one-day minimum) for previous Class A streams.

Category under class format	Category under Use Format	Exiting criteria Lowest 1-Day Minimum
Class AA	Char	9.5 mg/L
Class AA	Salmon and Trout Spawning, Core Rearing, and Migration	9.5 mg/L
Class A	Salmon and Trout Spawning, Non-Core Rearing, and Migration	8.0 mg/L
Class B	Salmon and Trout Rearing and Migration Only	6.5 mg/L
Class A	Non-anadromous Interior Redband Trout	8.0 mg/L
Class B	Indigenous Warm Water Species	6.5 mg/L

A limited data set exists for determining if the existing criteria protect spawning of other salmonids.

- About 98% of the streams that had a minimum one-day minimum of 9.5-10 mg/L met the spawning goal of 10.5 mg/L 90-DAMin during spawning.
- About 68% of the streams that had a minimum one-day minimum of 8-8.5 mg/L met the spawning goal of 10.5 mg/L 90-DAMin during spawning.

For a more detailed analysis of this data set, see *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-071).

Alternative with Lower Environmental Impact

The alternative with a lower environmental impact is to adopt criteria to specifically protect spawning where and when it occurs. In this alternative, the following criteria would apply to protect salmonid life-stages:

10.5 mg/L 90-DAMin – Spawning of Salmonids (when it occurs)
8.5 mg/L 90-DAMin – Rearing of Salmonids (rest of the year)

This alternative would also include the one-day minimum similar to the proposed alternative to prevent unusual situations where very short-term, low dissolved oxygen levels would be harmful to aquatic life, but might not be reflected in the longer-term 90-DAMin. The 7.0 mg/L one-day minimum would be used in conjunction with, not instead of, the 90-DAmin.

This alternative assures that specific criteria are set to protect critical life stages of salmon, steelhead, and trout.

Comparison of Alternatives – Dissolved Oxygen Criteria for Fresh Water

	Proposed Alternative	No-Action and Preferred Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	The proposed alternative uses year-round dual criteria (9.5 mg/L 90-day average of the daily minimums and 7.0 mg/L one-day minimum) to protect both rearing and spawning. It does not establish separate spawning criteria.	The existing criteria 9.5 mg/L , 8.0 mg/L and 6.5 mg/L, one-day minimums apply year-round.	The alternative with a lower environmental impact is to adopt criteria (90-day averages of the daily minimums) to specifically protect spawning where and when it occurs: 10.5 mg/L for spawning (when it occurs) and 8.5 mg/L for rearing (rest of the year).
Simplicity (how easy is it for the reader to understand the rule?)	Moderate • There is one pair of criteria that apply year-round to all salmonid waterbodies.	Moderate • There is one criterion for old Class AA waterbodies and a different criterion for old Class A waterbodies.	Low • Each waterbody would have two pairs of criteria. Which pair of criteria applies depends on the time of year. • The spawning time periods and spawning locations would be listed in the water quality standards.
Usability (can the alternative be used effectively to protect water quality?)	High • Year-round criteria mean that there is a single critical condition – this is easier to monitor and model.	High • Year-round criteria mean that there is a single critical condition – this is easier to monitor and model.	Low • The spawning criterion would apply where and when spawning occurs. This would necessitate having knowledge of spawning periods in a watershed in order to accurately apply the criteria. While general assessments are

	Proposed Alternative	No-Action and Preferred Alternative	Alternative with Lower Environmental Impact
			available, precise knowledge of spawning time periods and spawning locations in individual waterbodies are not always known. Extensive work would have to be done to establish accurate spawning time periods in some watersheds. • Two criteria make dissolved oxygen modeling to determine compliance limits more difficult.
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • It does not have a numeric criterion solely for protecting spawning. In some waterbodies, the desired spawning levels might not be met by relying on natural rates of cooling.[4]	Low • It does not have a numeric criterion designed to protect spawning. In some waterbodies, the desired spawning dissolved oxygen level might not be met. • The Class AA criterion (9.5 mg/L one-day minimum) would more likely protect spawning than the Class A criterion (8.0 mg/L one-day minimum).	High • It has a numeric criterion explicitly designed to protect spawning. It does not rely on a summer criterion and subsequent increasing in dissolved oxygen to protect spawning. • Identification of spawning locations would ensure that spawning areas are protected.

[4] For a more detailed analysis of this data set, see *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-071).

Bacteria Criteria

Introduction

For a detailed analysis of bacteria issues in the water quality standards, please see Ecology's *Setting Standards for the Bacteriological Quality of Washington's Surface Water – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-072). This document contains in-depth analyses of all of the issues and alternatives discussed in this FEIS.

In 1986, the United States Environmental Protection Agency (EPA) recommended to states that they should no longer use fecal coliform as an indicator of the bacterial health of water. The use of fecal coliform as an indicator has been questioned on technical grounds by EPA, as well as members of the public and the regulated community. Most of this debate surrounds the use of fecal coliform as an indicator of potential health threats to swimmers; significantly less debate exists about the use of fecal coliform as a criterion to protect consumers of shellfish. Based on studies conducted by USEPA, it was recommended that states either use *Escherichia coli* (*E. coli*) or enterococci for their bacterial indicator criteria in fresh waters, and use only enterococci in marine waters. Washington, along with many other states, did not adopt the newly recommended criteria.

Ecology conducted a technical evaluation of the current use of fecal coliform bacteria as a general indicator that pathogens might be in the water. The indicator tells us if other bacteria and pathogens might be present in a waterbody that can make people sick if they swim in the water or eat contaminated shellfish. The higher the concentration of the indicator, the more people will likely get sick.

A work group established by Ecology found little reason to conclude that any one indicator bacterium was sufficiently superior in all respects to justify their absolute support. A study done by Ecology found that a very strong correlation exists between *E.* coli and fecal coliform in Washington fresh waters. This study found that *E. coli* makes up typically between 90-99% of the measured fecal coliforms.

After evaluating a range of options, Ecology's proposed alternative is to use two new indicator bacteria to protect people who come in contact with waters contaminated with human and other animal waste. The selection of the final recommendation in the proposal was based heavily on trying to maintain the generally high quality of our state's waters and on obtaining formal approval from EPA. EPA wants the states to only use either *E. coli* or enterococci in fresh waters, and only enterococci in marine waters to protect water contact activities.

Federal regulations require that states adopt criteria to fully protect beneficial uses.

Washington's bacteria criteria were developed to fully protect people who work and play in the state's waters.

Existing Criteria for Bacteria		
Class and Use Protected	Indicator Organism	Criteria (cfu's/100 ml) (Geometric Mean)
Fresh water		
Class AA (primary contact)	Fecal coliform	50
Class A (primary contact)	Fecal coliform	100
Class B (secondary contact)	Fecal coliform	200
Marine Water		
Class AA (shellfish harvesting and primary contact)	Fecal coliform	14
Class A (shellfish harvesting and primary contact)	Fecal coliform	14
Class B (secondary contact)	Fecal coliform	100
Class C (secondary contact)	Fecal coliform	200

Proposed December 2002 Alternative Criteria for Bacteria		
Use Protected	Indicator Organism	Criteria (bacterial colonies/100 ml)
Fresh water		
Primary contact	*E. coli*	100
Secondary contact	*E. coli*	200
Marine Water		
Shellfish harvesting and primary contact	Fecal Coliform	14
	Enterococci	35
Secondary contact	Fecal Coliform	NA
	Enterococci	70

The vast majority of fresh waters, in the existing standards and all alternatives, are protected for primary contact recreation. The vast majority of marine waters are protected for primary contact recreation and shellfish harvesting.

Primary contact recreation means activities where a person would have direct contact with water to the point of complete submergence including, but not limited to, skin diving, swimming, and water skiing. Secondary contact recreation means activities where a person's water contact would be limited (wading or fishing) to the extent that bacterial infections of eyes, ears, respiratory or digestive systems, or urogenital areas would normally be avoided.

Ecology is not proposing to make any changes to the shellfish harvesting criteria (fecal coliform at 14 cfu/100ml). The Federal Drug Administration, which regulates bacteria criteria for

shellfish harvesting, continues to require the existing criteria for fecal coliform. Therefore, the shellfish harvesting criterion is not being discussed in this FEIS.

The risk of illness for each indicator is presented in the following table. These illness rates are used throughout this section and are based on relationships found in studies conducted by EPA.

***E. coli* in Fresh Water**		**Enterococci in Marine Water**	
Illness Rate per 1000 people	Geometric Mean	Illness Rate per 1000 people	Geometric Mean
1	22.7	1	1.2
2	29.0	2	1.4
3	37.0	4	2.1
4	**47.3**	8	4.4
5	60.4	10	6.4
6	77.1	12	9.3
7	98.5	14	13.6
7.06	**100.0**	16	19.9
8	125.9	18	29.0
9	160.8	**19**	**35.1**
10	**205.5**	20	42.4
12	335.4	**22.5**	**70**
15	699.3	24	90.3
20	2380	26	132
25	8100	28	192
30	27569	30	281

Source: *Ambient Water Quality for Bacteria - 1986*, Environmental Protection Agency.[5]

Existing bacteria criteria are in WAC 173-201A-030 and 130. The proposed alternative bacteria criteria are in proposed WAC 173-201A-200, 210, 602, and 612.

[5] The EPA's illness rates only used highly credible gastroenteritis. Other illnesses were not counted. For a more detailed review of EPA's studies, including an discussion of some of its weaknesses, please see *Setting Standards for the Bacteriological Quality of Washington's Surface Water – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-072)

Bacteria Criteria

Background

Bacteria indicator criteria are based on risk levels. Any level of bacterial pollution in the water might cause illnesses; there is no "safe" level of bacteria. The assumption is that as the concentration of the bacteria indicator is lowered, fewer people will get sick.

The EPA conducted a study to determine illness rates for primary contact recreation with varying bacteria concentrations. Subjects had to have put their head under the water to be included as test subjects in the EPA analysis of illness rates. These illness rates are based on serious gastrointestinal problems and do not include infections of the skin, eyes, ears, etc. The rates for highly credible gastroenteritis are shown in the introduction.

For a detailed analysis of bacteria issues in the water quality standards, please see Ecology's *Setting Standards for the Bacteriological Quality of Washington's Surface Water – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-072).

Proposed December 2002 Alternative

Fresh water

Primary Contact. The proposed alternative is to use *E. coli* at 100 cfu/100ml to protect contact recreation in fresh water. According to the EPA, this level would correspond to 7 cases of gastrointestinal illnesses per 1000 swimmers (see table in introduction). As noted previously, the risk values are provided recognizing that their accuracy is uncertain.

Secondary Contact. The proposed alternative is to use *E. coli* at 200 cfu/100ml to protect secondary contact recreation in fresh water. The secondary contact criterion was set at twice the primary contact criteria to match the relationships established in the state's existing bacterial criteria (lower than EPA guidance of five times the primary criteria). This would allow for 10 illnesses per 1,000 swimmers and 3-4 more illnesses than primary.

Ecology recognizes that reducing exposure to just wading must reduce the risk of illness compared to swimming in the water. Thus Ecology believe it is warranted to have a higher secondary contact criterion so long as that value is set cautiously. The more limited the exposure (swallowing water, time in the water, bathing with soap after contact) the lower the risk of illness.

Marine Water

Shellfish Harvesting and Primary Contact. The proposed alternative is to rely on the shellfish harvesting criteria of fecal coliform at 14 cfu/100ml to protect both shellfish harvesting and primary contact where shellfish harvesting is a designated use of the waterbody. This recognizes that shellfish consumption is a more sensitive use that water contact. Enterococci at 35 cfu/100ml can also be used to protect primary contact recreation, and where shellfish harvesting is not a designated use, enterococci will be the indicator used to ensure that people who work and play in those waters are adequately protected. Enterococcus at 35cfu/100ml corresponded to 19 cases of gastrointestinal illnesses per 1000 swimmers (see table in introduction) in the EPA studies.

Secondary Contact. The proposed alternative is to use enterococci at 70 cfu/100ml to protect secondary contact recreation in fresh water. This approach continues the existing practice of doubling the concentration for primary contact to estimate a reasonably safe secondary contact criterion.

Enterococci at 70 cfu/100ml would correspond to about 22.5 (3-4 more than primary) cases of gastrointestinal illnesses per 1000 swimmers according to the EPA (see table in introduction).

For more information go to the Proposed Bacteria Criteria Decision Process Memo by Megan White

No-Action Alternative

The existing water quality standards use fecal coliform. In EPA's studies, they found no statistical relationship between the fecal coliform concentration in the water and illness rates of swimmers. However, fecal coliform is a more sensitive indicator than *E. coli*. Fecal coliform is a group of bacteria made up of *E. coli* and other organisms. Therefore, the concentration of fecal coliform would always be equal to or higher than the concentration of *E. coli*. As described in earlier in the section, the correlation between *E. coli* and fecal coliform in Washington is quite high. Based on an ecology study E.coli makes up typically between 90-99% of the measured fecal coliforms.

There is no statistical relationship between *E. coli* and enterococci or between fecal coliform and enterococci.

Fresh water

Primary Contact. The existing standards use fecal coliform at 50 cfu/100ml (Class AA) and 100 cfu/100ml (Class A) to protect contact recreation in fresh water. Both of these criteria are more stringent than the proposed alternative of *E. coli* at 100 cfu/100ml.

Secondary Contact. The existing standards use fecal coliform at 200 cfu/100ml (Class B) to protect secondary contact recreation. This criterion is more stringent than the proposed alternative of *E. coli* at 200 cfu/100ml.

Marine Water

Shellfish Harvesting and Primary Contact. The existing standard uses the shellfish harvesting criteria of fecal coliform at 14 cfu/100ml to protect both shellfish harvesting and primary contact. This matches the proposed alternative. There is no statistical relationship between the existing criterion and the proposed criterion of enterococci at 35 cfu/100ml, however, based on Ecology's data, waters that meet 14 cfu/100 ml fecal coliform will typically also meet the 35 cfu/100 ml enterococci criterion.[6]

Secondary Contact. The existing standards use fecal coliform at 100 cfu/100ml (Class B) and 200 cfu/100ml (Class C) to protect secondary contact recreation in marine water. There is no statistical relationship between the existing criterion and the proposed criterion of enterococci at 70 cfu/100ml.

Alternative with Lower Environmental Impact

An alternative with a lower environmental impact is to use the proposed alternative except eliminate the secondary contact use and protect all waterbodies for primary contact. Secondary contact means activities where a person's water contact would be limited (wading or fishing) to the extent that bacterial infections of eyes, ears, respiratory or digestive systems, or urogenital areas would normally be avoided. Currently, Class AA and A waters are protected for primary contact recreation. Only Class B and C waters are protected for just secondary contact recreation. These waters are listed in the existing WAC 173-201A-130 and 140.

In this alternative, all waters would have primary contact as the designated use. This would have a lower environmental impact because secondary contact waters have the potential to be used as primary contact. Since these "secondary contact" waters often flow to "primary contact" waters, this alternative will also provide a higher degree of prevention and protection for these downstream waters that are used for swimming and active water sports.

[6] From October 2000 to July 2001, Ecology conducted dual monitoring of fecal coliform and enterococci in marine waters. Of the 166 samples where fecal coliform concentrations were at or below 14 cfu/100mL, none of those samples has enterococci concentrations above 35 cfu/100mL.

Preferred Alternative

The preferred alternative is to stay with existing criteria in fresh water and only change to enterococci for marine waters that are currently protected for secondary contact. Where shellfish is a protected use, one indicator would apply – 14 fecal coliforms. Where shellfish is not a protected use the waters are also not designated for primary contact in the existing standards and so a secondary contact criterion of 70 enterococci will be used.

Category under class format	Category under Use Format	Exiting criteria Lowest 1-Day Minimum
FRESH WATER		
Class AA	Extraordinary Primary Contact Recreation	50 colonies/100 mL
Class A	Primary Contact Recreation	100 colonies /100 mL
Class B	Secondary Contact Recreation	200 colonies/100 mL
MARINE WATER		
Class AA	Shellfish Harvesting and Primary Contact Recreation	14 colonies/100mL
Class A	Shellfish Harvesting and Primary Contact Recreation	14 colonies/100mL
Class B	Secondary Contact Recreation	70 enterococci colonies/100ml
Class C	Secondary Contact Recreation	70 enterococci colonies/100ml

Comparison of Alternatives – Bacteria Criteria

	Proposed Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
Summary of Alternative	*-Fresh water* Primary Contact - *E. coli* at 100 cfu/100ml. Secondary Contact - E. coli at 200 cfu/100ml. *-Marine Water* Shellfish Harvesting and Primary Contact – fecal coliform at 14 cfu/100ml Where shellfish is not a use Enterococci at 35/100ml Secondary Contact. - enterococci at 70 cfu/100ml.	*-Fresh water* Primary Contact fecal coliform at 50 cfu/100ml (Class AA) and 100 cfu/100ml (Class A) Secondary Contact fecal coliform at 200 cfu/100ml (Class B) *-Marine Water* Shellfish Harvesting and Primary Contact fecal coliform at 14 cfu/100ml. Secondary Contact. fecal coliform at 100 cfu/100ml (Class B) and 200 cfu/100ml (Class C).	Same as proposed alternative but eliminate all secondary contact.	*-Fresh water* Same criteria as existing standards *-Marine water* Shellfish Harvesting and Primary Contact (formerly class AA & A) fecal coliform at 14 cfu/100ml Secondary Contact. (formerly class B & C) Enterococci at 70 cfu/100ml.
Simplicity (how easy is it for the reader to understand the rule?)	Low • The water quality standards use three different indicator organisms (fecal coliform, enterococci, and *E. coli*) to apply to fresh and marine waters..	Moderate • All classes use fecal coliform, but the numeric value varies. • However, the EPA has stated that it will not allow states to continue	Low • The water quality standards use three different indicator organisms (fecal coliform, enterococci, and *E.*	Moderate • All fresh waters use fecal coliform, but the numeric value varies. • However, the national EPA has

	Proposed Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
		using fecal coliform as an indicator for contact recreation.	*coli*), but the secondary contact category is eliminated.	stated that it may not allow states to continue using fecal coliform as an indicator for contact recreation.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • *E. coli* and fecal coliform, the two indicators that will be used the most, are well-correlated but not identical. • Laboratories in Washington will have to learn to analyze for *E. coli* and enterococci. • Many entities have used fecal coliform for many years.	High • Laboratories have monitored for fecal coliform for many years. • Other programs that address water issues often use fecal coliform. • However, EPA has indicated that fecal coliform is not as good an indicator as *E. coli* and enterococci for protecting contact recreation.	Moderate • *E. coli* and fecal coliform, the two indicators that will be used the most, are well-correlated. • Laboratories in Washington will have to learn to analyze for *E. coli* and enterococci.	Moderate • Laboratories have monitored for fecal coliform for many years. • Other programs that address water issues often use fecal coliform. • However, EPA has indicated that fecal coliform is not as good an indicator as *E. coli* and enterococci for protecting contact recreation. • Laboratories in Washington will have to learn to analyze for

	Proposed Alternative	No-Action Alternative	Alternative with Lower Environmental Impact	Preferred Alternative
				enterococci.
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • The illness rate for primary contact in fresh water is seven cases of gastrointestinal illness per 1000 swimmers and 10 illnesses per 1000 swimmers for secondary contact. In marine water, the illness rate for primary contact is 19 cases of gastrointestinal illness per 1000 swimmers and 22 illnesses per 1000 swimmers for secondary contact.	Moderate • The illness rate for primary contact in fresh waters for fecal coliform is estimated at seven cases of gastrointestinal illness per 1000 swimmers and 10 illnesses per 1000 swimmers for secondary contact. In marine water, the illness rates are similar to fresh water	High • Eliminating the secondary contact use and protecting all waters for primary contact would potentially reduce the number of illness.	High • Will keep existing standards in place to provide better criteria levels than EPA guidance. • This will help protect any degradation of shellfish beds. • Provide more health protection for bathers.

Ammonia Criteria

1. Ammonia Criteria

Background

For more information on the ammonia criteria, please see the Department of Ecology's draft discussion document *Review of USEPA's 1999 Ammonia Criteria for Fresh waters*.

In high levels, ammonia is toxic to fish and other aquatic life. The actual numeric value of the ammonia criteria vary with temperature and pH. The criteria themselves are available in the existing water quality standards (WAC 173-201A-040) and in Ecology's *Review of USEPA's 1999 Ammonia Criteria for Fresh water.*

In 1999, the EPA published a revised update to the water quality standards for ammonia in fresh water. Both the chronic and the acute EPA 1999 recommended criteria are less stringent than Ecology's existing criteria.

Both the existing and the EPA recommended ammonia criteria are relatively complex to use. Both are expressed as an equation, and in each case the equation requires the knowledge of other water quality information to calculate the criteria for any individual waterbody. In addition to the complexity of the criteria equations, the criteria apply to areas where specific aquatic life uses exist, so each time the criteria are used the specific designated uses of a waterbody must be checked to determine which criteria equation apply.

Existing ammonia criteria are in WAC 173-201A-040. The proposed alternative ammonia criteria are in proposed WAC 173-201A-240.

Proposed December 2002 and Preferred Alternative

The proposed alternative is to use the existing chronic criteria for waters with salmonid habitat and use the EPA 1999 update criteria for all other situations.

Waterbodies	Criteria	
All fresh waters	Acute criteria	EPA 1999 update criteria
Fresh waters with no early life stages present and not designated as salmonid habitat	Chronic criteria	EPA 1999 update criteria for "fish early life stages absent"
Fresh waters with early life stages of non-salmonid fish species present and not designated as salmonid habitat	Chronic criteria	EPA 1999 Update criteria for "fish early life stages present"
All fresh waters with salmonid habitat as a designated use	Chronic criteria	Existing criteria for "salmonids present"

Ecology's review of the EPA 1999 update criteria found that they were appropriate for use in Washington's water with the exception of the chronic criteria for waters with salmonid habitat.

A paucity of data on effects of ammonia on early life stages of salmonids makes an assessment of the protectiveness of the new chronic criterion difficult to quantify. Because of insufficient data to quantify safe levels, effects levels from each research study were used separately to evaluate the EPA 1999 update criteria, instead of relying on a species mean (or other measure of central tendency) effects level to represent the effects level.

This analysis found that the chronic EPA 1999 update criteria for salmonid waters might be inappropriate. Ecology is proposing to continue to use its existing (and more protective) criteria in this situation.

For more go to the Proposed Ammonia Criteria Decision Process Memo by Megan White.

No-Action Alternative

The no-action alternative is to use the existing ammonia criteria in all situations. The existing ammonia criteria are more protective than the EPA 1999 update criteria.

Alternative with Lower Environmental Impact

Ecology could have made a proposal that would have resulted in lower ammonia concentrations, but could find no scientific basis to support the need for such a proposal. Thus, for this issue, the alternative with lower environmental impact is equivalent to the existing No-Action Alternative discussed above.

Comparison of Alternatives –Criteria for Ammonia

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	Use existing chronic criteria for waters with salmonids. Use the EPA 1999 update criteria for other situations.	Use existing ammonia criteria in all situations.	The no action is the most protective.
Simplicity (how easy is it for the reader to understand the rule?)	Low • The criteria are very complex to calculate and apply. They require waterbody-specific chemistry and aquatic life information.	See the alternative with lower environmental impact	Low • The criteria are very complex to calculate and apply. They require waterbody-specific chemistry and aquatic life information.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • These criteria can be used effectively to control ammonia discharges. Their complexity and the requirement for waterbody-specific information to use in the criteria calculation does not detract from their usefulness.	See the alternative with lower environmental impact	Moderate • These criteria can be used effectively to control ammonia discharges. Their complexity and the requirement for waterbody-specific information to use in the criteria calculation does not detract from their usefulness.
Level of Environmental Protection (do not factor in issues of simplicity and usability)	Moderate to High • Based on available data, this alternative is likely to provide high levels of protection to aquatic life in fresh waters.	See the alternative with lower environmental impact	High • The existing ammonia criteria are the most stringent of all the criteria considered in this review; therefore they will very likely provide the highest level of protection to aquatic life.

Miscellaneous

1. Selection of Criteria for Agricultural Water Supply

Background

For detailed information on agricultural water supply criteria, please see Ecology's *Establishing Surface Water Quality Criteria for the Protection of Agricultural Water Supplies – Draft Discussion Paper* (Department of Ecology publication number 00-10-073). This document contains an in-depth analysis of the technical issues associated with the alternatives discussed in this DEIS.

While the current water quality standards list agricultural water supply as a protected beneficial use, it does not clarify what level of water quality is needed. Ecology established a technical work group to identify water quality concerns that were a problem or likely to become a problem for irrigated agriculture in Washington. The primary goal was to establish criteria that would allow the unrestricted selection of crops and methods of agricultural water supply and protect the long-term health of soils, crops, and equipment.

Existing agricultural water supply criteria are in WAC 173-201A-030. The proposed alternative agricultural water supply criteria are in proposed WAC 173-201A-200.

Proposed December 2002 Alternative

The proposed alternative includes narrative and numeric criteria. The criteria will apply to all waterbodies, since agricultural water supply is designated as a beneficial use for all waters. These criteria do not apply within irrigation projects.[7]

The following numeric criteria are an arithmetic average for the period of April 1-September 30:

[7] It should be noted that these criteria are only designed to protect irrigated agriculture. Other criteria to protect other uses, such as aquatic life, still apply.

Parameter	Criteria
Electrical conductivity	not to exceed 700 microsiemens per centimeter (uS/cm)
Bicarbonate	not to exceed 339 milligrams per liter (mg/L)
Total suspended solids	not to exceed 75 mg/L
pH	between 6.5 and 9.0 standard units

Agricultural water supply is only one of many uses. For waterbodies with other uses, such as salmonid habitat and water contact recreation, additional criteria to protect those uses also apply.

Ecology recognizes that the proposed criteria are largely preventative in nature, but also believes that maintaining high quality water supplies is important. The proposed criteria create a defined level of expected protection. In doing so, the criteria can be used to prevent the economic and social costs associated with a deterioration in water quality that will benefit Washington's farms and agricultural land into the future.

For more information go to the Proposed Agricultural Water Supply Criteria Decision Process Memo by Megan White

No-Action and Preferred Alternative

The existing water quality standards do not have any numeric criteria for agricultural water supplies. Protection of agricultural water supplies is dependent on the narrative criteria.

Alternative with Lower Environmental Impact

An alternative with a lower environmental impact would be to set more prescriptive criteria to protect the use. This criteria to protect irrigation agriculture would be more stringent.

Parameter	Proposed Alternative – Agricultural Water Supply Criteria	Alternative with Lower Environmental Impact – Agricultural Water Supply Criteria	Units
Electrical conductivity	not to exceed 700	not to exceed 700	uS/cm
Bicarbonate	not to exceed 339	not to exceed 91.5	mg/L
Total suspended solids	not to exceed 75	not to exceed 50	mg/L
pH	between 6.5 and 9.0	between 6.5 and 8.4	Standard pH units

Comparison of Alternatives – Selection of Criteria for Agricultural Water Supply

	Proposed December 2002 Alternative	No-Action and Preferred Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	Adopt numeric criteria for electrical conductivity, bicarbonate, total suspended solids and pH to protect agricultural water supply.	The existing criteria have narrative criteria but no numeric.	Adopt numeric criteria for electrical conductivity, bicarbonate, total suspended solids and pH that are more stringent than the criteria in the proposed alternative.
Simplicity (how easy is it for the reader to understand the rule?)	Low • The four numeric criteria are applied as an average across the irrigation season. • These criteria will apply to all waterbodies, since agricultural water supply is designated as a beneficial use for all waters	High • There are no numeric criteria.	Low • The four numeric criteria are applied as an average across the irrigation season. • These criteria will apply to all waterbodies, since agricultural water supply is designated as a beneficial use for all waters
Usability (can the alternative be used effectively to protect water quality?)	Moderate • Three of the four parameters (electrical conductivity, bicarbonate, and total suspended solids) are new parameters that would need to be applied.	Moderate • There are no numeric criteria. Implementing narrative criteria can be more difficult than applying specific numbers.	Moderate • Three of the four parameters (electrical conductivity, bicarbonate, and total suspended solids) are new parameters that would need to be applied.
Level of Envir. Protection (do not factor in issues of simplicity and usability)	Moderate • There might be a moderate impact to irrigated agriculture at pollution levels near the criteria	Low • There are no numeric criteria to protect agricultural water supply.	High • Designed to fully protect agricultural water supply.

2. Compliance Schedules to Address Relicensing of Existing Hydropower Dams

Background

Many hydroelectric facilities in Washington require water quality certifications (401 certification) in order to be relicensed by the Federal Energy Regulatory Commission (FERC). Ecology is responsible for certifying through a 401 certification that the hydroelectric facility will meet water quality standards. Achieving standards for these facilities in the near term may be very difficult and require significant investments of resources and time.

Existing compliance schedules are in WAC 173-201A-160. The proposed compliance schedule for dam relicensing is in proposed WAC 173-201A-510.

Proposed December 2002 and Preferred Alternative

Discussions were held internally at Ecology with staff and management to determine the best way to move forward with re-certification of dams. These discussions led to four major goals for re-certification:

1. Existing dams should have to endeavor to meet WQ standards – evaluate what it would take and implement those changes to the extent feasible.

2. Try to place clear offramps where the dam is not a cause of the problem or no options short of removal will help.

3. If the changes from the evaluation identified above are not practicable, do the work to establish site specific standards through a use attainability analysis that take advantage of "less than full support" language in federal regulations (CFR 131.10(g)(4)).

4. If dams commit to a process to work through items above, a 401 certification could be issued to comply with the standards.

Based on the above goals, language was drafted in a new sub-section of the implementation section to allow compliance schedules for dams under the circumstances described in the standards. Ecology believes that this explicit language will provide assurances and clarity to the regulated community and the public on how dams are required to comply with the standards.

For more information go to the Proposed Language Addressing Regulation of Dams Decision Process Memo by Megan White.

No-Action Alternative

In the existing standards there is no specific language for compliance schedules for dams. The existing language on generic compliance schedules could be used to address this issue. However, the language in the existing water quality standards is less specific and does not address all of the issues surrounding dams.

Alternative with Lower Environmental Impact

An alternative with lower environmental impact would be to require all dams to fully comply with water quality standards before the certifications are issued. Given the impact of dams on watersheds and the difficulties of making operational or structural improvements, it could take a great deal of time before the water quality standards are met. During that time, Ecology would not be able to issue water quality certifications.

Comparison of Alternatives – Compliance Schedules to Address Relicensing of Existing Hydropower Dams

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	The proposed alternative allows for compliance schedules for dams to be used in 401 certifications if they endeavor to meet standards.	The language in the existing standards on compliance schedules is not explicit for dams.	Require all dams to fully comply with water quality standards before the certifications are issued.
Simplicity (how easy is it for the reader to understand the rule?)	Low • There is a series of steps that must be included in the compliance plan in order to ensure beneficial uses are protected.	Moderate • The existing compliance schedule language is for general application, and does not have different language for dams. Several steps still need to occur.	High • All dams would have to fully comply with the water quality standards.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • A compliance schedule allows dams to receive a water quality certification while implementing a plan to meet water quality standards.	Moderate • It is not explicit about how compliance schedules can be used for dams relicensing.	Low • All dams would have to fully comply with the water quality standards before Ecology could issue a 401 certification for relicensing. Since this is not technically possible in the near term for many dams, certification would be delayed, which would in turn delay the ability of Ecology to place requirements on dams through the permit process.

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • Allowing dams more time to meeting water quality standards will, in many cases, allow dam operators to make better and more significant changes in order the meet water quality standards. • If water quality standards are not met beneficial uses may be harmed.	Moderate • Depending on how the existing water quality standards are interpreted, compliance schedules under the existing standards may be more or less protective than under the proposed alternative.	Low • This alternative is impractical for many dams, therefore it would be very difficult to implement, and would result in delays and stalemates between Ecology and the regulated dam owner. The sooner dams strive to meet water quality standards, the sooner beneficial uses (such as aquatic life) will be protected.

3. Allowance for Irreversible Human Structural Changes

Background

Major hydrological modifications, such as large dams and levies, have significant effects on water quality. In many cases, these human-created modifications are almost irreversible. There is considerable debate on how to address these human structural changes.

The proposed alternative for human structural changes that cannot be effectively remedied is in proposed WAC 173-201A-200 and 260.

Proposed December 2002 and Preferred Alternative

The proposed alternative recognizes that in some situations, criteria cannot be met due to human structural changes that cannot be effectively remedied. This would include structural changes such as large dams and major levies designed to protect cities.

The proposed alternative (WAC 173-201A-260(2)) states:

> It is recognized that portions of many waterbodies cannot meet the assigned criteria due to the natural conditions of the waterbody. When a waterbody does not meet its assigned criteria due to natural climatic or landscape attributes, or due to human structural changes that cannot be effectively remedied (as determined consistent with the federal regulations at 40 CFR 131.10(g)(3) and (4)), then alternative estimates of the attainable water quality conditions, plus any further human effects allowance specified in this section for when natural conditions are above a numeric criteria, may become an alternative criteria target for a waterbody.

The federal regulations (40 CFR 131.10(g)(3) and (4)) referenced in this section is:

> States may remove a designated use which is not an existing use, as defined in Sec. 131.3, or establish sub-categories of a use if the State can demonstrate that attaining the designated use is not feasible because:…
>
> (3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or
>
> (4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use….

No-Action Alternative

The existing water quality standards do not address human structural changes that cannot be effectively remedied. It is implied, therefore, that there is no allowance for those effects in the existing water quality standards.

Alternative with Lower Environmental Impact

- An alternative with a lower environmental impact would be not giving an allowance to human structural changes that cannot be effectively remedied. In this alternative, all human-created impacts would have to meet water quality standards. In theory, this would mean more waters would fully support beneficial uses.

Comparison of Alternatives – Allowance for Irreversible Human Structural Changes

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	If a waterbody does not meet temperature or dissolved oxygen criteria due to human structural changes that can not be effectively remedied then human actions considered cumulatively may not exceed temperature criteria by more than 0.3C	Current standards do not address irreversible human effects.	Do not give an allowance to irreversible human effects.
Simplicity (how easy is it for the reader to understand the rule?)	Moderate • Provides language to allow alternative criteria to be set.	Moderate • There is no specific language on irreversible human structures.	High • Language would be added to make it clear that there is no allowance for irreversible human structures.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • Determining which human structural changes can and which cannot be effectively remedied might be very difficult and controversial.	Low • Forcing activities that cannot meet standards to meet the standards would be problematic. Time and resources would be wasted attempting to solve problems that are technically or politically irreversible. Such resources would otherwise be directed to improving conditions to the extent possible	Low • Forcing activities that cannot meet standards to meet the standards would be problematic. Time and resources would be wasted attempting to solve problems that are technically or politically irreversible. Such resources would otherwise be directed to improving conditions to the extent possible

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
		given the existence of these structures.	given the existence of these structures.
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • Accepting that some human actions are irreversible will allow the water quality standards to function better. By including the allowance for some human structural changes, Ecology and other entities can focus on the human activities that can be improved.	High • All human activities must fully comply with the water quality standards.	High • All human activities must fully comply with the water quality standards. • It is not technically feasible to meet water quality standards without the removal of these structures.

4. Application of the Dissolved Oxygen and Temperature Criteria

Background

Ecology and other entities establish programs to prevent the dissolved oxygen and temperature criteria from being violated. They also develop water clean-up plans to improve dissolved oxygen and temperature in waterbodies that are not meeting the criteria. Often, complex models and statistical analyses are needed to establish these programs. This is due in part to the need to account for the year to year variability in dissolved oxygen levels and stream temperature. Dissolved oxygen and temperature variations are due to a number of factors, including climatic temperature cycles, rainfall, snow pack, ground water, and human influences.

The models and statistical analyses for complying with the dissolved oxygen and temperature criteria could be applied in many different ways. For example, they could be designed so the waterbody would meet the criteria every year (even the hottest potential years) or to just the average year. Obviously, deciding how to apply the criteria could make a big difference on the requirements on human activities that ensure the criteria would be met.

Previously, Ecology had proposed rule language based on "unusually warm weather" that was attempting to address extreme air temperature events. Exemptions would have been granted during certain periods of unusually warm weather. However, after extensive analysis and public comment, Ecology found that its proposal had technical problems that prevented it from functioning properly. The unusually warm weather exemption also added levels of complexity and uncertainty for the regulated community and created unnecessary obstacles for developing effective TMDLs. Ecology believes the new proposal will partially address the rare, extreme events without the complexity and uncertainty of the old proposal.

In the old proposal, unusually warm weather would have been calculated by Ecology for specific areas of the state. It was based on the 7-DADMax air temperatures. An unusually warm weather exemption would occur, on average, once each decade. Exceeding the numeric temperature or dissolved oxygen criteria would not be deemed a violation if it occurred during a period of unusually warm weather.

The exemption would have only applied during the time when the 7-DADMax air temperature is unusually warm. It would not have applied all year. A determination of whether an exemption is warranted due to unusually warm weather would have been made as follows:

(i) Calculate the 7-Day Average Daily Maximum (7-DADMax) air temperatures over the entire historic record;
(ii) Determine the hottest 7-DADMax air temperature for each year;
(iii) Calculate the 90th percentile value of those annual hottest 7-DADMax air temperatures;

(iv) Exceeding the numeric temperature criteria would not have been deemed a violation if it occurred during a period when the 7-DADMax air temperature in that region of the state is warmer than the 90th percentile value of annual hottest 7-DADMax air temperatures [as calculated in (iii)].

Proposed December 2002 and Preferred Alternative

The proposed alternative states:

- Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.
- Concentrations of dissolved oxygen are not to fall below the criteria at a probability frequency of more than once every ten years on average.

This means that the models and statistical analyses would be designed so the waterbody would meet the criteria every year over a typical ten-year period. The models and statistical analyses would take into account the normal year-to-year fluctuations, but not the rarer and extreme cases such as severe heat waves or periods of extreme draught.

No-Action Alternative

In the existing standards, there is no language addressing probability frequencies. It simply states that waterbodies must meet the criteria. While this is arguably more protective of aquatic life, it makes modeling and permitting very difficult. Attempting to determine what a stream temperature would be in an absolutely worse-case scenario (hottest temperature, lowest snow pack, and least rainfall ever recorded) is problematic. The odds of an absolutely worse-case scenario actually occurring would also be very unlikely. In practice, a probability frequency once every ten years (equal to the proposed alternative) is already being used.

Alternatives with Lower Environmental Impact

An alternative with a lower environmental impact would use the same concept as the proposed alternative but change the ten-year interval to twenty years. It would state:

- Temperatures are not to exceed the criteria at a probability frequency of more than once every twenty years on average.
- Concentrations of dissolved oxygen are not to fall below the criteria at a probability frequency of more than once every twenty years on average.

This means that the models and statistical analyses would be designed so the waterbody would meet the criteria every year over a typical twenty-year period. In this alternative, the models and

statistical analyses would have to consider slightly more unusual events that would typically occur over a twenty-year period compared to the proposed alternative. Therefore, the models and statistical analyses would probably design pollution control activities that have less impact on dissolved oxygen and temperature and thus would be slightly more protective.

Comparison of Alternatives – Application of the Dissolved Oxygen and Temperature Criteria

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Summary of Alternative	Temperatures are not to exceed the criteria (and dissolved oxygen is not to fall below the criteria) at a probability frequency of more than once every ten years on average.	In the existing standards, there is no language addressing probability frequencies. It simply states that waterbodies must meet the criteria.	Temperatures are not to exceed the criteria (and dissolved oxygen is not to fall below the criteria) at a probability frequency of more than once every twenty years on average.
Simplicity (how easy is it for the reader to understand the rule?)	Low • Probability frequencies and other statistical tools are difficult to understand.	High • In the existing standards, there is no language addressing probability frequencies.	Low • Probability frequencies and other statistical tools are difficult to understand.
Usability (can the alternative be used effectively to protect water quality?)	Moderate • In order to use the proposed rule language, fairly complex modeling or statistical analyses are required.	Low • Modeling for an absolute worse-case scenario is very difficult.	Moderate • In order to use the proposed rule language, fairly complex modeling or statistical analyses are required.

	Proposed December 2002 and Preferred Alternative	No-Action Alternative	Alternative with Lower Environmental Impact
Level of Environmental Protection (this does not factor in issues of simplicity and usability addressed above)	Moderate • As a result of modeling or statistical analyses using the proposed language, the criteria would be met every year during a typical ten-year period. However, the criteria might not be met in more extreme situations.	High • Modeling and statistical analyses would design programs where waterbodies meet the criteria every year.	Moderate • As a result of modeling or statistical analyses using the proposed language, the criteria would be met every year during a typical twenty-year period. However, the criteria might not be met in more extreme situations.

Affected Environment, Significant Impacts and Mitigation Measures

Affected Environment

The purpose of the water quality standards is to set criteria to be used to fully protect beneficial uses of all of Washington's rivers, streams, lakes, marine waters, and other waters of the state. The beneficial uses that are specifically protected include:

- **Aquatic Life.** The aquatic life beneficial use includes salmonids (salmon, trout, and char), other fish, macroinvertebrates, other animals, and plants. All life-stages of aquatic life, including spawning, rearing, and migrating, are protected. Salmonids, especially those that are threatened or endangered, usually receive the most attention. In many cases, they are also the most sensitive species.

- **Water Contact.** The water contact beneficial use is designed to protect those who work or play in Washington's waters. This includes swimming, wading, boating, fishing, and other activities.

- **Agricultural, Domestic, and Industrial Water Supply.** Water quality must be of high enough quality so water can be used for these activities.

- **Commerce and Navigation.** Water quality must be of high enough quality so water can be used for these activities.

- **Wildlife.** The wildlife use protects terrestrial plants and animals that rely on rivers, streams, lakes, and marine water for survival.

- **Fishing and Harvesting.** The fishing and harvesting use protects water quality at levels that allow for fishing, harvesting, and consumption of aquatic plants and animals (such as fish and shellfish).

The proposed changes to the water quality standards could affect all of these uses. Aquatic life, water contact, and agricultural water supply are most directly affected by the proposal.

Many of Washington's waterbodies are not fully protecting all of these uses. A list of those waterbodies that are impaired, often called the 303(d) List, is published by Ecology. The 303(d) List is available at www.ecy.wa.gov/programs/wq/303d.

Pollution that affects these uses comes from point sources (such as industrial facilities and waste water treatment plants) and non-point sources (such as stormwater runoff).

Significant Impacts

The proposed changes to the water quality standards set specific criteria that if met will fully protect the uses listed in the previous section. However, significant controversy exists whether each part of the proposal will, in fact, fully protect each use. The proposal and the possible significant impacts are addressed in this section.

For more information on the potential effects of these proposed changes, please see the following documents:

- *Water Quality Antidegradation Implementation Plan – Draft Discussion Paper* (Department of Ecology publication number 00-10-069).
- *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070)
- *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-071)
- *Setting Standards for the Bacteriological Quality of Washington's Surface Water – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-072)
- Department of Ecology's draft discussion document *Review of USEPA's 1999 Ammonia Criteria for Fresh waters*
- *Establishing Surface Water Quality Criteria for the Protection of Agricultural Water Supplies – Draft Discussion Paper* (Department of Ecology publication number 00-10-073)
- *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature WaterQuality Standards,* EPA document number 910-B-03-002, April 2003

Restructuring the Standards

The structure of the standards connects waterbodies to their uses and criteria. If the restructuring of the standards is not done appropriately, the entire water quality standards could be affected, and in the worse-case scenario, the protected uses might suffer.

Antidegradation Implementation Plan

The antidegradation implementation plan protects water quality from unnecessary degradation. It affects all of the beneficial uses in the water quality standards. If the antidegradation plan is

ineffective, all uses could suffer. This includes aquatic life, wildlife, water contact, agricultural water supply, industrial water supply, domestic water supply, commerce and navigation, fishing and harvesting, and aesthetics.

Temperature Criteria

Temperatures criteria that are set too warm or are inappropriately applied might detrimentally affect aquatic life. The temperature criteria were primarily based on the needs of salmonids. They are key species and are usually the most sensitive species.[8] If aquatic life is affected, it could also affect other wildlife that is dependent on aquatic life as a food source.

Dissolved Oxygen Criteria

Dissolved oxygen criteria set too low or inappropriately applied might detrimentally affect aquatic life. The dissolved oxygen criteria were primarily based on the needs of salmonids. They are key species and are often the most sensitive species. The effects on macroinvertebrates, which are also very sensitive to dissolved oxygen, were also considered. If aquatic life is affected, it could also affect other wildlife that is dependent on aquatic life as a food source.

Bacteria Criteria

The bacteria criteria are designed to protect water contact. If the bacteria criteria are set too high or inappropriately applied, more people who recreate or work in the water might become ill also if they are set not protective enough they will impact Washington's shellfish beds.

Ammonia Criteria

If ammonia criteria are set too high or are inappropriately applied, it might detrimentally affect aquatic life. If aquatic life is affected, it could also affect other wildlife that is dependent on aquatic life as a food source.

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[8] Other aquatic life, such as macroinvertebrates and amphibians, are also affected by temperature. Tailed frogs and torrent salamanders are examples of temperature-sensitive organisms. Criteria specifically designed to protect these organisms are not being proposed due to the lack in data detailing their temperature requirements. If the temperature criteria based on the key fish species are met, it should provide a healthy temperature for most other aquatic life.

Miscellaneous

Agricultural Water Supply. If agricultural water supply criteria are inappropriately set or applied, it might detrimentally affect irrigators. The agricultural water supply criteria were designed to protect soils, crops, and infrastructure of irrigated agriculture.

Compliance Schedules for Dams. If the compliance schedules for dams are inappropriately constructed or applied, all beneficial uses might be affected. Aquatic life, and especially salmonids, is most likely to be affected.

Allowance for Irreversible Human Structural Changes. If the allowance is inappropriately constructed or applied, all beneficial uses might be affected. Depending on the human structural change that is allowed, different uses might be affected. Aquatic life would most likely be affected.

Application of the Dissolved Oxygen and Temperature Criteria. If the dissolved oxygen and temperature criteria are misapplied, it might detrimentally affect aquatic life.

Mitigation Measures

Mitigation measures should be identified that will reduce or eliminate the adverse environmental impacts of a proposal. Mitigation measure should be reasonable and capable of being accomplished. According to the SEPA rules (WAC 197-11-768), "mitigation" means:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action;
(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;
(5) Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
(6) Monitoring the impact and taking appropriate corrective measures.

Most of the possible mitigation measures were addressed in the evaluation of alternatives. Since the water quality standards include numeric criteria, narrative criteria, and implementation, most issues normally considered “mitigation measures” can be addressed as part of the rule.

There are, however, five mitigation measures outside the scope of the water quality standards that could help offset any adverse environmental impact of the water quality standards. These mitigation measures involve Ecology, but are also highly dependent on other public and private entities and on available funding.

Increased Monitoring

Ecology and other public and private entities can increase their monitoring efforts as a mitigation measure. The negative effects of improperly set criteria will be compounded by sporadic monitoring. A robust monitoring program will lessen any adverse environmental impact and provide clarity on whether waterbodies are impaired.

Increased monitoring includes monitoring more waterbodies and more continuous monitoring. For example, the lowest dissolved oxygen levels often occur early in the morning before monitoring crews arrive. Continuous dissolved oxygen monitoring devices, while currently unreliable for long periods of time, might in the future solve this problem. Continuous monitoring devices will catch the worst conditions, even when monitoring crews are not present. Ecology and other entities that conduct monitoring should work to ensure that their monitoring programs are as robust as possible.

Increased Water Clean-Up

Many entities, including Ecology, are working to clean up polluted waterbodies. Improving water quality is an extremely important mitigation measure to offset any adverse environmental impact from water quality standards. Having entire healthy watersheds with good water quality that provides good habitat for aquatic life will help mitigate any minor deficiency associated with setting inadequate water quality standards.

For example, if overall water quality is generally poor, an improperly set temperature criteria could have severe effects on salmon populations due to the synergistic effects of temperature with other pollutants. However, if the water quality is generally healthy, salmon populations would be more resilient and more able to survive despite an improperly set temperature criteria.

Increased Pollution Prevention

There are many programs designed to prevent pollution from reaching surface waters. These programs address point sources and non-point sources of pollution. For example, these programs have led to Best Management Practices (BMPs) for stormwater and forestry that are designed to protect water quality.

Many parts of the water quality standards rely directly or indirectly on the successes of these programs. For example, the antidegradation implementation plan directs entities to use BMPs. The antidegradation implementation plan can only be successful if other programs' BMPs can protect water quality.

The water quality standards do not address every potential source of pollution, so other entities will have to voluntarily ensure that their pollution prevention programs are working properly in order to protect Washington's water quality.

Systematic Process for Updating Water Quality Standards

States are required to review their standards every three years. The issues in this update have been very complex and controversial and have resulted in the Ecology delaying the adoption of these standards. We have also delayed addressing other parts of the standards that need review and possible update. If Washington could develop a systematic way to address updating of standards, it would potentially take care of improperly set standards.

Training on the Water Quality Standards

The proposed changes to the water quality standards include new criteria and new concepts. Federal, state, and local governments and other entities all implement the water quality standards, and must understand and use these new criteria and concepts. By providing training, Ecology can assist entities and make sure the water quality standards are implemented correctly and in a timely fashion.

Glossary and List of Acronyms

ºC	Degrees Celsius
303(d)	Ecology's list of impaired waters that violate the water quality standards.
APA	Administrative Procedures Act
BMP	Best Management Practices
CFR	Code of Federal Regulations
Char	Bull trout and Dolly Varden
CRITFIC	Columbia River Inter-Tribal Fish Commission
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
Ecology	Washington State Department of Ecology
DEIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
NMFS	National Marine Fisheries Service (NOAA Fish)
NPDES	National Pollutant Discharge Elimination System Permitting Program
mg/L	Milligrams per liter
PBT	Persistent Bioaccumulative Toxins
RCW	Revised Code of Washington
Salmonids	Salmon, Steelhead, Trout, and Char
SEPA	State Environmental Policy Act
TMDL	Total Maximum Daily Load, or Water Clean-Up Plan
UAA	Use Attainability Analysis
uS/cm	Microsiemens per centimeter
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code (The Water Quality Standards for Surface Waters of the State of Washington are in WAC 173-201A)
WFPA	Washington Forest Protection Association

Technical Reports and Other Documents

The following documents produced by the Department of Ecology are available. These detailed documents address the proposed changes to the water quality standards. Specific scientific studies that were used are referenced in these documents depending on the specific subject (temperature, bacteria, etc.)

Agricultural Water Supply

- *Establishing Surface Water Quality Criteria for the Protection of Agricultural Water Supplies – Draft Discussion Paper* (Department of Ecology publication number 00-10-073)

Ammonia

- Department of Ecology's draft discussion document *Review of USEPA's 1999 Ammonia Criteria for Fresh waters*

Antidegredation

- *Water Quality Antidegradation Implementation Plan – Draft Discussion Paper* (Department of Ecology publication number 00-10-069).

Bacteria

- *Setting Standards for the Bacteriological Quality of Washington's Surface Water – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-072)
- *Ambient Water Quality for Bacteria – 1986*. U.S. EPA, Office of Water Regulations and Standards, Criteria and Standards Division, Washington, D.C. 20460. EPA 440/5-84-002. January 1986.

Dissolved Oxygen

- *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Dissolved Oxygen – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-071)

Temperature

- *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards – Temperature Criteria – Draft Discussion Paper and Literature Summary* (Department of Ecology publication number 00-10-070)
- *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards,* EPA document number 910-B-03-002, April 2003

Other

- Chapter 173-201A WAC 173-201A – Water Quality Standards for Surface Waters of the State of Washington

Appendix A:
Draft EIS Commenters, Comments and Responses to Comments

Comments on the Draft EIS

Only a few people submitted comments directly on the Draft EIS. We have made a diligent attempt to find all such comments. Most of the approximately 1400 commenters addressed only the rule itself or other supporting documentation. The responses attached only addresses those comments that directly relate to the Draft EIS. A responsiveness summary that includes all 1400 commenters and the responses to their comments is available on our website at www.ecy.wa.gov/programs/wq/swqs. If you would like a hard copy, please contact Andrew Kolosseus, Department of Ecology, at 360-407-7543.

In July 2003, Ecology will be mailing a CD with the complete responsiveness summary, FEIS, Rule Language, Cost Benefit Analysis and supporting material to everyone who commented on the draft proposed rule.

List of Commenters on DEIS

- EPA (United States Environmental Protection Agency)
- Good, Randy
- Lakewood, City of
- Nicpon, Jack
- North Cascades Audubon Society
- North Sound Baykeeper
- Plum Creek (Plum Creek Timber Company)
- Washington Farm Bureau
- Washington Public Interest Rights Group

Summary of Comments on the Draft EIS and Responses

ANTIDEGRADATION

1. **Because of the significant difference in allowable activities between Tier II and Tier III waters, many states have adopted a Tier II ½ provision that allows some very limited degradation, but offers much of the Tier III protection. We would support the State adopting in addition to the Tier III category, a Tier II ½ as mentioned in the Draft EIS. (EPA)**

RESPONSE: We have included a Tier II ½; although, we do not use that terminology. We are establishing the ability to chose between two levels of protection as part of the Tier III process. The highest level would provide non-degradation protection and the next highest would allow for de minimus degradation from actions using state of the art pollution control methods.

2. **The ability to place waters in Tier III is severely limited. We strongly recommend the addition of a tier between II and III as discussed in the DEIS. This will help protect critical habitat for endangered species, shellfish growing waters, and domestic supplies (North Cascades Audubon Society) (North Sound Baykeeper).**

RESPONSE: We have added a second level of Tier III protection that is similar to the Tier II ½ concept. See previous response on Tier II ½ above.

3. **We recommend including forest practices as an example situation where Tier II analysis would not be needed (p. 26). (Plum Creek)**

RESPONSE: This would not quite be correct. Tier II compliance does not have to be determined for individual forest harvest actions but the forest practices rules must use adaptive management to build in the components central to the Tier II analysis. This seems consistent with the approaches being taken and agreed upon in the Forest and Fish agreement.

4. **Discussion regarding the Tier II½ alternative to Tier III designations suggests this is actually Ecology's preferred alternative. Also, for the environmental characteristics of the alternatives (p. 35), the proposed alternative should have a "high" rating (owing to high expected protection), and the No Action alternative should receive a "low" rating (because currently no Tier III designated water bodies). (Plum Creek)**

RESPONSE: We really do not expect more waters would be placed in Tier III under the proposed language than under the existing rule language. Tier II ½ is recognized for the

benefits it provides in terms of a greater likelihood of being supported by communities, but it was not our proposed approach.

5. **For Adaptive Management of General Permits (p. 36), Ecology should cite forest practices as an example of how continuous improvements are made. (Plum Creek)**

RESPONSE: Forest practices are a great example of the adaptive management approach but we do not want to single out any actions in our general descriptions.

TEMPERATURE

6. **Westslope cutthroat trout are overlooked on p. 6 under the Temperature Criteria. We recommend the substituting the phrase "eastern redband trout" with "cutthroat trout and redband rainbow trout of the interior Columbia River Basin…" (Plum Creek)**

RESPONSE: We agree calling them eastern makes it sound like they are from the Eastern part of the US. In the regulations we refer to them as interior redband trout.

7. **Redband trout are often referred to (here and elsewhere in supporting materials) as "non-indigenous", when we believe Ecology means "non anadromous." (Plum Creek)**

RESPONSE: You are correct it should say non-anadromous, Although we could not find the reference in the DEIS that you mention.

8. **Alternatives are not presented (pp. 11, 41) or discussed further in the DEIS for the salmon and trout rearing only, redband trout, and warmwater species groups. (Plum Creek)**

RESPONSE: The DEIS contains 3 alternatives to protect Salmon, Steelhead and Trout Spawning and Rearing Criteria. The analysis that was done for salmonids in general captured the appropriate range of numbers for rearing only. We did not think the setting of rearing only criteria was an area that merited specific analysis in the EIS. It has not been an area of discussion or controversy over the many years that we have been working to refine this proposal. Therefore, in an effort to meet the requirements of WAC 197-11-408 we kept the scope of this EIS to those items that were related to the changes we were proposing and ones where there was significant debate. Also, during the scoping period we did not receive any response that developing alternative temperature requirements for rearing only should be included in this EIS.

Currently there is not enough scientific information available to propose a warm water species rearing only criteria

DISSOLVED OXYGEN

9. As with temperature criteria, implementation of dissolved oxygen criteria is problematic and probably infeasible or inappropriate for the Alternative with Lower Environmental Impact. When does the standard apply? To a single spawning pair? At the start of the run? The peak? (Plum Creek)

RESPONSE: We have expressed that the focus is on the typical dates of initiation and completion.

GENERAL

10. We are disappointed that Ecology did not consider the environmental community's alternative for consideration in the EIS. Our alternative, dated August 16, 2002, is a reasonable alternative that would significantly enhance environmental quality by implementing more stringent standards for temperature and dissolved oxygen, an antidegradation policy that ensures high quality waters will not be degraded, and a ban on mixing zones for persistent bioaccumulative toxics (PBTs or persistent pollution). We again, urge you to consider the proposal in its entirety. (Washington Public Interest Rights Group)

RESPONSE: We appreciate the effort that was put into rewriting the whole Water Quality Standards rule as you would want to see it. As was explained in the response to scoping, this was a very detailed alternative that we tried to use where we could and still meet the intent of WAC 197-11-408. We used portions of this alternative when your alternative was: 1) Relevant to the scope of proposed changes; 2) Specific to the significant alternatives that were being analyzed; 3) Technologically feasible; and 4) A viable option that Ecology could consider and implement.

11. The APA analysis was not made available through the proposed rule notice and it has not been incorporated in the DEIS for the proposed guidelines. This analysis (including an implementation plan) should be completed and made available for public comment before adoption of the guidelines. (Washington Farm Bureau)

RESPONSE: Under the Administrative Procedures Act, such advance release was not required when this proposal went out for public comment We recognized the desire of our stakeholders to see this information and voluntarily provided a draft Cost Benefit Analysis as part of this rulemaking.

12. Use of simplicity, usability, and environmental protection as evaluation criteria for each rule alternative is appropriate and important (p 16). (Plum Creek)

RESPONSE: We appreciate your support.

13. How designated uses are to be assigned to lakes and reservoirs is not identified. (Plum Creek)

RESPONSE: This is because there is no difference with how the uses are assigned to all other waterbody types. Where uses are designated now, they will be designated in the new regulation. Uses would be changed based on a use assessment and future modifications to the rule and be based on a determination on what the attainable uses are.

14. While I can support many of the proposed change, I can only support the lower environmental impact alternatives identified in the EIS for temperature and dissolved oxygen (Jack Nicpon).

RESPONSE: Comment noted.

15. I do support increased scientific monitoring on the ground as part of the mitigation. (Jack Nicpon)

RESPONSE: Thank you for your feedback. Ongoing monitoring is crucial to all aspects of protecting and maintaining water quality.

16. Many comments and references were previously entered into the EIS scoping process that met the criteria for best available science criteria listed under the WAC 365-195-900 through 925. These references were not considered in these documents. (Randy Good)

RESPONSE: All information that was submitted as part of the scoping process was considered for inclusion in the draft EIS. In an effort to be clear about what comments we were not going to include we wrote back to all that submitted scoping information. Without any specific references to which comments or references you think should be included it is hard to answer thes concerns more specifically. The DEIS includes specific responses to each of the scoping letters that were received.

17. It is not clear how NPDES phase II cities will be affected, and how the best management practices BMPs will be regulated under the proposed standards. The DEIS says there will not be substantive changes, but 160 suggests otherwise. (City of Lakewood)

RESPONSE: There is no change to how stormwater and nonpoint sources are regulated as a consequence of the changes to the regulation. The comment is referring to existing provisions in the state standards for nonpoint source controls.

Appendix B:
EIS Distribution List

Copies of the final EIS were initially provided to (1) the responsible official, (2) the Department of Ecology, (3) all agencies with jurisdiction, (4) all agencies that commented on the DEIS and rule proposal, and anyone that specifically requested a copy of the FEIS once it is issued.

A notice that the FEIS has been issued and is available was sent to the following:

Everybody that commented on the DEIS
Everybody that commented on the Draft Rule
Tribal Governments
All counties – Commissioners and Planning Directors in Washington
All cities – Planning Directors in Washington
State Agencies
Federal Agencies – (EPA, NMFS, USFWS)

In July 2003, Ecology will be mailing a CD with the rule language, FEIS, responsiveness summary, cost benefit analysis and supporting material to this same distribution list.