UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

Reply To
Attn Of: OW-135

FEB 11 2008

David C. Peeler, Program Manager
Department of Ecology
P. O. Box 47600
Olympia, Washington 98504-7600

Re: EPA Approval of the 2003/2006 Revisions to the Washington Water Quality Standards Regulations

Dear Mr. Peeler: DAVE

The Environmental Protection Agency (EPA) has completed its review of the 2003 revisions to the Washington water quality standards (WQS) regulations and the 2006 WQS revisions made pursuant to EPA's March 23, 2006 disapproval action. We conducted our review pursuant to our authority under Section 303(c) of the Clean Water Act (CWA) and the implementing regulations at 40 CFR 131. Today, EPA is taking action on the new and revised standards in the 2003 and 2006 rulemaking revisions on which we have not previously acted. Therefore, in accordance with CWA section 303(c), EPA is approving the water quality standard provisions of these rulemaking packages which include:

- new fresh water use designations for salmon and other aquatic life,
- new numeric temperature criteria,
- specific salmonid use designations for rivers and streams throughout Washington state,
- specific application of the salmonid spawning temperature criteria,
- several narrative temperature provisions and
- several miscellaneous provisions.

This approval also includes revisions to the ammonia criteria in WAC 173-201A-240, included as part of the 2003 rulemaking package, subject to the results of ESA consultation under Section 7(a)(2) of the Endangered Species Act (ESA). If the consultation identifies deficiencies in the standards requiring remedial action by EPA, EPA retains the full range of options available under Section 303(c) for ensuring water quality standards are protective of designated uses.

The enclosed document provides a detailed description of each of the above provisions and EPA's basis for approval. The enclosure also provides EPA's approval of the editorial and formatting changes made to various water quality standards such as the numeric criteria for turbidity, dissolved oxygen, total dissolved gas, and pH. The editorial changes did not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 standards. EPA is acting on these provisions to ensure that the reformatted provisions are in effect under the CWA. Finally, the enclosure identifies the provisions that EPA is not taking an action on because we do not consider the provisions water quality standards under section 303 of the CWA.

Today's approval, in combination with previous EPA determinations and approval of various portions of the Washington's 2003 revised water quality standards on January, 12, 2005, March 22, 2006, March 23, 2007, and May 2, 2007 now completes EPA's review of the 2003 WQS revisions. This approval action also completes EPA's review of Ecology's 2006 WQS revisions which adopted EPA's recommendations identified in its March 23, 2006 disapproval action as necessary to meet the requirements of the CWA, in accordance with section 303(c)(3). Therefore Ecology and EPA have completed their CWA obligations stemming from EPA's March 22, 2006 disapproval action.

Also, today's approval concludes a significant amount of work on the part of your agency and others to revise the water quality standards to reflect the most recent scientific information on temperature and salmonids. Accordingly, we believe implementation actions to attain and maintain these new standards will significantly aid in the protection and recovery of salmonid species in the state. We congratulate you on this important accomplishment and appreciate the collaborative process with the tribes, federal and state fish agencies, and other stakeholders in this effort. We believe the final standards were improved by this coordination and understand that Ecology and the recognized Tribes of the State of Washington have established the Ecology/Tribal Environmental Council (ETEC) to help future collaboration between Ecology and the Tribes. We believe this Council will be helpful to address future water quality standard revisions.

Except for the ammonia criteria as discussed above, EPA has completed consultation on today's approval action with the U.S. Fish and Wildlife Service and National Marine Fishery Service under Section 7(a)(2) of the Endangered Species Act (ESA). That consultation concluded that EPA's approval action is largely beneficial and would not jeopardize the continued existence of any endangered or threatened species. As part of that consultation, there were several conditions set forth to minimize any adverse effects to ESA listed species, which include: reviewing the dissolved oxygen criteria; establishing a process to review new fish use information in coordination with the tribal and state co-fisheries managers and other stakeholders and, if needed, periodically revise the standards; applying the antidegradation policy to protect salmonid uses; and minimizing the thermal impacts from point sources discharges. We look forward to working with you in carrying out these items.

We appreciate the efforts of you and your staff to coordinate this action with EPA throughout the water quality standard revision process and look forward to our continued collaboration on future standards work. Please feel free to contact me at (206) 553-7151, Jannine Jennings at (206) 553- 2724, or John Palmer (206) 553-6521 if you have any questions or concerns regarding this action.

Sincerely,

Michael F. Gearheard
Director
Office of Water & Watersheds

Enclosure

cc: Melissa Gildersleeve, Washington Department of Ecology
Fran Wilshusen, Northwest Indian Fisheries Commission
Steve Landino, NOAA Fisheries
Ken Berg, USFWS

ENCLOSURE

I. History

In August 2003 the Washington Department of Ecology adopted, and submitted to EPA, its 2003 Water Quality Standards (WQS) regulations revisions. The WQS package contained the specific revisions to the regulatory language at WAC 173-201A, the Lt. Governor's certification that the revisions were duly adopted in accordance with State law, a summary of the changes made to the States water quality standards, the State's response to comments document, and technical reports. On January 12, 2005, EPA provided its determination on some of the provisions in the 2003 WQS. These provisions included:

- Recreational uses and criteria, fresh water (WAC173-201A-200(2))
- Water supply uses, fresh water (WAC173-201A-200(3))
- Miscellaneous uses, fresh water (WAC173-201A-200 (4))
- Lake nutrient criteria (WAC173-201A-200-230)
- Radioactive substances (WAC173-201A-200-250)
- Toxics and aesthetics narrative (WAC173-201A-200-260(2))
- Variance procedures (WAC173-201A-420)
- Site specific criteria (WAC173-201A-430)
- Use attainability analysis ((WAC173-201A-440))
- Water quality offsets ((WAC173-201A-450))
- Recreational, water supply, and miscellaneous uses for water bodies in Table 602

On February 10, 2005, EPA sent a letter to the Department of Ecology clarifying that the provision for compliance schedules for dams (WAC 173-201A-510(5)) contained in the 2003 WQS revision was not a water quality standard. Because it is not a water quality standard EPA did not take action on the provision (see letter dated February 10th letter from Paula Vanhaagen to Melissa Gildersleeve).

On March 22, 2006, EPA sent a letter to the Department of Ecology disapproving specific stream segments because the aquatic life use designation was incorrect, and in some cases the temperature criterion did not protect the fish uses. As a result of EPA's action the Department of Ecology revised their water quality standards to address the deficiencies outlined in EPA's disapproval action. Ecology's newly adopted water quality standards package was submitted to EPA on December 8, 2006. The package submitted by the Department of Ecology contains revisions to the State's water quality standards, the Lt. Governor's certification that the revisions were duly adopted in accordance with State law, and a summary of the changes made to the water quality standards. EPA's determinations on these revisions are included in this action. The water quality standards revisions contained in the 2006 package are as follows:

- Revised the names and descriptions of the aquatic life use categories to more accurately reflect the aquatic life use
- Revised specific stream designated uses (and associated temperatures)
- Applied the 9° C Char spawning criterion to specific stream segments

- Applied the 13° C salmon/trout spawning criterion to specific stream segments
- Corrected the ammonia criterion equations
- Made minor corrections to errors contained in the 2003 WQS (i.e., changed allowable incremental temperature increase from point sources from 28/(T+5) to 28/(T+7); changed the fecal coliform criterion for marine water primary contact recreation from a geometric mean of 41 FC/100 ml to 43 FC/100 ml)
- As a result of revising the stream designated uses, the dissolved oxygen criteria for some streams was revised from 8.0 mg/L to 9.5 mg/L

On March 23, 2007 EPA sent a letter to the Department of Ecology approving the cyanide chronic criterion for marine aquatic life outside of Puget Sound (see WAC173-201A-240).

Finally, on May 2, 2007, EPA sent a letter to the Department of Ecology approving the antidegradation provisions contained in WAC 173-201A-300 through 330.

II. EPA Action

Today's action provides EPA's determinations on provisions in Washington's 2003 WQS and the 2006 WQS submission.

The 2003 and 2006 WQS provisions that EPA is making a determination on are:

- Definitions
- Fresh water aquatic life uses categories
- Fresh water temperature, dissolved oxygen, turbidity, total dissolved gas, and pH criteria
- Marine water aquatic life uses categories
- Marine water temperature, dissolved oxygen, turbidity, and pH criteria
- Shellfish harvesting use and criteria
- Recreational uses and criteria, marine water
- Miscellaneous uses, marine water
- Toxic Substances
- Natural conditions and other water quality criteria applications
- Mixing zone policy
- Short term modification
- General allowance for compliance schedules
- Part VI – Use designations for waters of the state

The technical justification for each of EPA's determinations is discussed in part IV of this enclosure.

III. Endangered Species Act and Essential Fish Habitat

EPA's approval action is considered a federal action which is subject to the Section 7 consultation requirements of the Endangered Species Act (ESA) as well as Essential Fish Habitat

(EFH) consultation requirements under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). EPA has a separate document which addresses ESA and EFH consultation.

IV. TECHNICAL JUSTIFICATION

The following provides each of the water quality standard provisions that EPA reviewed, and EPA's determination. The underlined language in each provision denotes that the language is new, revised, and/or reformatted; language that is not underlined was in the 1997 water quality standards and has not changed, it is included here to provide context for the overall provision.

A. PURPOSE

1. WQS provisions: Purpose, (WAC 173-201A-010(1), (2), (3), (4))

(1) The purpose of this chapter is to establish water quality standards for surface waters of the state of Washington consistent with public health and public enjoyment of the waters and the propagation and protection of fish, shellfish, and wildlife, pursuant to the provisions of chapter 90.48 RCW. All actions must comply with this chapter. As part of this chapter:

(a) All surface waters are protected by narrative criteria, designated uses, and an antidegradation policy.

(b) Based on the use designations, numeric and narrative criteria are assigned to a water body to protect the existing and designated uses.

(c) Where multiple criteria for the same water quality parameter are assigned to a water body to protect different uses, the most stringent criteria for each parameter is to be applied.

(2) Surface waters of the state include lakes, rivers, ponds, streams, inland waters, saltwaters, wetlands, and all other surface waters and water courses within the jurisdiction of the state of Washington.

(3) This chapter will be reviewed periodically by the department and appropriate revisions will be undertaken.

(4) WAC 173-201A-200 through 173-201A-260 describe the designated water uses and criteria for the state of Washington. These criteria were established based on existing and potential water uses of the surface waters of the state. Consideration was also given to both the natural water quality potential and its limitations. Compliance with the surface water quality standards of the state of Washington requires compliance with chapter 173-201A WAC, Water quality standards for surface waters of the state of Washington, chapter 173-204 WAC, Sediment management standards, and applicable federal rules.

EPA ACTION: EPA acknowledges the changed language contained in this provision. However, water quality standards are provisions of State or Federal law which consist of a designated use or uses for waters of the United States, and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is a general policy statement as to the goals and purpose of the state water quality standard provisions and as such is not a water quality standard under Section 303(c) of the Clean Water Act (CWA). Therefore, EPA is not required to take an action on this provision under the CWA.

B. DEFINITIONS – WAC 173-201A-020

1. WQS Provision: definition of 1-day maximum temperature

A**1-Dmax**@ or A**1-day maximum temperature**@ is the highest temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

EPA ACTION: EPA approves the definition for 1-Dmax because it is reasonably explains the use of this term.

2. WQS Provision: definition of 7-day average of the daily maximum temperatures

"7-DADMax" or "**7-day average of the daily maximum temperatures**" is the arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

EPA ACTION: EPA approves Washington's definition for "7-DADMax" because it is scientifically defensible, and consistent with Section 303(c) of the CWA and its implementing regulations.

The 7DADMax metric is recommended for temperature standards by the USEPA *Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* (EPA910-B-03-002, April 2003, hereafter referred to as the Temperature Guidance, USEPA 2003). The Temperature Guidance and the six Technical Issue Papers that serve as the scientific basis for the recommendations in the Guidance may be found at: www.epa.gov/r10earth/temperature.htm.

EPA considers this metric better than the instantaneous maximum temperature metric, which was previously used, because it integrates more information into one value. The metric is not overly influenced by the maximum temperature of any

single day as it reflects an average temperature that fish are exposed to over a week-long period.

This metric more adequately protects aquatic life against acute[1] effects because the metric incorporates daily maximum temperatures. This metric can also be protective of chronic[2] effects to aquatic life because the metric describes the thermal exposure over 7 days. The Temperature Guidance considered both acute and chronic effects to fish when developing its recommended temperature criteria.

3. WQS Provision: definition of Actions

"Actions" refers broadly to any human projects or activities.

EPA ACTION: EPA approves Washington's definition for "actions" because it is reasonable to have a broad definition of the term in order to have the flexibility to adapt policies and procedures to the circumstances encountered in the day-to-day operation of a water quality management program.

4. WQS Provision: definition of Critical condition

"Critical condition" is when the physical, chemical, and biological characteristics of the receiving water environment interact with the effluent to produce the greatest potential adverse impact on aquatic biota and existing or designated water uses. For steady-state discharges to riverine systems the critical condition may be assumed to be equal to the 7Q10 flow event unless determined otherwise by the department.

EPA ACTION: EPA approves this minor clarifying language change. Washington replaced the word "characteristic" with the word "designated." The change in this provision does not alter the definition that EPA previously approved, and that was in effect in the 1997 WQS. While EPA is not reassessing or re-approving the underlying, previously approved water quality standard, EPA is acting on this revised language to ensure that the editorial change is in effect under the CWA.

5. WQS Provision: definition of Designated uses

"**Designated uses**" are those uses specified in this chapter for each water body or segment, regardless of whether or not the uses are currently attained.

EPA ACTION: EPA approves Washington's definition of "designated uses" because it is consistent with Section 303(c) of the CWA and with EPA's definition of designated uses at 40 CFR §131.3(f).

[1] Acute – a stimulus severe enough to rapidly induce an effect such as lethality.
[2] Chronic - a stimulus that lingers over a relatively long period of time. It is measured as reduced growth, reduced reproduction, lethality, etc.

6. WQS Provision: definition of Enterococci

"**Enterococci**" refers to a subgroup of the fecal streptococci that includes *S. faecalis, S. faecium, S. gallinarum, and S. avium.* The enterococci are differentiated from other streptococci by their ability to grow in 6.5% sodium chloride, at pH 9.6, and at 10°C and 45°C.

EPA ACTION: EPA approves Washington's definition for "enterococci" as it is consistent with the definition in *Standard Methods for the Examination of Water and Wastewater* (18th edition, 1992) and is therefore scientifically defensible.

7. WQS Provision: definition of *Escherichia coli*

"***E. coli***" or "***Escherichia coli***" is an aerobic and facultative gram negative nonspore forming rod shaped bacterium that can grow at 44.5 degrees Celsius that is ortho-nitrophenyl-B-D-galactopyranoside (ONPG) positive and Methylumbelliferyl glucuronide (MUG) positive.

EPA ACTION: EPA is not taking action on this definition since it is not used in the State's water quality standards, and a definition by itself is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for waters of the United States, and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). Because this definition is not a water quality standard EPA is not required to take an action on this provision under the CWA.

8. WQS Provision: definition of Existing uses

"Existing uses" means those uses actually attained in fresh or marine waters on or after November 28, 1975, whether or not they are designated uses. Introduced species that are not native to Washington, and put-and-take fisheries comprised of nonself-replicating introduced native species, do not need to receive full support as an existing use.

EPA ACTION: EPA approves Washington's definition of "existing uses" because it is consistent with Section 303(c) of the CWA and with EPA's definition of existing uses. Washington has further clarified EPA's definition by adding: "introduced species that are not native to Washington, and put-and-take fisheries comprised of nonself-replicating introduced native species, do not need to receive full support as an existing use." EPA is approving this language because it is consistent with the CWA goal to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

9. WQS Provision: definition of Mixing Zone

"Mixing zone" means that portion of a water body adjacent to an effluent outfall where mixing results in the dilution of the effluent with the receiving water. Water quality criteria may be exceeded in a mixing zone as conditioned and provided for in WAC 173-201A-400.

EPA ACTION: EPA acknowledges the minor editorial change in this provision (i.e., 173-201A-400) as a non-substantive revision to a regulatory cross reference. Washington changed the regulatory citation to conform to their new formatting system. The change in this provision does not alter the definition that EPA previously approved, and that was in effect in the 1997 WQS. EPA acknowledges this change in the regulatory citation and considers it in effect under the CWA.

10. WQS Provision: definition of Natural Condition

"Natural conditions" or "natural background levels" means surface water quality that was present before any human-caused pollution. When estimating natural conditions in the headwaters of a disturbed watershed it may be necessary to use the less disturbed conditions of a neighboring or similar watershed as a reference condition. (See also WAC 173-201A-260(1).)

EPA ACTION: EPA acknowledges the minor editorial change in this definition (i.e., "see also WAC 173-210A-260(1)") as non-substantive revision to a regulatory cross reference. Washington changed the regulatory citation to conform to their new formatting system. The change in this provision does not alter the definition that EPA previously approved, and that was in effect in the 1997 WQS. EPA acknowledges this change in the cross reference and considers it in effect under the CWA.

11. WQS Provision: definition of New or expanded actions

"New or expanded actions" mean human actions that occur or are regulated for the first time, or human actions expanded such that they result in an increase in pollution, after July 1, 2003, for the purpose of applying this chapter.

EPA ACTION: EPA approves Washington's definition for "new and expanded actions" because it is reasonable in order to have the flexibility to adapt policies and procedures to the circumstances encountered in the day-to-day operation of a water quality management program.

12. Washington WQS Provision: definition of Permit

"Permit" means a document issued pursuant to chapter 90.48 RCW specifying the waste treatment and control requirements and waste discharge conditions.

EPA ACTION: EPA acknowledges the minor editorial change (i.e., chapter 90.48 RCW) as non-substantive revision to a regulatory cross reference. The change in this provision does not alter the definition that EPA previously approved, and that was in effect in the 1997 WQS. EPA acknowledges this change in the cross reference and considers it in effect under the CWA.

C. FRESH WATER AQUATIC LIFE USES AND CRITERIA

1. WQS Provision: Fresh water designated uses, WAC 173-201A-200(1)

WAC 173-201A-200 Fresh water designated uses and criteria. The following uses are designated for protection in fresh surface waters of the state. Use designations for water bodies are listed in WAC 173-201A-600 and 173-201A-602.

(1) **Aquatic life uses.** Aquatic life uses are designated based on the presence of, or the intent to provide protection for, the key uses identified in (a) of this subsection. It is required that all indigenous fish and nonfish aquatic species be protected in waters of the state in addition to the key species described below.

(a) The categories for aquatic life uses are:

(i) **Char spawning and rearing.** The key identifying characteristics of this use are spawning or early juvenile rearing by native char (bull trout and Dolly Varden), or use by other aquatic species similarly dependent on such cold water. Other common characteristic aquatic life uses for waters in this category include summer foraging and migration of native char; and spawning, rearing, and migration by other salmonid species.

(ii) **Core summer habitat**. The key identifying characteristics of this use are summer (June 15 – September 15) salmonid spawning or emergence, or adult holding; use as important summer rearing habitat by one or more salmonids; or foraging by adult and subadult native char. Other common characteristic aquatic life uses for waters in this category include spawning outside of the summer season, rearing, and migration by salmonids.

(iii) **Salmonid spawning, rearing, and migration.** The key identifying characteristic of this use is salmon or trout spawning and emergence that only occurs outside of the summer season (September 16 - June 14). Other common characteristic aquatic life uses for waters in this category include rearing and migration by salmonids.

(iv) **Salmon rearing and migration only.** The key identifying characteristic of this use is use only for rearing or migration by salmonids (not used for spawning).

(v) **Non-anadromous interior redband trout.** For the protection of waters where the only trout species is a non-anadromous form of self-reproducing interior redband trout (*O. mykis*), and other associated aquatic life.

(vi) **Indigenous warm water species.** For the protection of waters where the dominant species under natural conditions would be temperature tolerant indigenous nonsalmonid species. Examples include dace, redside shiner, chiselmouth, sucker, and northern pikeminnow.

EPA ACTION: EPA approves this provision because it is consistent with Section 303(c) of the CWA and EPA=s implementing regulations at 40 CFR 131.10 which requires States and Tribes to specify the designated uses to be achieved and protected, and allows for sub-categorizing uses. In this case, Washington has sub-categorized its aquatic life uses.

The following provides a brief history of how Washington's aquatic life use categories have evolved in the 2003 and 2006 water quality standards revisions. In Washington's 2003 WQS revision the formatting used to assign designated uses to waters was revised. The 1997 WQS used a "Class" format which assigned each water body to a particular "Class." Fresh waters had Class AA, Class A, Class B, and Lake Class waters. Each "Class" contained a suite of designated uses for fresh and marine waters (e.g., "salmonid migration, rearing, spawning, and harvesting;" "other fish migration, rearing, spawning, and harvesting;" water supply uses, recreational uses). The 2003 WQS removed the "Class" system and instead applied the designated uses that were contained in the "Class" directly to the water body.

Washington's *Final Environmental Impact Statement, Washington State's Proposed Changes to the Surface Water Quality Standards* (June 2003, page 19-20) explained that when changing from a Class-based system to a Use-based system, the State intended to "refine" some of the fresh water uses. For example, the Class use termed "salmonid migration, rearing, spawning, and harvesting" was refined into the following aquatic life uses[3] in the 2003 WQS revision.

- "Char"
- "Salmon and trout core rearing and migration"
- "Salmon and trout non-core rearing and migration" and
- "Non-anadromous interior redband trout"

Similarly, the Class use termed "other fish migration, rearing, spawning, and harvesting" was refined to:

- "Indigenous warm water species."

Finally, the Class use "salmonid rearing and migration" became:

- "Salmon and trout rearing and migration only."

[3] It should be noted that in the 2003 water quality standards revision the "harvesting" component of the Class use termed "salmonid migration, rearing, spawning, and harvesting" is contained in the "Miscellaneous uses" category (see WAC 173-201A-200(4)).

Washington's 2006 WQS revision re-named and clarified the definitions of Char and salmonid use designations. The table below shows the changes made in the 2006 revision:

Aquatic Life Use Categories in the 2003 and 2006 Water Quality Standards

Aquatic life use categories in Washington's 2003 WQS	**Aquatic life use categories in Washington's 2006 WQS**
Char. For the protection and early tributary rearing (e.g., first year juveniles) of native char (bull trout and Dolly Varden) and other associated aquatic life.	Char spawning and rearing. The key identifying characteristics of this use are spawning or early juvenile rearing by native char (bull trout and Dolly Varden), or use by other aquatic species similarly dependent on such cold water. Other common characteristic aquatic life uses for waters in this category include summer foraging and migration of native char; and spawning, rearing, and migration by other salmonid species
Salmon and trout spawning, core rearing, and migration. For the protection of spawning, core rearing, and migration of salmon and trout, and other associated aquatic life.	Core summer habitat. The key identifying characteristics of this use are summer (June 15 – September 15) salmonid spawning or emergence, or adult holding; use as important summer rearing habitat by one or more salmonids; or foraging by adult and subadult native char. Other common characteristic aquatic life uses for waters in this category include spawning outside of the summer season, rearing, and migration by salmonids.
Salmon and trout spawning, noncore rearing, and migration. For the protection of spawning, noncore rearing, and migration of salmon and trout, and other associated aquatic life.	Salmonid spawning, rearing, and migration. The key identifying characteristic of this use is salmon or trout spawning and emergence that only occurs outside of the summer season (September 16 - June 14). Other common characteristic aquatic life uses for waters in this category include rearing and migration by salmonids.
Salmon and trout rearing, and migration only. For the protection of rearing, and migration of salmon and trout, and other associated aquatic life.	Salmonid rearing and migration only. The key identifying characteristic of this use is use only for rearing or migration by salmonids (not used for spawning).

As stated previously, the CWA and EPA's implementing regulations allow states to adopt subcategories of uses such as those adopted by Washington.

2. WQS Provision: General criteria, WAC 173-201A-200 (1)(b)

(b) General criteria. General criteria that apply to all aquatic life fresh water uses are described in WAC 173-201A-260(2)(a) and (b), and are for:

(i) Toxic, radioactive, and deleterious material; and

(ii) Aesthetic values

EPA ACTION: EPA approves this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved and that was in effect in the 1997 WQS.

The 1997 WQS was a Class-based format which assigned each water body to a particular "Class." Each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. In the 1997 WQS the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion was assigned to each "Class." The 2003 WQS removed the "Class" format and instead applies the designated uses and the criteria that were in the "Class" directly to individual water bodies. This provision makes clear that the same narrative criteria that applied in the Class-based format now apply directly to individual waters. The criteria are described in the referenced provisions (i.e., WAC 173 201A-260(2)(a) and (b)).

EPA is acting on the changes to this provision to ensure that the edited and reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved standard.

3. WQS Provision: Fresh water numeric criteria
Aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c))

(c) Aquatic life temperature criteria. Except where noted, water temperature is measured by the 7-day average of the daily maximum temperatures (7-DADMax). Table 200(1)(c) lists the temperature criteria for each of the aquatic life use categories.

Table 200(1)(c)
Aquatic Life Temperature Criteria in Fresh Water

Category	Highest 7-DADMax
Char Spawning	9EC (48.2EF)
Char Spawning and Rearing	12EC (53.6EF)
Salmon and Trout Spawning	13EC (55.4EF)
Core Summer Salmonid Habitat	16EC (60.8EF)
Salmonid Spawning, Rearing, and Migration	17.5EC (63.5EF)
Salmonid Rearing and Migration Only	17.5EC (63.5EF)
Non-anadromous Interior Redband Trout	18EC (64.4EF)
Indigenous Warm Water Species	20EC (68EF)

EPA ACTION: EPA approves Washington=s temperature metric (highest A7-day average of the daily maximum temperatures") and its temperature criteria as consistent with Section 303(c) of the CWA and its implementing regulations. EPA's rationale for approving the temperature metric is discussed in Part IV.B.2. EPA's rationale for each temperature criterion is explained in more detail below.

Numeric Criteria for Temperature (Table 200(1)(c))

Under the CWA and EPA=s regulations at 40 C.F.R. ' 131.3(b), 131.5(a)(2), 131.6(c), and 131.11(a) criteria must be sufficient to protect the designated uses established by the State. Washington has adopted the following numeric criteria (specified in Table 200(1)(c) of their regulations):

The temperature criteria in Table 200(1)(c) are the same or slightly more stringent than those EPA recommended in the Temperature Guidance. The scientific rationale and basis for EPA=s recommended criteria, and by extension Washington=s criteria for "Char Spawning," "Char Spawning and Rearing," "Salmon and Trout Spawning," "Core Summer Salmonid Habitat," "Salmonid Spawning Rearing and Migration," and "Salmonid Rearing and Migration Only" is described in the Temperature Guidance and the supporting six Technical Issue Papers. The Temperature Guidance is EPA's recommendation for temperature standards for Region 10 states and tribes based on the current scientific information on temperature effects on these species as summarized in the Guidance and the supporting issue papers. The scientific rationale for the temperature criteria for "Non-anadromous Interior Redband Trout," and "Indigenous Warm Water Species" is contained in the document entitled *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards, Temperature Criteria,* Washington State Department of Ecology, December 2002).

Tables 1 and 2, below, provide summaries of the important water temperature considerations, which formed the scientific basis of EPA=s recommended temperature criteria for bull trout (char) juvenile rearing, salmon/trout core juvenile rearing, salmon/trout non-core juvenile rearing, salmon/trout migration, bull trout spawning, salmon/trout spawning, egg incubation, and fry emergence, and steelhead smoltification. The tables are taken from the Temperature Guidance (pages 16-17).

Following these tables EPA provides its rationale for approving each of the temperature criteria in Table 200(1)(c) adopted by Washington.

Table 1. Summary of Temperature Considerations for Salmon and Trout Life Stages

Life Stage	Temperature Consideration	Temperature & Unit	Reference
Spawning and Egg Incubation	Temperature range at which spawning is most frequently observed in the field	4 - 14 EC (daily avg.)	Issue Paper 1[4], pp. 17-18 Issue Paper 5[5], p. 81
	Egg Incubation Studies - results in good survival - Optimal range	4 - 12 EC (constant) 6 - 10 EC (constant)	
	Reduced viability of gametes in holding adults	13 EC (constant)	Issue Paper 5, p. 16
Juvenile Rearing	Lethal temperature (1-week exposure)	23 - 26 EC (constant)	Issue Paper 5, pp. 12, 14 (Table 4), 17, and 83-84
	Optimal growth - Unlimited food - Limited food	13 - 20 EC (constant) 10 - 16 EC (constant)	Issue Paper 5, pp. 3-6 (Table 1), and 38-56
	Rearing preference temperature in lab and field studies	10 - 17 EC (constant) <18 EC (7DADMax)	Issue Paper 1, p. 4 (Table 2) EPA 2003
	Impairment to smoltification	12 - 15 EC (constant)	Issue Paper 5, pp. 7 and 57-65
	Impairment to steelhead smoltification	>12 EC (constant)	Issue Paper 5, pp. 7 and 57-65
	Disease risk (lab studies) - High - Elevated - Minimized	>18 - 20 EC (constant) 14 - 17 EC (constant) 12 - 13 EC (constant)	Issue Paper 4[6], pp. 12-23
Adult Migration	Lethal temperature (1-week exposure)	21 - 22 EC (constant)	Issue Paper 5, pp. 17, 83-87
	Migration blockage and migration delay	21 - 22 EC (average)	Issue Paper 5, pp. 9, 10, 72-74 Issue Paper 1, pp. 15-16
	Disease risk (lab studies) - High - Elevated - Minimized	>18 - 20 EC (constant) 14 - 17 EC (constant) 12 - 13 EC (constant)	Issue Paper 4, pp. 12 - 23
	Adult swimming performance - Reduced - Optimal	>20 EC (constant) 15 - 19EC (constant)	Issue Paper 5, pp. 8, 9, 13, 65 - 71
	Overall reduction in migration fitness due to cumulative stresses	>17 - 18 EC	Issue Paper 5, p. 74

[4] Sauter, S.T., J. McMillan, and J. Dunham. 2001. *Issue paper 1: salmonid behavior and water temperature*. Prepared as part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project.

[5] McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. 2001. *Issue paper 5: summary of technical literature examining the physiological effects of temperature on salmonids.* EPA-910-D-01-005. U.S. Environmental Protection Agency. 114 pp.

[6] Materna, E. 2001. *Issue paper 4: temperature interaction.* EPA-910BD-01-004. Prepared as part of the U.S. Environmental Protection Agency=s Region 10 Temperature Water Quality Criteria Guidance Development Project, Seattle, WA. 33 pp

		(prolonged exposure)	

Table 2. Summary of Temperature Considerations for Bull Trout Life Stages

Life Stage	Temperature Consideration	Temperature & Unit	Reference
Spawning and Egg Incubation	Spawning initiation	<9 EC (constant)	Issue Paper 5[7], pp. 88 - 91
	Temperature at which peak spawning occurs	<7 EC (constant)	Issue Paper 5, pp. 88 - 91
	Optimal temperature for egg incubation	2 - 6 EC (constant)	Issue Paper 5, pp. 88 - 91 Issue Paper 5, p. 16
	Substantially reduced egg survival and size	6 - 8 EC (constant)	Issue Paper 5, pp. 18, 88 - 91
Juvenile Rearing	Lethal temperature (1-week exposure)	22 - 23 EC (constant)	Issue Paper 5, p. 18
	Optimal growth - Unlimited food - Limited food	 12 - 16 EC (constant) 8 - 12 EC (constant)	 Issue Paper 5, p. 90; Selong et al. 2001; Bull trout peer review 2002, as cited in EPA 2003
	Highest probability to occur in the field	12 - 13 EC (daily maximum)	Issue Paper 5, p. 90; Issue Paper 1[8], p. 4 (Table 2); Dunham et al. 2001 and Bull trout peer review 2002, as cited in EPA 2003
	Competition disadvantage	>12 EC	Issue Paper 1, pp. 21 - 23; Bull trout peer review 2002, as cited in EPA 2003

[7] McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. 2001. *Issue paper 5: summary of technical literature examining the physiological effects of temperature on salmonids.* EPA-910-D-01-005. U.S. Environmental Protection Agency. 114 pp.

[8] Issue Paper 1: Sauter, S.T., J. McMillan, and J. Dunham. 2001. Salmonid behavior and water temperature. Prepared as part of EPA Region 10 temperature water quality criteria guidance development project.

"Char Spawning" (Table 200(1)(c)) - 9EC (48.2EF)

EPA=s Temperature Guidance recommends a temperature of 9EC (48EF) to protect bull trout spawning. According to the EPA Technical Synthesis of the information used to develop the Temperature Guidance, temperatures of ≤ 9°C initiate spawning, and spawning activity peaks at temperatures of ≤7°C (see Table 2). Successful bull trout egg incubation occurs at temperatures 2-6°C (see Table 2).

The 9°C temperature is protective of the bull trout spawning life history as this is the temperature needed by bull trout to initiate spawning. At this temperature, the natural decline of temperatures associated with the progression of the autumn season will allow cooler temperatures (≤7°C) during peak spawning. Further declines in temperature result in optimum incubation temperatures (2-6°C) over the winter.

EPA, therefore, has concluded that the 9°C criterion is protective of Char spawning.

"Char Spawning and Rearing" (Table 200(1)(c)) - 12EC (54EF)

Washington adopted 12EC (54EF) to protect waters designated for Char (bull trout and Dolly varden) spawning and early juvenile rearing. This criterion is the same as the criterion recommended in the Temperature Guidance for the protection of char juvenile rearing. The 12EC 7-DADMax criterion roughly translates to a maximum weekly average temperature of 11EC, and an "equivalent" constant temperature of 11.5EC for comparison to juvenile growth studies at constant temperatures summarized in Table 2 (see page 19-20 of the Temperature Guidance for an explanation how to translate a 7-DADMax temperature criterion to an "equivalent" constant temperature). This criterion is designed to:

1. protect juvenile bull trout from lethal temperatures (22 to 23 °C constant, see Table 2);

2. provide conditions during the period of summer maximum temperature and other times of the year that are in the optimal range when food is limited for juvenile growth (8 to12EC constant, see Table 2);

3. provide temperatures where juvenile bull trout are not at a competitive disadvantage with other salmonids (greater than 12EC constant, see Table 2); and

4. provide temperatures that are consistent with the temperatures observed in field studies identifying where juvenile bull trout have the highest probability to occur (12 to 13EC daily maximum, see Table 2).

Because bull trout generally spawn in the late summer and fall in the same waters where young fluvial and resident juvenile bull trout rear, it is generally appropriate to protect both bull trout spawning and rearing use with a single numeric temperature criterion of 12EC (54EF), (EPA 2003). EPA has concluded that 12°C for the char spawning life history phase is protective for most Char spawning and rearing waters in Washington. Thermal temperature patterns in Washington char waters indicate that if the summer maximum temperature is 12EC (54EF), temperatures will naturally decrease to levels that are protective of char spawning [9EC (48EF)] during

the time of spawning in late summer and early fall (Washington Department of Ecology 2005, Unpublished Data). Likewise, temperatures will decline further with the progression of fall/winter resulting in temperatures that are protective of egg incubation [2 to 6EC (36 to 43EF)] during the winter incubation period.

EPA, therefore, has concluded that the 12°C criterion is protective of the Char Spawning and Rearing designated use, except for where and when the 9°C criterion is needed to protect Char spawning and incubation as noted below.

There are some bull trout populations that spawn very early (e.g. late August) in the State of Washington. In water bodies inhabited by these early spawners, the application of the 12EC (54EF) 7-DADMax criterion will not be protective of the char spawning designated use. In these areas, dependence on declining water temperatures in the autumn alone may be insufficient to protect these early spawners, and application of the 9° C temperature criterion is needed to ensure that spawning and incubation are protected. In the 2006 WQS revision Washington adopted GIS maps which show when and where the 9°C is needed to protect spawning and incubation. EPA's action on the application of the 9EC criterion is discussed in detail in section IV.C.7 (WQS Provision: Fresh water narrative temperature criteria; application of the char spawning criterion (9EC), and the salmon and trout spawning criterion (13EC)).

"Salmon and Trout Spawning" (Table 200(1)(c)) - 13EC (55.4EF))

Washington adopted 13EC, as a 7-DADMax temperature criterion to protect salmon and steelhead spawning through fry emergence. This criterion is identical to the criterion recommended in the EPA Temperature Guidance. The diurnal variation that occurs when this criterion is applied in the late fall through spring is likely less than the diurnal variation in the summer, therefore this 13EC 7-DADMax criterion should result in maximum weekly mean temperatures between 10-12EC for a typical stream. This criterion is designed to protect spawning, egg incubation, and fry emergence for salmon and trout. Meeting this criterion at the onset of spawning for salmon will likely provide protective temperatures for egg incubation (6 to 10EC) that occurs over the winter (salmon) and spring (trout), assuming the typical annual thermal pattern of lowering temperature during fall, winter and spring. This criterion is designed to:

1. protect ripe gametes inside adults during the weeks just prior to spawning (less than 13EC constant);

2. provide temperatures at which spawning is most frequently observed in the field (4 to 14EC daily average), and

3. provide protective temperatures for egg incubation (4 to 12EC constant for good survival, and 6 to 10E constant for optimal range) that occurs over the winter (salmon) and spring (trout), assuming the typical annual thermal pattern (see Table 1).

EPA, therefore, has concluded that the 13°C criterion is protective of salmon and trout spawning through fry emergence.

"Core Summer Salmonid Habitat" (Table 200(1)(c)) - 16EC (61EF))

Washington adopted 16EC, as a 7-DADMax, to protect waters designated for "Core Summer Salmonid Habitat." This criterion is identical to the criterion that EPA recommended in its Temperature Guidance for salmon and trout core juvenile rearing. This criterion roughly translates to a 13° C maximum weekly mean, and an equivalent constant temperature of 14.5° C (midpoint between 13° C and 16° C) for comparison to juvenile growth studies at constant temperatures summarized in Table 1. This criterion is designed to:

1. protect juvenile salmon and steelhead from lethal temperatures (23 to 26EC);
2. provide conditions during the period of summer maximum temperature and other times of the year that are in the optimal range when food is limited for juvenile growth (10 to 16EC);
3. protect against temperature-induced elevated disease rates (14 to 17EC constant);
4. provide temperatures that juvenile salmon and trout prefer, as demonstrated by studies indicating fish in high densities at these temperatures (10 to 17EC constant or less than 18EC 7-DADM);
5. protect salmon and steelhead from competitive disadvantage with cool and warm water species which can occur when average temperatures are greater than 15EC and maximum temperatures exceed 17-18EC (see *Evaluating Standards for Protecting Aquatic Life in Washington's Water Quality Standards, Temperature Criteria, Draft Discussion Paper and Literature Summary,* Washington Department of Ecology, 2002, pp. 67);
6. provide conditions during the period of summer maximum temperatures that protect adult and sub-adult foraging and migration (less than 15EC) (see Temperature Guidance pg 27; and Bull Trout Peer Review, EPA, 2002); and
7. provide conditions that protect chinook salmon that are holding over the summer prior to spawning in late summer-early fall (see Temperature Guidance).

This numeric criterion applies during the warmest times of the summer, the warmest years, and throughout the water body, including the lowest downstream extent of the water body designated for this use, which means that the 7-DADMax temperatures will be cooler than 16EC most of the time where this use occurs. This is true because:

1) if the criterion is met during the summer maximum period, then temperatures will be colder than that value during the rest of the year,
2) the criterion must be attained at the furthest point downstream where this use is designated, temperatures will generally be colder where the use occurs upstream due to the effect of elevation on temperature, and
3) the criterion must be met in the warmest years, so that in most years, the waters will be colder.

The Temperature Guidance recommends a temperature of 13EC to protect salmon spawning; however, the Temperature Guidance also discusses that it may be appropriate to protect a combined salmon spawning and rearing use with a single numeric temperature criterion (16EC) that limits summer maximum temperature. EPA has concluded, based on a review of the best available science that it is protective to do this some water bodies in Washington with this designated use

because the thermal temperature patterns in these water bodies indicate that if the summer maximum temperature is 16EC, temperatures will naturally decrease to levels that are protective of salmon spawning (13EC) when it occurs in these water bodies, which is after September 15. Temperatures will further decrease to protect egg incubation (6 to 10EC) when it occurs over the winter.

In streams where *summer* salmon spawning occurs the 16EC 7-DADMax criterion is not protective of spawning. For these stream segments, Washington has applied its Salmon and Trout spawning criterion of 13EC (see WAC 173-201A-200-(1)(c)(iv)). Washington has adopted GIS maps which show where and when the salmon and trout spawning criteria apply. EPA's action on the application of the 13EC criterion is discussed in detail in section IV.C.7 (WQS Provision: Fresh water narrative temperature criteria; application of the char spawning criterion (9EC), and the salmon and trout spawning criterion (13EC)).

EPA, therefore, has concluded that the 16°C criterion is protective of the Core Summer Salmonid Habitat designated use, except for where and when the 13°C criterion is needed to protect salmon spawning and incubation as noted above.

"Salmonid Spawning, Rearing, and Migration" and "Salmonid Rearing and Migration only" (Table 200(1)(c)) – 17.5EC (63.5EF))

Washington adopted 17.5°C to protect two separate use designations: (1) "Salmonid Spawning, Rearing, and Migration;" and (2) "Salmonid Rearing and Migration only." The 17.5°C criterion is more stringent than the 18°C criterion that is recommended in the Temperature Guidance for "salmon/trout migration and non-core rearing." Washington's "Salmonid Spawning, Rearing, and Migration" designated use is equivalent to EPA's "salmon/trout migration and non-core rearing" designated use. Additionally, the 17.5 °C criterion is more stringent than the 20°C criterion that is recommended in the Temperature Guidance for the "salmon/trout migration" designated use. The 17.5°C criterion (which roughly translates to a 14.5°C maximum weekly mean and an equivalent constant temperature of 16°C for comparison to juvenile growth studies at constant temperatures in Table 1) is designed to:

1. protect against lethal conditions for both juveniles and adults (21 to 22°C constant);
2. prevent migration blockage conditions for migrating adults (21 to 22°C average);
3. provide near optimal juvenile growth conditions (under limited food conditions) during the summer maximum conditions and optimal conditions during the rest of the year (10 to 16°C constant);
4. protect adults and juveniles from high disease risk and minimize the exposure time to temperatures that can lead to elevated disease rates (14 to 17°C constant); and
5. protect salmon and steelhead from a competitive disadvantage with cool and warm water species which can occur when average temperatures are greater than 15°C and maximum temperatures exceed 17-18°C (see *Evaluating Standards for Protecting Aquatic Life in Washington's Water Quality Standards, Temperature Criteria, Draft Discussion Paper and Literature Summary,* Washington Department of Ecology, 2002).

Data and information in the record indicates that salmon and steelhead will use waters that are warmer than their optimal thermal range during the summer, and that portions of rivers and streams in the Pacific Northwest that historically supported this use were likely to be naturally (i.e., absent human impacts) warmer than the optimal thermal range for salmonids during the period of summer maximum temperatures. This criterion is designed to protect salmon/trout non-core rearing and migration by minimizing potential adverse effects, while recognizing salmon and steelhead will exploit waters where some minor adverse effect may occur to individual fish. Adverse effects that may occur, but which this criterion will minimize, include decreased juvenile growth, increased disease risk, and increased competition with cool and warm water species during the period of summer maximum temperatures. The rivers with the greatest potential for these adverse effects to occur are ones with small diurnal temperature variation such that fish are exposed to average temperatures in the 16-18°C range for multiple days. However, a typical river would have a 14.5°C maximum weekly mean temperature if it met the 17.5°C 7-DADMax criterion (see Temperature Guidance for a discussion on determining how to develop constant temperatures equivalent to the 7-DADMax), thus in a typical river the above adverse effects would be minimal.

As stated previously, EPA=s Temperature Guidance recommends a temperature of 13EC to protect salmon spawning, but also discusses that it may be appropriate to protect a combined salmon spawning and rearing use with a single numeric temperature criterion that limits summer maximum temperatures if salmon spawn late enough in the fall (see discussion for "Char Spawning" and "Salmon and Trout spawning"). EPA has concluded it is protective to do this for most water bodies in Washington designated with the Salmonid Spawning, Rearing, and Migration use because, based on its review of the best available science the thermal temperature patterns in these waters indicate that if the summer maximum temperature is 17.5EC, temperatures will naturally decrease to levels that are protective of salmon spawning (13EC) when it occurs (after October 1), and further decrease to protect egg incubation (6 to 10EC) when it occurs over the winter. In a few water bodies with this use designation spawning occurs in late September, however, Washington has also applied the spawning criterion of 13EC, which will ensure that spawning is protected.

EPA, therefore, has concluded that the 17.5°C criterion is protective of the Salmonid Spawning, Rearing, and Migration designated use, except for where and when the 13°C criterion is needed to protect salmon spawning and incubation as noted above. EPA also has concluded that the 17.5°C criterion is protective of the Salmonid Rearing and Migration designated use.

Non-anadromous Interior Redband Trout **(Table 200(1)(c)) – 18EC (64EF))**

EPA is approving Washington's temperature criterion of 18°C for the protection of "Non-anadromous interior redband trout" based on the information Washington provided in the document entitled *Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards, Temperature Criteria, Draft Discussion Paper and Literature Summary* (Washington Department of Ecology, December 2002). The information reviewed by Washington suggests that non-anadromous interior forms of rainbow trout have higher optimal temperatures ranges than other subspecies of rainbow trout. However, because the information was

inconsistent, Washington adopted temperature criteria at the upper end of the range determined to be fully protective of salmon and trout in general (18°C). EPA's Temperature Guidance also recommends 18°C for cold water salmonids for the protection of migrating adults and juvenile salmonids, and juvenile rearing.

Non-anadromous interior redband trout occur east of the Cascade Mountains in Washington and in the Columbia River Basin, and spawn in the spring. Since spawning occurs in spring, it is likely water temperatures will naturally decrease to levels that are protective of spawning when it occurs in the spring (i.e, 13°C).

***Indigenous warm water species* (Table 200(1)(c)) – 20EC (68EF))**

EPA is approving Washington's temperature criterion of 20°C for the protection of "Indigenous warm water species." A natural warm water fish community in Washington is characterized by the presence of redside shiner; tui chub; margined, mottled, or piute sculpin; longnose or speckled dace; sucker; and northern pikeminnow. These fish are known to exist in some of Washington's warmest waters, where they often out-compete introduced populations of rainbow trout. Washington has done an extensive literature search for warm water fisheries and found that there is insufficient information to develop individual water quality criteria for each native warm waters species, so it is proposing they be considered broadly as a community. A review of the literature shows that Washington's warm water fish communities are fairly temperature tolerant. For example, longnose dace can be found in waters with temperatures as low as 12.8 °C or as high as 21°C. While warm water communities may prefer waters with temperature below 20°C, it was found that they can thrive in waters that have summer maximum temperatures as high as 25-27° C (*Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards, Temperature Criteria*, Washington State Department of Ecology, December 2002). EPA believes that 20°C will be protective of warm water species.

4. WQS Provision: Fresh water narrative temperature criteria; allowable increase above natural conditions (WAC 173-201A-200 (1)(c)(i))

(i) When a water body's temperature is warmer than the criteria in Table 200 (1)(c) (or within 0.3EC (0.54EF) of the criteria) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3EC (0.54EF).

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13.

The 1997 WQS included a similar provision which allowed an increase of 0.3°C when the natural condition of the water body exceeded the established temperature criterion. The only difference between the 2003 WQS provision and the 1997 provision is that the 2003 WQS provision is measured as a "7-DADMax" rather than as a maximum temperature.

EPA believes that a 0.3°C or less increase in temperature is insignificant as far as impacts on designated uses for the following reasons. First, nearly all studies that examine the temperature effects on salmonids (i.e., lethality, growth, disease) are based on temperature increments of 1°C or more. A 0.3°C temperature difference is well within the range of uncertainty of the thermal requirements of salmonids, which is in the range of approximately ±0.5°C. Thus, while any determination of temperature criteria must examine the data and draw the line at some point, EPA finds, based on the data discussed in the Temperature Guidance, that establishing the effective criteria (i.e., numeric criteria plus human use allowance) at 9.3°C for char spawning, 13.3°C for salmon and trout spawning, 12.3°C for char spawning and rearing use; 16.3°C for core summer salmonid habitat; 17.8°C for salmonid spawning rearing and migration; and 17.8°C for salmonid rearing and migration only, would also protect the respective designated use. Second, in Washington the reliable field detection level for temperature is 0.3° C. In other words, the 0.3° C temperature increase is considered within the error band associated with typical temperature monitors. And finally, as described in WAC 173-201A-400 the maximum size of a mixing zone (singularly or in combination with other mixing zones) shall not use greater than 25% of the flow of the river. This is important because point source discharges cannot cause the whole river to experience a temperature increase of more than 0.075° C above the applicable natural condition criterion. Therefore, EPA believes that a 0.3°C temperature difference is insignificant in the context of our scientific understanding of the data concerning water temperature and salmonids, and the addition of 0.3°C temperature increase will still protect the designated use.

This provision is consistent with the Temperature Guidance which recommends that states include a provision in their water quality standards that allows the temperature in a water body to be insignificantly higher than the otherwise applicable criterion. Such a provision allows an insignificant level of heat into the river from human activities when the natural condition criterion is the applicable criterion. Absent such a provision, no heat would be allowed from human activities when the natural condition criteria are the applicable criterion. EPA has concluded that this is unnecessarily restrictive for the protection of salmonid uses, and would lead to unnecessary and costly expenditures. Therefore, EPA has recommended such a provision in its Temperature Guidance.

5. WQS Provision: Fresh water narrative temperature criteria; allowable increase above natural conditions when water is cooler than criterion in Table 200(1)(c) Aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c)(ii))

(ii) When the background condition of the water is cooler than the criteria in Table 200 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows:

> (A) Incremental temperature increases resulting from individual point source activities must not, at any time, exceed 28/(T+7) as measured at the edge of a mixing zone boundary (where "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge); and

(B) Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not, at any time, exceed 2.8°C (5.04°F).

EPA ACTION: EPA approves the allowable temperature increase of 28/T+7, at the edge of a mixing zone, for point source dischargers when the background condition of a water body is cooler than the numeric temperature criteria contained in Table 200(1)(c). This provision is consistent with the Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13.

Table 200(1)(c) establishes the temperature criteria protective of aquatic life. EPA has reviewed and approved these criteria. This incremental temperature increase provision limits the temperature increase a point source can cause to a water body when it is cooler than the established temperature criterion, and it does not allow the temperature to increase above the criteria established in Table 200(1)(c) to protect the aquatic life uses.

Additionally, Washington's anti-degradation policy requires that a Tier II analysis be completed for any State regulated new or expanded action that would warm temperatures by 0.3°C or more at the edge of the mixing zone. Therefore, the Tier II analysis would have to be completed prior to allowing an incremental temperature increase of 0.3°C or more at the edge of the mixing zone for point sources if the water is high quality for temperature.

EPA is not taking action on part (B) of this provision because it is not a water quality standard under Section 303(c) of the CWA. This provision addresses non point source activities and EPA does not regulate non-point source activities (*American Wildlands v Browner, 260 F 3d 1192 (10th Cir. 2001)*.

6. WQS Provision: Fresh water narrative temperature criteria; frequency of exceedance aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c)(iii))

(iii) Temperatures are not to exceed the criteria at a probability frequency of more than once every ten years on average.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13. EPA asked Washington to clarify the term "probability frequency…on average" as this is not a recognized statistical term, and Washington did not define it in their water quality standards. Washington provided a response in a letter dated January 19, 2006. Based on Washington's response EPA believes that the 1 in 10 year recurrence language is intended to codify Washington's current implementation of water quality standards for temperature and other parameters. A central part of this implementation is selection of design conditions for evaluation of TMDLs and permit requirements to insure that the resulting allocations and limits achieve the criterion except in unusual instances. While water temperatures are

affected by a variety of factors (e.g., receiving water flows, effluent discharges, weather, groundwater), Washington's practice is to use conservative design flows for the receiving water to calculate TMDLs and permit limits. The typical design flow used is the 7Q10 flow – the lowest 7 day average flow expected in a ten year period. Statistical methods are used to estimate the 7Q10 flow from long term flow records for a river. While other factors besides flow affect water temperature, TMDLs and permits calculated under 7Q10 flow conditions should generally achieve the water quality criteria with the desired probability of recurrence of 1 exceedance in 10 years. EPA believes the above explanation is protective of water quality standards.

7. WQS Provision: Fresh water narrative temperature criteria; spawning criteria Aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c)(iv))

(iv) Spawning and incubation protection. The department has identified water bodies, or portions thereof, which require special protection for spawning and incubation in ecology publication 06-10-038 (also available on ecology's web site at www.ecy.wa.gov). This publication indicates where and when the following criteria are to be applied to protect the reproduction of native char, salmon, and trout:

$ Maximum 7-DADMax temperatures of 9EC (48.2EF) at the initiation of spawning and at fry emergence for char; and
$ Maximum 7-DADMax temperatures of 13EC (55.4EF) at the initiation of spawning for salmon and at fry emergence for salmon and trout.

The two criteria above are protective of incubation as long as human actions do not significantly disrupt the normal patterns of fall cooling and spring warming that provide significantly colder temperatures over the majority of the incubation period.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.5(a)(2), 131.6(c); 131.11 and 131.13. EPA has reviewed Washington's application of the 9°C char spawning criterion, and the 13°C salmon and trout spawning criterion, and concluded that the application of the criteria ensure the protection of the spawning areas. The methodology used for the application of the spawning criteria is discussed in more detail below.

Application of 9°C char spawning criterion

This criterion is intended to be applied to water bodies where the 12°C criterion alone is not protective of the Char Spawning and Rearing designated use because bull trout spawning occurs early (late summer). Washington determined the specific water bodies where this criterion should apply by adopting the results of a data analysis conducted by EPA as documented in EPA's March 22, 2006 partial disapproval of the 2003 revisions to the Washington water quality standards. The specific water bodies where this criterion is applied are contained in Washington Department of Ecology publication 06-10-038. The EPA compiled information on distribution of early bull trout spawning from numerous sources including the

Washington Department of Fish and Wildlife's (WDFW) Bull Trout SaSI Report[9] and more recent data collected by U.S. Fish and Wildlife Service, U.S. Forest Service, and the (Washington Department of Fish and Wildlife) WDFW. From this data search, the EPA identified 25 stream reaches where early spawning occurs. These are presented in Appendix F of EPA's March 22, 2006 partial disapproval of Washington Water Quality Standards. Based on the data found on char spawning timing in each of these reaches, EPA applied the following convention for a temporal application of the 9°C criterion to protect early char spawning: If bull trout spawning timing from the above sources indicated bull trout start spawning in "mid-August," "late August," or "the last week of August," then application of 9°C starts August 21. If timing information for bull trout spawning indicated "September 1st" or "early September" then application of 9°C starts September 1st. Finally, EPA determined from discussions with local biologist that an end-date of May 15 for the 9°C criterion was appropriate as bull trout incubation is completed by this date across all areas.

Washington concurred with the findings of this analysis including both the location of these 'early bull trout spawning reaches' and the start/end-dates for the application of the 9°C. Ecology adopted these into their 2006 water quality standards revisions as depicted on Washington's GIS maps (see website: http://www.ecy.wa.gov/pubs/0610038/start.pdf).

Application of the 13°C salmon and trout spawning criterion

This criterion is intended to be applied to water bodies where the 16°C criterion alone is not protective of the Core Salmonid Summer Habitat designated use and where the 17.5°C criterion alone is not protective of the Salmonid Spawning, Rearing, and Migration use because of the time of spawning or egg incubation. Washington determined the specific water bodies where this criterion should apply by adopting the results of a data analysis conducted by EPA as documented in the EPA's March 22, 2006 partial disapproval of the 2003 revisions to the Washington water quality standards. The specific water bodies where this criterion is applied are contained in Washington Department of Ecology publication 06-10-038.

Washington's water quality standards applies a 13°C criterion to specific stream reaches where salmon stocks begin spawning in July, August, or September or steelhead egg incubation extends into June or July. This criterion is necessary in these waters as the summer maximum criteria of 16°C or 17.5°C is unlikely to protect the spawning and early egg incubation life histories. The 16°C or 17.5°C temperature criteria are inadequate because 1) stream temperatures are unlikely to decline sufficiently in the fall prior to the onset of spawning, or 2) embryos of spring spawning steelhead have not yet emerged prior to the onset of summer temperature increases. The timing of the application of the 13°C criterion and the specific stream reaches where it should be applied were determined by an analysis conducted by the EPA and are discussed below.

[9] Washington State salmonid stock inventory: bull trout/Dolly Varden. Washington Department of Fish and Wildlife, Fish Program. Olympia. 437pp.

How the timing for the application of the 13°C spawning criterion was determined

The EPA analyzed patterns of salmon spawning timing in Washington to develop a set of conventions for the start-date for the application of the 13°C to protect early spawning salmon . The dataset used for this analysis was WDFW Salmon Stock Inventory known as SASI (WDFW 1993, also available online: http://wdfw.wa.gov/fish/sasi/), which is a database of the spawning run timing periods for all know salmon stocks in Washington. Site specific data provided by Tribes and other entities were also used when available (this information is contained in EPA's March 22, 2006 partial disapproval of the 2003 Revisions to the Washington Water quality Standards Regulations). Because spawning start-dates are variable both among and within stocks, setting conventions for start-dates involved the consideration of many factors related to the available data. In order to interpret the start-dates listed in the SASI database, EPA reviewed the original field data that the start-dates listed in the database were developed from. This raw data included dates of presence of live fish, redds and dead fish for the various stocks. EPA found that the SASI database generally reflected the earliest redds documented for a particular stock over the period of record and that the spawning start-date for the majority of the run begins a week or more later that this date of earliest spawning. Based on this characteristic of the SaSI data in relation to the raw data it appeared reasonable to apply the 13°C criterion approximately one week later than the spawning start-date indicated in SaSI database. Thus, the more typical spawning start date for a particular stock would be reflected in the start-date. Although this seemed to be a reasonable interpretation of the data, there were many other factors that warranted consideration. Factors that suggest that a more conservative early application of 13°C include:

- monitoring protocols in field surveys are not necessarily intended to document the first redds. Thus, the beginning of spawning period may not be fully documented in some years.
- Field surveys are done periodically, not daily, thus when a redd is documented, actual spawning may have been days or a week prior.
- Turbid conditions in some rivers prevent redd/spawner surveys, thus actual early spawning may not be documented.
- Human caused elevated temperatures are likely to have truncated the full timing distribution of early spawning stocks (*i.e.*, historically, more fish spawned earlier), thus some wild stocks are unlikely to exhibit their full timing distribution due to present day low returns.

Factors that suggest a more liberal later application of the 13°C include:

- For most salmon stocks, the week that spawning starts only represents a small percent (e.g., 5%) of the total number of spawning fish.
- It is likely that a portion of some salmon runs spawn when temperatures are slightly higher than 13°C 7DADM. Exploitation of a range of environmental conditions is an important evolutionary trait of salmon, which maintains population diversity and thus the ability to adapt to environmental variability and disturbance.
- For salmon runs with a large spatial spawning distribution that encompass a large range of elevations, the earliest spawning may occur only in the higher elevation

portion of the spawning distribution. Thus, if 13°C is to be applied at the lower elevation part of the distribution, this spatial difference in spawning timing needs to be considered.

After considering these factors, EPA decided that a reasonable interpretation of the SaSI data was to apply 13°C approximately one week later than the start-date indicated in the SaSI database (rounding to either the 1st or the 15th of the month). This was used as the convention for assigning the start-date of the application of the 13°C criterion to Washington salmon stocks (see Table below).

TABLE: EPA interpretation of SaSI spawning start dates.

Spawning Start-date listed in the SaSI Database	Start-Date for application of 13°C criterion
Late July	August 1st
Early to Mid-August	August 15th
Late August	September 1st
Early September	September 15th

EPA determined the end-date for the application of the 13°C criterion based on the extent of the incubation period for both summer/fall spawned salmon/char and spring spawned steelhead. The typical completion of egg incubation for both summer/fall spawning salmon and char is May 15 based on SaSI and consultation with WDFW biologists. Therefore, May 15th was established as the end-date for the application of the 13°C criterion in water bodies with salmon runs.

In contrast with salmon stocks, steelhead are winter/spring spawners. Therefore the critical period where 16°C and 17.5°C criteria may not be protective is during the egg incubation period prior to emergence. Juvenile steelhead that have not emerged prior to the increasing stream temperatures with the onset of summer need to be protected with the 13°C criterion. Similar to the analysis of the SaSI data for salmon spawning start dates, steelhead spawning periods were analyzed, accounting for the typical incubation period of 5-7 weeks for steelhead eggs. EPA determined that the 13°C criterion should apply from February 15 and end according to the dates described in the following Table in waters with steelhead runs. These conventions were applied to the majority of the steelhead stocks. Site specific data were used to determine 13°C end-dates in some locations (this information is contained in Appendix D of EPA's Disapproval Letter; Appendix D of this document contains EPA's Disapproval Letter).

TABLE: EPA interpretation of SaSI steelhead spawning end dates.

Spawning End in the SaSI Database	End Date for 13°C
Early June	June 15th
Mid to Late June	July 1st
July	July 15th

How streams were designated as early 13°C spawning criterion

The EPA analysis of start and end-dates were determined on a stock by stock basis from the SaSI database to establish a temporal application of 13°C for each stock. Likewise, the spatial extent of the application 13°C criterion was based on the spatial distribution of each of the stocks as contained within WDFW GIS Salmonscape database. Washington Ecology concurred with the findings by the EPA for both the temporal and spatial application of the 13°C criterion, adopting both the timing conventions for the start-dates and end-dates for the application of the 13°C and the stock by stock spatial distribution from the Salmonscape data. Additional site-specific information on either timing or distribution of early spawners/later emerging fry included in the EPA analysis was also incorporated into Washington's application of 13°C. The temporal and spatial application of the 13°C criterion is shown on the maps contained in the Washington Department of Ecology publication 06-10-038. Water bodies with multiple salmon/steelhead runs (a common occurrence) have start/end dates that bracket the full temporal extent (i.e. summer spawning and summer incubation) of all runs present.

8. WQS Provision: Fresh water narrative temperature criteria; criteria for lakes Aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c)(v))

(v) For lakes, human actions considered cumulatively may not increase the 7-DADMax temperature more than 0.3°C (0.54°F) above natural conditions.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13. The 1997 WQS contained a temperature provision which stated that there should be "no measurable change from natural condition." The 2003 WQS revision retained the "natural condition" as the temperature criterion, however, the metric has changed to the 7-DADMax, and a cumulative temperature increase of not more than 0.3°C is allowed.

EPA believes that a 0.3°C (or less) increase in temperature is insignificant for the following reasons. First, nearly all studies that examine the temperature effects on salmonids (i.e., lethality, growth, disease) are based on temperature increments of 1°C or more. A 0.3°C temperature difference is well within the range of uncertainty of the thermal requirements of salmonids, which is in the range of approximately ±0.5°C. And second, in Washington the reliable field detection level for temperature is 0.3° C. In other words, the 0.3° C temperature increase is considered within the error band associated with typical temperature monitors. Therefore, EPA believes that a 0.3°C temperature difference is insignificant in the context of our scientific understanding of the data concerning water temperature and salmonids, and the addition of 0.3°C will still protect the designated use.

This allowable temperature increase is consistent with the recommendations in EPA's Temperature Guidance which recommends including a provision in water quality standards that allows the water temperatures in a water body to be insignificantly higher than the otherwise applicable criterion. Such a provision allows an insignificant level of heat into the lake from human activities when the natural condition criterion is the applicable criterion. Absent such a provision, no

heat would be allowed from human activities when the natural condition criterion is the applicable criteria. EPA has concluded that this is unnecessarily restrictive for the protection of salmonid uses, and would lead to unnecessary and costly expenditures. Therefore, EPA has recommended such a provision in its Temperature Guidance.

9. WQS Provision: Fresh water narrative temperature criteria; monitoring Aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c)(vi))

(vi) Temperature measurements should be taken to represent the dominant aquatic habitat of the monitoring site. This typically means samples should:

(A) Be taken from well mixed portions of rivers and streams; and

(B) Not be taken from shallow stagnant backwater areas, within isolated thermal refuges, at the surface, or at the water's edge.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision does not change the level of protection afforded to Washington's waters. Rather, it provides Washington's preferred locations for sample collection.

10. WQS Provision: Fresh water narrative temperature guidelines for aquatic life temperature criteria (freshwater) (WAC 173-201A-200 (1)(c)(vii))

(vii) The department will incorporate the following guidelines on preventing acute lethality and barriers to migration of salmonids into determinations of compliance with the narrative requirements for use protection established in this chapter (e.g., WAC 173-201A-310(1), 173-201A-400(4), and 173-201A-410 (1)(c)). The following site-level considerations do not, however, override the temperature criteria established for waters in subsection (1)(c) of this section or WAC 173-201A-602:

(A) Moderately acclimated (16-20°C, or 60.8 - 68°F) adult and juvenile salmonids will generally be protected from acute lethality by discrete human actions maintaining the 7-DADMax temperature at or below 22°C (71.6°F) and the 1-day maximum (1-DMax) temperature at or below 23°C (73.4°F).

(B) Lethality to developing fish embryos can be expected to occur at a 1-DMax temperature greater than 17.5°C (63.5°F).

(C) To protect aquatic organisms, discharge plume temperatures must be maintained such that fish could not be entrained (based on plume time of travel) for more than two seconds at temperatures above 33°C (91.4°F) to avoid creating areas that will cause near instantaneous lethality.

(D) Barriers to adult salmonid migration are assumed to exist any time the 1-DMax temperature is greater than 22°C (71.6°F) and the adjacent downstream water temperatures are 3°C (5.4°F) or more cooler.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision does not change the level of protection afforded to Washington's waters, rather, this provision offers guidelines, in the form of general scientific statements which should be considered when applying narrative provisions.

11. WQS Provision: Fresh water narrative temperature criteria; Section 316 of the Clean Water Act (WAC 173-201A-200 (1)(c)(viii))

(viii) Nothing in this chapter shall be interpreted to prohibit the establishment of effluent limitations for the control of the thermal component of any discharge in accordance with 33 U.S.C. 1326 (commonly known as section 316 of the Clean Water Act).

EPA ACTION: EPA approves the re-numbering of this provision, and the editorial change which corrects the statutory reference. In the 1997 WQS this provision was WAC 173-201A-060 and stated: "Nothing in this chapter shall be interpreted…in accordance with Section 316 of the federal Clean Water Act (33 U.S.C. 1251 et seq.)." The editorial changes in the 2003WQS provision do not alter the substance of the provision that EPA previously approved, and that was in effect in the 1997 WQS. EPA is not re-assessing or re-approving the underlying, previously approved provision.

12. WQS Provision: Fresh water Dissolved Oxygen Numeric Criteria (WAC 173-201A-200(1)(d) Table 200(1)(d))

(d) Aquatic life dissolved oxygen (D.O.) criteria. The D.O. criteria are measured in milligrams per liter (mg/L). Table 200 (1)(d) lists the 1-day minimum D.O. for each of the aquatic life use categories.

Table 200 (1)(d)
Aquatic Life Dissolved Oxygen Criteria in Fresh Water

Category	**Lowest 1-Day Minimum**
Char Spawning and Rearing	9.5 mg/L
Core Summer Salmonid Habitat	9.5 mg/ 1
Salmonid Spawning, Rearing, and Migration	8.0 mg/L
Salmonid 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

EPA ACTION: EPA approves the changes to this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 WQS. EPA is acting on this provision to ensure that the reformatted provision is in effect under the CWA. EPA is not re-assessing or re-approving the underlying provision which was previously approved.

Washington proposed revising the dissolved oxygen criteria for fresh water aquatic life. However, in its *Final Environmental Impact Statement, Washington State's Proposed Changes to the Surface Water Quality Standards-WAC 173-201A*, June 2003 (FEIS), Washington identified the "no action alternative" as its preferred alternative. The "no action alternative" is to use the criteria in the 1997 WQS. The FEIS provided the following table to illustrate that Washington is continuing to use the 1997 WQS criteria.

Category under class format	**Category under Use Format[1]**	**Existing criteria Lowest 1-day Minimum**
Class AA	Char	9.5 mg/L
Class AA	Salmon and trout spawning and core rearing and migration	9.5 mg/L
Class A	Salmon and trout spawning and 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
1. The categories listed under this heading reflect the "use names" in the 2003 water quality standards revisions. Some use names were revised in the 2006 water quality standard revision. "Char" has been renamed "Char spawning and rearing"; "Salmon and trout spawning and core rearing and migration" has been renamed "Core summer habitat"; and "Salmon and trout rearing and migration only" has been renamed "Salmonid spawning, rearing and migration."		

Additionally, EPA is approving the following:

- EPA is approving the 9.5 mg/L D.O. criterion for water bodies that have been designated as "Core summer habitat" use in Washington's 2006 revision to its water quality standards. Previously, these waters had a use designation of "Salmon and trout spawning, noncore rearing and migration" which had a D.O. criterion of 8.0 mg/L. This action is for about 15% of the waters in the state, mostly in Puget Sound and lower Columbia River regions. Specific water bodies can be viewed on the EPA GIS maps associated with its July 10, 2006 disapproval action (see "WAC non-core, EPA Core" (dark blue lines) on EPA GIS maps).

- EPA is approving the 8.0 mg/L for two small water bodies that have been designated as "Salmon spawning, rearing and migration" use in Washington's 2006 water quality standard revision (Palouse River in WRIA 34 and Mill Creek in WRIA 32). Previously, these waters had a use designation of "Salmon and trout rearing and migration only" which had a D.O. criterion of 6.5 mg/L (these water bodies can be viewed on the EPA GIS maps associated with its July 10, 2006 disapproval action (see "WAC Rearing/Migration, EPA Non-core" (red lines) on EPA GIS maps).

- EPA is approving the 9.5 mg/L DO criterion for water bodies that have been designated as "Char spawning and rearing" use in Washington's 2006 water quality standards revisions. Previously these waters had a used designation which had a D.O. criterion of 8.0 mg/L.

WRIA	Stream Segment
1	Hutchison Creek and tributaries
5	N.F. Stillaguamish from Boulder River to Squire Creek
5	Deer Creek and tributaries from unnamed tributary at latitude 48.3195, longitude 121.9565 to Little Dear Creek; and Dear Creek from Little Deer Creek to just upstream of Deforest Creek
10	Carbon River from Latitude 46.99, longitude 121.07 to Snoqualmie National Forest boundary
32	S.F. Touchet River upstream of latitude 46.23 and longitude 117.93, and all tributaries not previously designated as Class AA
35	Cummins Creek, lower 4 miles
35	N.F. Asotin Creek, lower 4 miles
35	Charley Creek from unnamed tributary at latitude 117.23, longitude 46.28 to the boundary of the Umatilla National Forest
37	N.F. Ahtanum Creek and tributaries from confluence with Middle fork to headwaters; all tributaries of North Fork Ahtanum from confluence of South Fork to the confluence of the Middle Fork
37	M.F. Ahtanum Creek
37	S.F. Ahtanum Creek (outside boundary of Yakima Indian Reservation)
48	Gold Creek, lower 1.5 mile
62	Indian Creek
62	S.F. Tacoma Creek from confluence with Tacoma Creek to boundary of Colville National Forest
62	Small Creek, and E.F. Small Creek not classified as Class AA in 1997 WQS

EPA approves these revisions as consistent with the Clean Water Act and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c), and 131.11. According to EPA's *Quality Criteria for Water 1986* (EPA 440-5-86-001) a D.O. concentration of 9.5 mg/L as a minimum during the time of year when D.O. is lowest (late summer), would provide protection during the non-incubation (rearing/migration) period, and would result in slight production impairment in waters where salmonid spawning occurs.

13. WQS Provision: Fresh water Dissolved Oxygen Narrative Criteria (WAC 173-201A-200(1)(d)(i) and (ii))

(i) When a water body's D.O. is lower than the criteria in Table 200 (1)(d) (or within 0.2 mg/L of the criteria) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the D.O. of that water body to decrease more than 0.2 mg/L.

(ii) For lakes, human actions considered cumulatively may not decrease the dissolved oxygen concentration more than 0.2 mg/L below natural conditions.

EPA ACTION: EPA approves these provisions as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11, and 131.13.

These provisions allow an insignificant decrease in the D.O. level from human activities when the natural condition criterion is the applicable criterion. The allowable change of 0.2 mg/L is within the monitoring measurement error for recording instruments typically used to monitor dissolved oxygen. Because the 0.2 mg/L dissolved oxygen decrease is considered within the error band associated with typical dissolved oxygen monitors EPA considers it insignificant.

Dissolved oxygen is a characteristic of a water body that can be affected by several different parameters such as temperature, physical characteristics (stream velocities, percent sediments, etc.), nutrients, sunlight, ammonia, etc. Because any oxygen demanding material or nutrient will negatively affect dissolved oxygen, meeting the "natural condition criterion" without allowing some insignificant decrease in dissolved oxygen would require disallowing any discharge of any pollutant that would affect dissolved oxygen. Absent such a provision as proposed by Washington, no oxygen demanding material would be allowed from human activities when the natural condition criteria are the applicable criterion. EPA believes that this is unnecessarily restrictive for the protection of designated uses, and would lead to unnecessary and costly expenditures.

14. WQS Provision: Fresh water Dissolved Oxygen Narrative Criteria (WAC 173-201A-200(1)(d)(iii))

(iii) Concentrations of D.O. are not to fall below the criteria in the table at a probability frequency of more than once every ten years on average.

EPA ACTION EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13. EPA asked Washington to clarify the term "probability frequency…on average" as this is not a recognized statistical term, and Washington did not define it in their water quality standards. Washington provided a response in a letter dated January 19, 2006. Based on Washington's response EPA believes that the 1 in 10 year recurrence language is intended to codify Washington's current implementation of water quality standards for temperature and other parameters. A central part of this implementation is selection of design conditions for evaluation of TMDLs and permit requirements to insure that the resulting allocations and limits achieve the criterion except in unusual instances. While water temperatures are affected by a variety of factors (e.g., receiving water flows, effluent discharges, weather, groundwater), Washington's practice is to use conservative design flows for the receiving water to calculate TMDLs and permit limits. The typical design flow used is the 7Q10 flow – the lowest 7 day average flow expected in a ten year period. Statistical methods are used to estimate the 7Q10 flow from long term flow records for a river. While other factors besides flow affect water temperature, TMDLs and permits calculated under 7Q10 flow conditions should generally achieve the water quality criteria with the desired probability of recurrence of 1 exceedance in 10 years. EPA believes the above explanation is protective of water quality standards.

15. WQS Provision: Fresh water Dissolved Oxygen Narrative Criteria (WAC 173-201A-200(1)(d)(iv))

(iv) D.O. measurements should be taken to represent the dominant aquatic habitat of the monitoring site. This typically means samples should:

(A) Be taken from well mixed portions of rivers and streams; and

(B) Not be taken from shallow stagnant backwater areas, within isolated thermal refuges, at the surface, or at the water's edge.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision does not change the level of protection afforded to Washington's waters. Rather, it provides Washington's preferred locations for sample collection.

16. WQS Provision: Fresh water Numeric Turbidity Criteria (WAC 173-201A-200(1)(e))

(e) Aquatic life turbidity criteria. Turbidity is measured in "nephelometric turbidity units" or "NTUs." Table 200 (1)(e) lists the maximum turbidity criteria for each of the aquatic life use categories.

Table 200(1)(e)
Aquatic Life Turbidity Criteria in Fresh Water

Category	NTUs
Char Spawning and Rearing	Turbidity shall not exceed: • 5 NTU over background when the background is 50 NTU or less; or • a 10% increase in turbidity when the background turbidity is more than 50 NTU.
Core Summer Salmonid Habitat	same as above.
Salmonid Spawning, Rearing, and Migration	same as above.
Salmonid Rearing and Migration Only	Turbidity shall not exceed: • 10 NTU over background when the background is 50 NTU or less; or • a 20% increase in turbidity when the background turbidity is more than 50 NTU.
Non-anadromous Interior Redband Trout	Turbidity shall not exceed: • 5 NTU over background when the background is 50 NTU or less; or • a 10% increase in turbidity when the background turbidity is more than 50 NTU.
Indigenous Warm Water Species	Turbidity shall not exceed: • 10 NTU over background when the background is 50 NTU or less; or • a 20% increase in turbidity when the background turbidity is more than 50 NTU.

EPA ACTION: EPA approves the revision to this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 WQS. Washington did not propose revising the turbidity criteria for fresh water aquatic life, rather it intended to keep the criteria from the 1997 WQS in place.

In Washington's 2006 WQS revision the turbidity criteria for each of the aquatic life use categories is the same as those that applied to the "Class" system used in the

1997 water quality standard. The following table shows the aquatic life use categories used in the 1997 WQS Class format, in the 2006 WQS Use-based format, and the applicable turbidity criteria:

Category under Class Format	**2006 Aquatic Life Use Category**	**Applicable Turbidity Criteria (NTU)**
Class AA	Char Spawning and Rearing	Turbidity shall not exceed: • 5 NTU over background when the background is 50 NTU or less; or • a 10% increase in turbidity when the background turbidity is more than 50 NTU.
Class AA	Core Summer Salmonid Habitat	same as above.
Class A	Salmonid Spawning, Rearing, and Migration	same as above.
Class B	Salmonid Rearing and Migration Only	Turbidity shall not exceed: • 10 NTU over background when the background is 50 NTU or less; or • a 20% increase in turbidity when the background turbidity is more than 50 NTU.
Class A	Non-anadromous Interior Redband Trout	Turbidity shall not exceed: • 5 NTU over background when the background is 50 NTU or less; or • a 10% increase in turbidity when the background turbidity is more than 50 NTU.
Class B	Indigenous Warm Water Species	Turbidity shall not exceed: • 10 NTU over background when the background is 50 NTU or less; or • a 20% increase in turbidity when the background turbidity is more than 50 NTU.

In the 2006 Water Quality Standards revision Washington applied revised aquatic life uses to specific water bodies. Even though the aquatic life use was revised as to some water bodies, this revision did not result in a different turbidity criterion. For example, some water bodies designated as Class A waters in the 1997 WQS have been re-designated as "Core Summer Salmonid Habitat" or in some cases as "Char" in the 2006 WQS revision. As can be seen from the table above, the turbidity criteria did not change as a result of the changes in the aquatic life use designation.

EPA is acting on the formatting changes to this provision to ensure that the reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved, standard.

17. WQS Provision: Fresh water Narrative Turbidity Criteria (WAC 173-201A-200(1)(e)(i))

(i) The turbidity criteria established under WAC 173-201A-200(1)(e) shall be modified, without specific written authorization from the department, to allow a temporary area of mixing during and immediately after necessary in-water construction activities that result in the disturbance of in-place sediments. This temporary area of mixing is subject to the constraints of WAC 173-201A-400 (4) and (6) and can occur only after the activity has received all other necessary local and state permits and approvals, and after the implementation of appropriate best management practices to avoid or minimize disturbance of in-place sediments and exceedances of the turbidity criteria. A temporary area of mixing shall be as follows:

(A) For waters up to 10 cfs flow at the time of construction, the point of compliance shall be one hundred feet downstream from the activity causing the turbidity exceedance.

(B) For waters above 10 cfs up to 100 cfs flow at the time of construction, the point of compliance shall be two hundred feet downstream of the activity causing the turbidity exceedance.

(C) For waters above 100 cfs flow at the time of construction, the point of compliance shall be three hundred feet downstream of the activity causing the turbidity exceedance.

(D) For projects working within or along lakes, ponds, wetlands, estuaries, marine waters or other nonflowing waters, the point of compliance shall be at a radius of one hundred fifty feet from the activity causing the turbidity exceedance.

EPA ACTION: EPA has reviewed this provision and has determined that it is not a water quality standard under Section 303(c) of the CWA (CWA). Therefore, EPA is not taking action on this provision.

The 1997 Water Quality Standards contained a "Short Term Modification" provision. The above language was contained in the 1997 provision. In 2003 Washington revised the "Short Term Modification" language contained in their 1997 Water Quality Standards. This provision was revised from the 1997 version in the following ways:

(1) The 1997 provision required short term modifications to be limited to "hours or days" the language in 2003 provision does not contain this specific timing limitation; (2) The 1997 provision allowed Washington to authorize a longer duration for aquatic pesticide application only, where this activity was part of a long-term operation or management plan. The language in the 2003 provision allows

Washington to authorize a longer duration for any activity that is part of a long term operation or management plan.
(3) The 2003 revision includes a provision to allow a major watershed activity at the discretion of the State. This provision was not in the 1997 water quality standards.
(4) The requirements for turbidity that were contained in the 1997 provision have been moved to sections WAC 173-201A-200(1)(e)(i) and WAC 173-201A-210(1)(e)(i). In addition, the timing restrictions for the turbidity requirements were removed.

As a result of these revisions, EPA requested that Washington clarify how they implement the Short Term Modification provision. On January 19, 2006, EPA received a letter from Washington which provided the following information:

- The short-term modification provision does not revise the underlying numeric criterion, but does allow short term excursions of the criteria in permits and 401 certifications.
- Short term modification provisions have been included in NPDES permits, 404 permits, and in licensing agreements established under 401 certifications.
- The duration of a criterion exceedance is determined on a case-by-case basis.

Based on Washington's January 19, 2006 clarification letter EPA has re-considered whether this provision is a water quality standard under Section 303(c) of the CWA. The federal regulation at 40 CFR 131.3(h) defines water quality standards as:

> "…provisions of State or federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act."[10]

The Short Term Modification provision does not define or revise the designated use of a water body or the water quality criterion. This provision does not directly affect the level of protection afforded by narrative or numeric water quality criteria, therefore, it is not a WQS under Section 303(c) of the CWA, and EPA is not taking action on it. Rather, this provision gives the State the discretion to exercise its enforcement authority to allow exceedances of water quality standards for certain activities.

Under the CWA, water quality standards are not directly enforceable, rather they are implemented through NPDES or 404 permitting programs, and/or the total maximum daily load (TMDLs) program under CWA Section 303(d). Since this provision is not

[10] "Serve the purposes of the Act" means that water quality standards: (1) include provisions for restoring and maintaining chemical, physical, and biological integrity of the State waters; (2) wherever attainable, achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water; and consider the use and value of State waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation (see Water Quality Standards Handbook: Second Edition, EPA, August 1994)

a water quality standard under the CWA it cannot be used in Clean Water Act actions.

18. WQS Provision: Fresh water Numeric Total Dissolved Gas (TDG) Criteria (WAC 173-201A- 200(f))

(f) Aquatic life total dissolved gas (TDG) criteria. TDG is measured in percent saturation. Table 200(1)(f) lists the maximum TDG criteria for each of the aquatic life use categories.

Table 200(1)(f)
Aquatic Life Total Dissolved Gas Criteria

Category	Percent Saturation
Char Spawning and Rearing	Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection.
Core Summer Salmonid Habitat	Same as above.
Salmonid Spawning, Rearing and Migration	Same as above.
Salmonid Rearing and Migration **Only**	Same as above.
Non-anadromous Interior Redband Trout	Same as above.
Indigenous Warm Water Species	Same as above.

EPA ACTION: EPA approves the change to this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 WQS. The 1997 WQS used a Class-based format, and each Class (i.e., Class AA, A, B, and Lake) contained a TDG criterion which stated: "Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection." The 2006 WQS revision is a Use-based format and the criterion is now applied to each aquatic life use category. EPA is acting on the editorial and formatting changes to this provision to ensure that the reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved, standard.

19. WQS Provision: Fresh water Narrative Total Dissolved Gas (TDG) Criteria (WAC 173-201A-200(f))

(i) The water quality criteria established in this chapter for TDG shall not apply when the stream flow exceeds the seven-day, ten-year frequency flood.

(ii) The TDG criteria may be adjusted to aid fish passage over hydroelectric dams when consistent with a department approved gas abatement plan. This plan must be accompanied by fisheries management and physical and biological monitoring plans. The elevated TDG levels are intended to allow increased fish passage without causing more harm to fish populations than caused by turbine fish passage. The following special fish passage exemptions for the Snake and Columbia rivers apply when spilling water at dams is necessary to aid fish passage:

> XTDG must not exceed an average of one hundred fifteen percent as measured in the forebays of the next downstream dams and must not exceed an average of one hundred twenty percent as measured in the tailraces of each dam (these averages are measured as an average of the twelve highest consecutive hourly readings in any one day, relative to atmospheric pressure); and
> XA maximum TDG one hour average of one hundred twenty-five percent must not be exceeded during spillage for fish passage.

EPA ACTION: EPA approves the changes in WAC 173-201A-200(f)(i) as a minor editorial change that does not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 WQS. WAC 173-201A-200(1)(f)(i) was contained in the 1997 WQS at WAC 173-201A-060(4). The only change to the language in this provision was the addition of the phrase "in this chapter." EPA is acting on the editorial change to this provision to ensure that it is in effect under the CWA.

EPA is approving the special fish passage exemptions for the Snake and Columbia rivers in WAC 173-210A-200(1)(f)(ii) as protective of the designated uses and consistent with the CWA and its implementing regulations at 40 C.F.R. 131. In the 1997 revisions to the water quality standards, a special condition was added to allow a higher level of total dissolved gas in the Columbia and Snake rivers in order to enable more fish passage over dams and thus protect more downstream migrating juvenile salmon and steelhead. Because insufficient information was available to determine the effects of the higher level gas on other aquatic species and because questions remained about the potential success of allowing more fish passage over dams, the following language was added to the provision "…These special conditions for total dissolved gas in the Snake and Columbia rivers are viewed as temporary and are to be reviewed by the year 2003." Since 1997, when this provision was initially incorporated into the water quality standards, data has been gathered for the Snake and Columbia Rivers that indicates that there is a 4 to 6 percent increase in fish survival by passing the fish over the dams in spill allowed to the adjusted 120 percent tailwater gas cap, as compared to spilling limited to the statewide total dissolved gas standard of 110 percent. Therefore, EPA is approving the changes to this provision.

20. WQS Provision: Fresh Water Aquatic Life pH Criteria (WAC 173-201A-200(g))

(g) Aquatic life pH criteria. Measurement of pH is expressed as the negative logarithm of the hydrogen ion concentration. Table 200 (1)(g) lists the pH levels for each of the aquatic life use categories.

Table 200(1)(g)
Aquatic Life pH Criteria in Fresh Water

Category	pH Units
Char Spawning and Rearing	pH shall be within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units.
Core Summer Salmonid Habitat	Same as above.
Salmonid Spawning, Rearing, and Migration	pH shall be within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.5 units.
Salmonid Rearing and Migration Only	Same as above.
Non-anadromous Interior Redband Trout	Same as above.
Indigenous Warm Water Species	Same as above.

EPA ACTION: EPA approves the changes to this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 WQS. Washington did not propose revising the pH criteria for fresh water aquatic life uses, rather it intended to keep the criteria from the 1997 WQS in place. The 1997 WQS used a Class-based format, and each Class (i.e., Class AA, A, B, and Lake) contained pH criterion. The 2006 WQS revision is a Use-based format and the criterion is now applied directly to each aquatic life use category. EPA is acting on the changes to this provision to ensure that the reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved, standard.

D. Marine Water Designated Uses and Criteria

1. WQS Provision: Marine water aquatic life uses (WAC 173-201A--210(1))

WAC 173-201A-210 Marine water designated uses and criteria. The following uses are designated for protection in marine surface waters of the state of

Washington. Use designations for specific water bodies are listed in WAC 173-201A-612.

(1) Aquatic life uses. Aquatic life uses are designated using the following general categories. It is required that all indigenous fish and nonfish aquatic species be protected in waters of the state.

(a) The categories for aquatic life uses are:

(i) Extraordinary quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

(ii) Excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

(iii) Good quality salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

(iv) Fair quality salmonid and other fish migration.

EPA ACTION: EPA approves the changes in the aquatic life use category names in WAC 173-201A-210(1) (i.e., Extraordinary quality, Excellent quality, Good quality, and Fair quality) as minor formatting and editorial changes that do not alter the designated uses that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on the changes to this provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved, standard.

As stated previously, the formatting used to assign designated uses to waters has been revised in the 2003 WQS. The 1997 WQS used a "Class" format which assigned each water body to a particular "Class." For example, marine water had Class AA, Class A, Class B, and Class C. Each "Class" contained a suite of designated uses (e.g., recreational uses, fish and shellfish use, etc.). The 2003 WQS removed the "Class" system and instead applies the designated uses that were contained in a "Class" directly to the specific waters.

As a result of the reformatting in the 2003 WQS, the aquatic life uses in "Class AA" are now identified with the term "Extraordinary quality;" "Class A" aquatic life uses are now identified with the term "Excellent quality;" "Class B" aquatic life uses are now identified with the term "Good quality;" and "Class C" aquatic life uses are now

identified with the term "Fair quality." Additionally, the term "harvesting" has been removed from each category. Shellfish harvesting is now a separate designated use (see WAC 173-201A-210(2), and all other "harvesting" use is included in a designated use termed "Miscellaneous uses" (see WAC 173-201A-210(4)).

The table below shows each of the "Classes" in the 1997 WQS and the aquatic life uses associated with them, and also identifies the categories used in the 2003 WQS and the aquatic life uses associated with them. As can be seen from the table there are only two changes between the 1997 WQS and the 2003 WQS. One change is the "harvesting" use has been removed, and the term used to identify the category name for each group of designated uses has changed.

1997 Water Quality Standards		**2003 Water Quality Standards**	
Class	**Designated Use**	**Category**	**Designated Use**
Class AA	Salmonid migration, rearing, spawning and harvesting; Other fish migration, rearing, spawning and harvesting; Clam, oyster and mussel rearing, spawning, and harvesting; Crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing, spawning	Extraordinary Quality	Salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.)rearing and spawning.
Class A	Salmonid migration, rearing, spawning and harvesting; Other fish migration, rearing, spawning and harvesting; Clam, oyster and mussel rearing, spawning, and harvesting; Crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing, spawning	Excellent Quality	Salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.
Class B	Salmonid migration, rearing, and harvesting; Other fish migration, rearing, spawning and harvesting; Clam, oyster and mussel rearing, spawning, Crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing, spawning	Good Quality	Salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.
Class C	Salmonid and other fish migration	Fair Quality	Salmonid and other fish migration

2. WQS Provision: Marine water general criteria (WAC 173-201A--210(1)(b))

(b) General criteria. General criteria that apply to aquatic life uses are described in WAC 173-201A-260 (2)(a) and (b), and are for:

(i) Toxic, radioactive, and deleterious materials; and

(ii) Aesthetic values

EPA ACTION: EPA approves the changes to this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved and that was in effect in the 1997 WQS.

The 1997 WQS was a Class-based format which assigned each water body to a particular "Class." Each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. In the 1997 WQS the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion was assigned to each Class. The 2003 WQS removed the "Class" format and instead applies the designated uses that were in the "Class" directly to the water body. Additionally, the 2003 WQS identifies the criteria necessary to protect each designated use. This provision identifies the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion, contained in WAC 173-201A-260(2)(a)(b), needed to protect marine aquatic life uses.

EPA is acting on the changes to this provision to ensure that the edited and reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved standard.

3. Marine water numeric temperature criteria (WAC 173-201A-210(1)(c))

(c) Aquatic life temperature criteria. Except where noted, temperature is measured as a 1-day maximum temperature (1-Dmax). Table 210(1)(c) lists the temperature criteria for each of the aquatic life use categories.

TABLE 210(1)(c)
Aquatic Life Temperature Criteria in Marine Water

Category	Highest 1-DMax
Extraordinary quality	13EC (55.4EF)
Excellent quality	16EC (60.8EF)
Good quality	19EC (66.2EF)
Fair quality	22EC (71.6EF)

EPA ACTION: EPA approves the changes to WAC 173-201A-210(1)(c) as formatting and editorial changes that do not alter the water quality standards that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on this provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved standard.

The 1997 WQS was a "Class-based" format, and each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. The 2003 WQS

removed the "Class-base" format and instead applies the designated uses that were contained in the "Class" directly to the water body. The table below summarizes the "Class-based" system and the associated temperature criterion used in the 1997 WQS, and the "Use-based" system and associated temperature criterion used in the 2003 WQS (Note: as discussed in section IV.D.1 of this document, the aquatic life uses contained in each "Class" in the 1997 WQS are the same as the aquatic life uses contained in the corresponding "Category" in the 2003 WQS (e.g., the aquatic life uses in waters designated as "Class AA" are the same as the aquatic life uses in waters designated as "Extraordinary Quality". See IV.D.1 for a description of the aquatic life uses).

1997 Water Quality Standards		**2003 Water Quality Standards**	
Class	**Temperature**	**Category**	**Temperature**
Class AA	13°C	Extraordinary Quality	13°C
Class A	16°C	Excellent Quality	16°C
Class B	19°C	Good Quality	19°C
Class C	22°C	Fair Quality	22°C

As can be seen from the table above, the temperature criteria in the 2003 WQS are the same as those contained in the 1997 WQS.

4. WQS Provision: Marine water narrative temperature criteria (WAC 173-201A-210(1)(c)(i))

(i) When a water body's temperature is warmer than the criteria in Table 210 (1)(c) (or within 0.3°C (0.54°F) of the criteria) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3°C (0.54°F).

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.5(a)(2), 131.6(c); 131.11 and 131.13.

The 1997 WQS included a similar provision which allowed an increase of 0.3°C when the natural condition of the water body exceeded the established temperature criterion. The only difference between the 2003 WQS provision and the 1997 provision is that the 2003 WQS provision is measured as a "7-DADMax" rather than as a maximum temperature.

EPA believes that allowing a 0.3° C or less increase in temperature is insignificant because, in Washington, the reliable field detection level for temperature is 0.3° C. Therefore, a 0.3° C temperature increase is considered within the error band associated with typical temperature monitors.

Furthermore, this provision is consistent with the recommendations in the Temperature Guidance which discusses including a provision in water quality standards that allows the water temperatures in a water body to be insignificantly higher than the otherwise applicable criterion. Such a provision allows an insignificant level of heat into the water body from human activities when the natural condition criterion is the applicable criterion. Absent such a provision, no heat would be allowed from human activities when the natural condition criteria are the applicable criterion. EPA has concluded that this is unnecessarily restrictive for the protection of salmonid uses, and would lead to unnecessary and costly expenditures.

5. WQS Provision: Marine water narrative temperature criteria (WAC 173-201A-210(1)(c)(ii))

(ii) When the natural condition of the water is cooler than the criteria in Table 210 (1)(c), the allowable rate of warming up to, but not exceeding, the numeric criteria from human actions is restricted as follows:

> (A) Incremental temperature increases resulting from individual point source activities must not, at any time, exceed 12/(T-2) as measured at the edge of a mixing zone boundary (where "T" represents the background temperature as measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge); and
> (B) Incremental temperature increases resulting from the combined effect of all nonpoint source activities in the water body must not, at any time, exceed 2.8°C (5.04°F).

EPA ACTION: EPA approves the allowable temperature increase of 12/T-2, at the edge of a mixing zone, for point source dischargers, when the natural condition of a water body is cooler than the numeric temperature criteria contained in Table 210(1)(c). This provision is consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13.

Table 210(1)(c) establishes the temperature criteria protective of aquatic life. These criteria were previously approved by EPA and were in effect in the 1997 WQS. The incremental temperature increase provision limits the temperature increase a point source can cause to a water body when it is colder than the established temperature criterion and it does not allow the temperature to increase above the criterion established to protect the aquatic life uses. Additionally, Washington's anti-degradation policy requires that a Tier II analysis be completed for any State regulated new or expanded action that would warm temperatures by 0.3°C or more at the edge of the mixing zone. Therefore, the Tier II analysis would have to be completed prior to allowing an incremental temperature increase of 0.3°C or more at the edge of the mixing zone for any State regulated new or expanded action.

EPA is not taking action on part (B) of this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision addresses non point source activities and EPA does not

regulate non-point source activities (*American Wildlands v Browner, 260 F 3d 1192 (10th Cir. 2001).*

6. WQS Provision: Marine water narrative temperature criteria (WAC 173-201A-210(1)(c)(iii))

(iii) Temperatures are not to exceed the criteria at a of more than once every ten years on average.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13. EPA asked Washington to clarify the term "probability frequency…on average" as this is not a recognized statistical term, and Washington did not define it in their water quality standards. Washington provided a response in a letter dated January 19, 2006. Based on Washington's response EPA believes that the 1 in 10 year recurrence language is intended to codify Washington's current implementation of water quality standards for temperature and other parameters. A central part of this implementation is selection of design conditions for evaluation of TMDLs and permit requirements to insure that the resulting allocations and limits achieve the criterion except in unusual instances. While water temperatures are affected by a variety of factors (e.g., receiving water flows, effluent discharges, weather, groundwater), Washington's practice is to use conservative design flows for the receiving water to calculate TMDLs and permit limits. The typical design flow used is the 7Q10 flow – the lowest 7 day average flow expected in a ten year period. Statistical methods are used to estimate the 7Q10 flow from long term flow records for a river. While other factors besides flow affect water temperature, TMDLs and permits calculated under 7Q10 flow conditions should generally achieve the water quality criteria with the desired probability of recurrence of 1 exceedance in 10 years. EPA believes the above explanation is protective of water quality standards.

7. WQS Provision: Marine water narrative temperature criteria (WAC 173-201A-210(1)(c)(iv))

(iv) Temperature measurements should be taken to represent the dominant aquatic habitat of the monitoring site. This typically means samples should not be taken from shallow stagnant backwater areas, within isolated thermal refuges, at the surface, or at the water's edge.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR §131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision addresses how to measure water quality; it does not address the desired condition of the water or change the level of protection afforded to Washington's waters.

8. WQS Provision: Marine water narrative temperature criteria (WAC 173-201A-210(1)(c)(v))

(v) The department will incorporate the following guidelines on preventing acute lethality and barriers to migration of salmonids into determinations of compliance with the narrative requirements for use protection established in this chapter (e.g., WAC 173-201A-310(1), 173-201A-400(4), and 173-201A-410 (1)(c)). The following site-level considerations do not, however, override the temperature criteria established for waters in subsection (1)(c) of this section or WAC 173-201A-612:

(A) Moderately acclimated (16-20°C, or 60.8 - 68°F) adult and juvenile salmonids will generally be protected from acute lethality by discrete human actions maintaining the 7-DADMax temperature at or below 22°C (71.6°F) and the 1-day maximum (1-DMax) temperature at or below 23°C (73.4°F).

(B) Lethality to developing fish embryos can be expected to occur at a 1-DMax temperature greater than 17.5°C (63.5°F).

(C) To protect aquatic organisms, discharge plume temperatures must be maintained such that fish could not be entrained (based on plume time of travel) for more than two seconds at temperatures above 33°C (91.4°F) to avoid creating areas that will cause near instantaneous lethality.

(D) Barriers to adult salmonid migration are assumed to exist any time the 1-DMax temperature is greater than 22°C (71.6°F) and the adjacent downstream water temperatures are 3°C (5.4°F) or more cooler.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR §131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision does not change the level of protection afforded to Washington's waters, rather, this provision offers guidelines, in the form of general scientific statements which should be considered when applying narrative provisions. The guidelines provide are general scientific statements rather than requirements

9. WQS Provision: Marine water narrative temperature criteria (WAC 173-201A-210(1)(c)(vi))

(v) Nothing in this chapter shall be interpreted to prohibit the establishment of effluent limitations for the control of the thermal component of any discharge in accordance with 33 U.S.C. 1326 (commonly known as section 316 of the Clean Water Act).

EPA ACTION:EPA approves the re-numbering of the provision, and the editorial change to the provision which corrects the statutory reference. In the 1997 WQS this provision was WAC 173-201A-060 and stated: "Nothing in this chapter shall be interpreted…in accordance with Section 316 of the federal Clean Water Act (33 U.S.C. 1251 et seq.)." The editorial changes in the 2003WQS provision do not alter the provision that EPA previously approved, and that was in effect in the 1997 WQS. EPA approves the changes in the regulatory citation, and the renumbered provision and considers it in effect under the CWA.

10. WQS Provision: Marine water numeric dissolved oxygen (D.O.) criteria (WAC 173-201A-210(1)(d))

(d) Aquatic life dissolved oxygen (D.O.) criteria. Except where noted D.O. concentrations are measured as a 1-day minimum in milligrams per liter. Table 210(1)(d) lists the D.O. criteria for each of the aquatic life use categories.

Table 210(1)(d)
Aquatic Life Dissolved Oxygen Criteria in Marine Water

Category	Lowest 1-Day Minimum
Extraordinary quality	7.0 mg/L
Excellent quality	6.0 mg/L
Good quality	5.0 mg/L
Fair quality	4.0 mg/L

EPA ACTION: EPA approves the changes to the D.O. criteria in WAC 173-201A-210(1)(d) as formatting and editorial changes that do not alter the water quality standards that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on this provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. EPA is not reassessing or re-approving the underlying previously approved standard.

The 1997 WQS was a "Class-based" format, and each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. The 2003 WQS removed the "Class-base" format and instead applies the designated uses that were contained in the "Class" directly to the water body. The table below summarizes the "Class-based" system and the associated dissolved oxygen criterion used in the 1997

WQS, and the "Use-based" system and associated dissolved oxygen criterion used in the 2003 WQS (Note: as discussed in section IV.D.1 of this document, the aquatic life uses contained in each "Class" in the 1997 WQS are the same as the aquatic life uses contained in the corresponding "Category" in the 2003 WQS (e.g., the aquatic life uses in waters designated as "Class AA" are the same as the aquatic life uses in waters designated as "Extraordinary Quality". See IV.D.1 for a description of the aquatic life uses).

1997 Water Quality Standard		**2003 Water Quality Standard**	
Class	**D.O. criteria**	**Category**	**D.O. criteria**
Class AA	7 mg/L	Extraordinary Quality	7 mg/L
Class A	6 mg/L	Excellent Quality	6 mg/L
Class B	5 mg/L	Good Quality	5 mg/L
Class C	4 mg/L	Fair Quality	4 mg/L

As can be seen from the table above, the temperature criteria in the 2003 WQS are the same as those contained in the 1997 WQS.

11. WQS Provision: Marine water narrative dissolved oxygen (D.O.) criteria (WAC 173-201A-210(1)(d)(i))

(i) When a water body's D.O. is lower than the criteria in Table 210 (1)(d) (or within 0.2 mg/L of the criteria) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the D.O. of that water body to decrease more than 0.2 mg/L.

EPA ACTION: EPA approves the formatting and editorial changes to this provision. The changes to this provision do not alter the water quality standard that EPA previously approved, and that was in effect in the 1997 WQS. EPA is acting on this provision to ensure that the editorial changes and reformatted changes are in effect under the CWA. However, EPA is not reassessing or re-approving the underlying previously approved standard.

The 1997 WQS was a Class-based format which assigned designated uses and criteria to each "Class." Each "Class" in the 1997 WQS contained a provision which allowed the dissolved oxygen to be depressed. For example, in the 1997 WQS, "Class C" waters, which have a D.O. criterion of 4 mg/L, also contained a provision which stated: "*Dissolved Oxygen…When natural conditions, such as upwelling occur, causing the dissolved oxygen to be depressed near or below 4.0 mg/L, natural dissolved oxygen levels may be degraded by up to 0.2 mg/L by human caused activities.*" The 2003 WQS continues to contain this provision, however it has been

edited to accommodate "Use-base" format which is now used in the water quality standards.

12. WQS Provision: Marine water narrative dissolved oxygen (D.O.) criteria (WAC 173-201A-210(1)(d)(ii))

(ii) Concentrations of D.O. are not to fall below the criteria in the table at a probability frequency of more than once every ten years on average.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13. EPA asked Washington to clarify the term "probability frequency…on average" as this is not a recognized statistical term, and Washington did not define it in their water quality standards. Washington provided a response in a letter dated January 19, 2006. Based on Washington's response EPA believes that the 1 in 10 year recurrence language is intended to codify Washington's current implementation of water quality standards for temperature and other parameters. A central part of this implementation is selection of design conditions for evaluation of TMDLs and permit requirements to insure that the resulting allocations and limits achieve the criterion except in unusual instances. While water temperatures are affected by a variety of factors (e.g., receiving water flows, effluent discharges, weather, groundwater), Washington's practice is to use conservative design flows for the receiving water to calculate TMDLs and permit limits. The typical design flow used is the 7Q10 flow – the lowest 7 day average flow expected in a ten year period. Statistical methods are used to estimate the 7Q10 flow from long term flow records for a river. While other factors besides flow affect water temperature, TMDLs and permits calculated under 7Q10 flow conditions should generally achieve the water quality criteria with the desired probability of recurrence of 1 exceedance in 10 years. EPA believes the above explanation is protective of water quality standards.

13. WQS Provision: Marine water narrative dissolved oxygen (D.O.) criteria (WAC 173-201A-210(1)(d)(iii))

(iii) D.O. measurements should be taken to represent the dominant aquatic habitat of the monitoring site. This typically means samples should not be taken from shallow stagnant backwater areas, within isolated thermal refuges, at the surface, or at the water's edge.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision addresses how to measure water quality; it does not address the desired condition of the water or change the level of protection afforded to Washington's waters.

14. WQS Provision: Marine water narrative turbidity criteria (WAC 173-201A-210(1)(e))

(e) **Aquatic life turbidity criteria.** Turbidity is measured in "nephelometric turbidity units" or "NTUs." Table 210 (1)(e) lists the one-day maximum turbidity allowed.

Table 210(1)(e)
Aquatic Life Turbidity Criteria in Marine Water

Category	NTUs
Extraordinary quality	Turbidity must not exceed $ 5 NTU over background when the background is 50 NTU or less; or $ A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Excellent quality	Same as above
Good quality	Turbidity must not exceed $ 10 NTU over background when the background is 50 NTU or less; or $ A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
Fair quality	Same as above

EPA ACTION: EPA approves the changes to the aquatic life turbidity criteria in WAC 173-201A-210(1)(e) as formatting and editorial changes that do not alter the water quality standards that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on this provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. However, EPA is not reassessing or re-approving the underlying previously approved standard.

As stated previously, the 2003 WQS removed the "Class-base" format and instead applies the designated uses that were contained in the "Class" directly to the water body. The table below summarizes the "Class-based" system and the associated turbidity criterion used in the 1997 WQS, and the "Use-based" system and associated turbidity criterion used in the 2003 WQS. (Note: as discussed in section IV.D.1 of this document, the aquatic life uses contained in each "Class" in the 1997 WQS is the same as the aquatic life uses contained in the corresponding "Category" in the 2003 WQS (e.g., the aquatic life uses in waters designated as "Class AA" are the same as the aquatic life uses in waters designated as "Extraordinary Quality"). See IV.D.1 for a description of the aquatic life uses).

1997 Water Quality Standards		2003 Water Quality Standards	
Class (aquatic life use)	**Criterion**	**Category (aquatic life use)**	**Criterion**
Class AA	Turbidity must not exceed: 5 NTU over background when the background is 50 NTU or less; or A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.	**Extraordinary quality**	Turbidity must not exceed: 5 NTU over background when the background is 50 NTU or less; or A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Class A	Same as above	**Excellent quality**	Same as above
Class B	Turbidity must not exceed: 10 NTU over background when the background is 50 NTU or less; or A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.	**Good quality**	Turbidity must not exceed: 10 NTU over background when the background is 50 NTU or less; or A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
Class C	Same as above	**Fair quality**	Same as above

As can be seen from the table above, the temperature criteria in the 2003 WQS are the same as those contained in the 1997 WQS.

15. WQS Provision: Marine water narrative turbidity criteria, (WAC 173-201A-210(1)(e))

(i) The turbidity criteria established under WAC 173-201A-210 (1)(e) shall be modified, without specific written authorization from the department, to allow a temporary area of mixing during and immediately after necessary in-water construction activities that result in the disturbance of in-place sediments. This temporary area of mixing is subject to the constraints of WAC 173-201A-400 (4) and (6) and can occur only after the activity has received all other necessary local and state permits and approvals, and after the implementation of appropriate best management practices to avoid or minimize disturbance of in-place sediments and exceedances of the turbidity criteria. A temporary area of mixing shall be as follows:

(A) For waters up to 10 cfs flow at the time of construction, the point of compliance shall be one hundred feet downstream from the activity causing the turbidity exceedance.
(B) For waters above 10 cfs up to 100 cfs flow at the time of construction, the point of compliance shall be two hundred feet downstream of the activity causing the turbidity exceedance.

(C) For waters above 100 cfs flow at the time of construction, the point of compliance shall be three hundred feet downstream of the activity causing the turbidity exceedance.

(D) For projects working within or along lakes, ponds, wetlands, estuaries, marine waters or other nonflowing waters, the point of compliance shall be at a radius of one hundred fifty feet from the activity causing the turbidity exceedance.

EPA ACTION: EPA has reviewed this provision and has determined that it is not a water quality standard under Section 303(c) of the CWA. Therefore, EPA is not taking action on this provision.

The 1997 Water Quality Standards contained a "Short Term Modification" provision. The above language was contained in the 1997 provision. In 2003 Washington revised the "Short Term Modification" language contained in their 1997 Water Quality Standards. This provision was revised from the 1997 version in the following ways:

(1) The 1997 provision required short term modifications to be limited to "hours or days" the language in 2003 provision does not contain this specific timing limitation;
(2) The 1997 provision allowed Washington to authorize a longer duration for aquatic pesticide application only, where this activity was part of a long-term operation or management plan. The language in the 2003 provision allows Washington to authorize a longer duration for any activity that is part of a long term operation or management plan.
(3) The 2003 revision includes a provision to allow a major watershed activity at the discretion of the State. This provision was not in the 1997 water quality standards.
(4) The requirements for turbidity that were contained in the 1997 provision have been moved to sections WAC 173-201A-200(1)(e)(i) and WAC 173-201A-210(1)(e)(i). In addition, the timing restrictions for the turbidity requirements were removed.

As a result of these revisions, EPA requested that Washington clarify how they implement the Short Term Modification provision. On January 19, 2006, EPA received a letter from Washington which provided the following information:

- The short-term modification provision does not revise the underlying numeric criterion, but does allow short term excursions of the criteria in permits and 401 certifications.
- Short term modification provisions have been included in NPDES permits, 404 permits, and in licensing agreements established under 401 certifications.
- The duration of a criterion exceedance is determined on a case-by-case basis.

Based on Washington's January 19, 2006 clarification letter EPA has re-considered whether this provision is a water quality standard under Section 303(c) of the CWA. The federal regulation at 40 CFR 131.3(h) defines water quality standards as:

"…provisions of State or federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act."[11]

The Short Term Modification provision does not define or revise the designated use of a water body or the water quality criterion. This provision does not directly affect the level of protection afforded by narrative or numeric water quality criteria, therefore, it is not a WQS under Section 303(c) of the CWA, and EPA is not taking action on it. Rather, this provision gives the State the discretion to exercise its enforcement authority to allow exceedances of water quality standards for certain activities.

Under the CWA, water quality standards are not directly enforceable, rather they are implemented through NPDES or 404 permitting programs, and/or the total maximum daily load (TMDLs) program under CWA Section 303(d). Since this provision is not a water quality standard under the Clean Water Act it cannot be used in Clean Water Act actions.

16. WQS Provision: Marine water Numeric pH criteria, (WAC 173-201A-210(1)(f))

(f) Aquatic life pH criteria. Measurement of pH is expressed as the negative logarithm of the hydrogen ion concentration. Table 210(1)(f) lists the pH levels allowed as a result of human actions for each of the aquatic life use categories.

Table 210(1)(f)
Aquatic Life pH Criteria in Marine Water

Category	pH Units
Extraordinary quality	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.2 units
Excellent quality	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units
Good quality	Same as above
Fair quality	pH must be within the range of 6.5 to9.0 with a human-caused variation within the above range of less than 0.5 units

[11] "Serve the purposes of the Act" means that water quality standards: (1) include provisions for restoring and maintaining chemical, physical, and biological integrity of the State waters; (2) wherever attainable, achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water; and consider the use and value of State waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation (see Water Quality Standards Handbook: Second Edition, EPA, August 1994)

EPA ACTION: EPA approves the changes to this provision as a formatting and editorial change that does not alter the water quality standards that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on this provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved, standard.

The 1997 WQS was a "Class-based" format, and each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. The 2003 WQS removed the "Class-base" format and instead applies the designated uses that were contained in the "Class" directly to the water body. The table below summarizes the "Class-based" system and the associated pH criterion used in the 1997 WQS, and the "Use-based" system and associated pH criterion used in the 2003 WQS (Note: as discussed in section IV.D.1 of this document, the aquatic life uses contained in each "Class" in the 1997 WQS are the same as the aquatic life uses contained in the corresponding "Category" in the 2003 WQS (e.g., the aquatic life uses in waters designated as "Class AA" are the same as the aquatic life uses in waters designated as "Extraordinary Quality").

1997 Water Quality Standards		**2003 Water Quality Standards**	
Class	**pH Criterion**	**Category**	**pH Criterion**
Class AA	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.2	Extraordinary quality	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.2
Class A	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5	Excellent quality	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5
Class B	Same as above	Good quality	Same as above
Class C	pH must be within the range of 6.5 to 9.0 with a human-caused variation within the above range of less than 0.5	Fair quality	pH must be within the range of 6.5 to 9.0 with a human-caused variation within the above range of less than 0.5

As can be seen from the table above, the pH criteria in the 2003 WQS are the same as those contained in the 1997 WQS.

17. WQS Provision: Marine shellfish harvesting use and general criteria, (WAC 173-201A-210(2)(a))

(2) Shellfish Harvesting.

(a) General criteria. General criteria that apply to shellfish harvesting uses are described in WAC 173-201A-260 (2)(a) and (b), and are for:

(i) Toxic, radioactive, and deleterious materials; and

(ii) Aesthetic values

EPA ACTION: EPA approves the shellfish harvesting designated use, and the general criteria provision as editorial and formatting changes that do not alter the water quality standards that EPA previously approved and that were in effect in the 1997 WQS. EPA is not re-assessing or re-approving the underlying, previously approved provision.

The 1997 WQS was a Class-based format which assigned each water body to a particular "Class." Each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. In the 1997 WQS, Class AA, Class A, and Class B waters contained a designated use termed "Crustaceans and other shellfish…rearing, spawning and harvesting." The 2003 WQS removed the "Class" system and instead applies the designated uses that were contained in a "Class" directly to the water body. The harvesting use for crustaceans and other shellfish has been retained in the 2003 WQS, however, it is now identified as a separate designated use category termed "Shellfish harvesting."

As stated above, each "Class" in the 1997 WQS also contained the criteria necessary to protect the uses. In the 1997 WQS the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion was assigned to each Class. The 2003 WQS removed the "Class" based format and identifies the criteria necessary to protect each designated use directly. The general criteria provision identifies the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion, contained in WAC 173-201A-260(2)(a)(b), needed to protect the Shellfish harvesting use.

18. WQS Provision: Marine Shellfish harvesting bacteria criteria, (WAC 173-201A-210-(2)(b))

(b) Shellfish harvesting bacteria criteria. To protect shellfish harvesting, fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, and not have more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

EPA ACTION: EPA approves the bacteria criteria in Table 200(2)(b) as consistent with the CWA and its implementing regulations under 40 CFR §131.11. The 1997 WQS had different fecal coliform bacteria criteria for the "shellfish harvesting" use depending on the "Class" of the water body. "Shellfish harvesting" was associated with "Class AA," "Class A," and "Class B." The following shows the bacteria criteria associated with each of these classes.

Class AA, and Class A: fecal coliform organism levels shall both not exceed a geometric mean of 14 colonies/100mL and not more than 10% of all samples obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

Class B: fecal coliform organism levels shall both not exceed a geometric mean of 100 colonies/100mL and not more than 10% of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100 mL..

The 2003 WQS require all waters with "shellfish harvesting" use to meet a geometric mean of 14 colonies/100mL and not more than 10% of the samples can exceed 43 colonies/100 mL. This criterion is consistent with the Food and Drug Administration which requires these criteria to be met for shellfish harvesting (*National Shellfish Sanitation Program, Guide for the control of Molluscan Shellfish*, 2003, Department of Health and Human Services, Food and Drug Administration) and therefore is protective of the designated use.

Washington also clarified that when there are less than 10 samples no single sample can exceed 43 colonies/100ml. EPA believes using a single sample to determine compliance when less than 10 samples are available is reasonable.

19. WQS Provision: Marine Shellfish harvesting compliance (WAC 173-201A-210-(2)(b)(i))

(i) Shellfish growing areas approved for unconditional harvest by the state department of health are fully supporting the shellfish harvest goals of this chapter, even when comparison with the criteria contained in this chapter suggest otherwise.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing provisions at 40 CFR 131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is related to compliance evaluation.

20. WQS Provision: Marine Water bacteria averaging narrative – WAC 173-201A-210(2)(b)(ii)

(ii) When averaging bacteria sample data for comparison to the geometric mean criteria, it is preferable to average by season and include five or more data collection events within each period. Averaging of data collected beyond a thirty-day period, or beyond a specific discharge event under investigation, is not permitted when such averaging would skew the data set so as to mask noncompliance periods. The period of averaging should not exceed twelve months, and should have sample collection dates well distributed throughout the reporting period.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR §131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and

water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This entire provision addresses measurement of water quality; it does not describe the desired condition of the water or change the level of protection afforded to Washington's waters. This provision provides Washington's preferred method for the averaging period and data collection samples for bacteria; it does not preclude other methodologies from being used.

21. WQS Provision: Marine Water bacteria compliance – WAC 173-201A-210(2)(b)(iii)

(iii) When determining compliance with the bacteria criteria in or around small sensitive areas, it is recommended that multiple samples are taken throughout the area during each visit. Such multiple samples should be arithmetically averaged together (to reduce concerns with low bias when the data is later used in calculating a geometric mean) to reduce sample variability and to create a single representative data point.

EPA ACTION: EPA is not taking action on the new language (i.e., the language that is underlined) in this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR §131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision addresses how to measure water quality; it does not describe the desired condition of the water or change the level of protection afforded to Washington's waters. This provision provides Washington's recommended guidance for compliance determination.

22. WQS Provision: Establishing more stringent criteria, WAC 173-201A-210(2)(b)(iv)

(iv) As determined necessary by the department, more stringent bacteria criteria may be established for waters that cause, or significantly contribute to, the decertification or conditional certification of commercial or recreational shellfish harvest areas, even when the preassigned bacteria criteria for the water is being met.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is simply a general statement that a more stringent site-specific criterion may be authorized at some future date. The Washington Department of Ecology's Responsiveness Summary (*WAC 173-201A Surface Water Quality Standards for the State of Washington*, July 1, 2003) clarified that the State will set site-specific criteria for bacteria in the same way it does for other pollutant parameters. Furthermore, Washington has adopted a provision for developing site-specific criteria, and EPA approved that provision as consistent with the CWA on January 12, 2005. If

Washington develops a site-specific criterion EPA will act on it when the State submits it to EPA for approval.

23. WQS Provision: Alternative indicator bacteria, WAC 173-201A-210(2)(b)(v)

(v) Where information suggests that sample results are due primarily to sources other than warm-blooded animals (e.g., wood waste), alternative indicator criteria may be established on a site-specific basis by the department.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is simply a general statement that a more stringent site-specific criterion may be authorized at some future date. Washington has adopted a provision for developing site-specific criteria, and EPA approved that provision as consistent with the CWA on January 12, 2005. If the state develops a site-specific criterion EPA will act on it when the State submits it to EPA for approval.

24. WQS Provision: Marine recreational uses - WAC 173-201A-210(3)

(3) Recreational uses. The recreational uses are primary contact recreation and secondary contact recreation.

EPA ACTION: EPA approves the changes to the recreational uses in WAC 173-210A-200(3) (i.e., primary contact recreation, and secondary contact recreation) as editorial and formatting changes that do not alter the uses that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on the changes to the provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. EPA is not reassessing or re-approving the underlying, previously approved, standard.

As stated previously, the formatting used to assign designated uses to waters has been revised in the 2003 WQS. The 1997 WQS used a "Class" format which assigned each water body to a "Class." For example, marine water had four "Classes": Class AA, Class A, Class B, and Class C. Each "Class" contained a suite of designated uses (e.g., recreational use, fish and shellfish use, wildlife habitat, etc.). The 2003 WQS removed the "Class" system and instead applies the designated uses that were contained in a "Class" directly to the specific waters contained in each "Class."

The table below identifies the recreational uses associated with 1997 WQS "Class" format:

Class	Use categories
Class AA	(v) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment)
Class A	(v) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment)
Class B	(v) Recreation (secondary contact recreation, sport fishing, boating and aesthetic enjoyment)
Class C	(v) Recreation (secondary contact recreation, sport fishing, boating and aesthetic enjoyment)

Each of the subcategories of the recreation use in the Class format (e.g., primary contact, sport fishing, boating, etc.) are now identified as a distinct designated "use" in the 2003 water quality standards, and each designated use is applied directly to water bodies. For example, in the 1997 WQS the Chilliwack River was simply designated as a Class AA water body and by extension, the uses assigned to Class AA applied to the water body. In the 2003 WQS the river, itself, is specifically designated for primary contact recreation use, harvesting use, boating use, and aesthetics use.

25. WQS Provision: Marine recreational uses, general criteria - WAC 173-201A-210(3)(a)

(a) General criteria. General criteria that apply to water contact uses for marine water are described in WAC 173-201A-260 (2)(a) and (b), and are for:

(i) Toxic, radioactive, and deleterious materials; and

(ii) Aesthetic values

EPA ACTION: EPA approves the changes to this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved and that was in effect in the 1997 WQS.

The 1997 WQS was a Class-based format which assigned each water body to a particular "Class." Each "Class" contained a suite of designated uses, and the criteria necessary to protect the uses. In the 1997 WQS the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion was assigned to each Class. The 2003 WQS removed the "Class" format and instead applies the designated uses that were in the "Class" directly to the water body. Additionally, the 2003 WQS identifies the criteria necessary to protect each designated use. This provision identifies the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion, contained in WAC 173-201A-260(2)(a)(b), needed to protect marine recreational uses.
EPA is acting on the changes to this provision to ensure that the edited and reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved standard.

26. WQS Provision: Marine bacteria criteria, WAC 173-201A-210(3)(b)

(b) Water contact recreation bacteria criteria. Table 210 (3)(b) lists the bacteria criteria to protect water contact recreation in marine water.

Table 210(3)(b)
Water Contact Recreation Bacteria Criteria in Marine Water

Category	Bacteria Indicator
Primary Contact Recreation	Fecal Coliform organism levels must not exceed a geometric mean of 14 colonies/100 mL, with not more than 10% of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.
Secondary Contact Recreation	Enterococci organism levels must not exceed a geometric mean value of 70 colonies/100 mL, with not more than 10 percent of all sample (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 208 colonies/100 mL.

EPA ACTION: EPA approves the new language for primary contact recreation contained in Table 210(3)(b) (i.e.,"…(or any single sample when less than ten sample points exist)") as consistent with the CWA and its implementing regulations under 40 CFR §131.11 because this statement clarifies how to use the criterion associated with "10 percent of all samples" (e.g., 100 colonies/100 mL for

extraordinary primary contact) when less than ten samples exists. EPA believes using a single sample when less than 10 samples are available is reasonable. EPA approves the remainder of the criteria for primary contact recreation (i.e., the word "must," and the regulatory language for primary contact recreation in Table 210 (3)(b) that is not underlined) as a non-substantive formatting change that does not alter the use or the criteria to protect the use that EPA previously approved, and that were in effect in the 1997. EPA is acting on this provision to ensure that the reformatted provisions are in effect under the CWA.

EPA approves the new language for secondary contact recreation contained in Table 210(3)(b) as consistent with the CWA and its implementing regulations under 40 CFR §131.11. Secondary contact recreation includes activities where participants have very little direct contact with the water and where ingestion is unlikely. Secondary contact recreation activities include wading, canoeing, motor boating, fishing, etc. The *Ambient Water Quality Criteria for Bacteria* – 1986 (Bacteria Criteria Document) only recommends water quality criteria for primary contact recreation. For primary contact recreation the Bacteria Criteria Document recommends (1) enterococci be used as the indicator organism for marine waters, a geometric mean indicator density of 35 organisms/100 mL, and (2) a single sample maximum density of either 104/100 mL, 158/100 mL, 276/100 mL, 501/100 mL depending on the frequency of use of the water body. Historically, States and Tribes have adopted, and EPA has approved, secondary contact recreation criteria ranging from 2-5 times the primary contact recreation criteria. Washington's secondary contact recreation criteria are within this range. EPA approves the language "or any single sample when less than ten sample points exist" as consistent with the CWA and its implementing regulations under 40 CFR §131.11 because this statement clarifies how to use the criterion associated with "10 percent of all samples" (e.g., 100 colonies/100 mL for extraordinary primary contact) when less than ten samples exists. EPA believes using a single sample when less than 10 samples are available is reasonable.

27. WQS Provision: Marine water averaging narrative, WAC 173-201A-210(3)(b)(i)

(i) When averaging bacteria sample data for comparison to the geometric mean criteria, it is preferable to average by season and include five or more data collection events within each period. Averaging of data collected beyond a thirty-day period, or beyond a specific discharge event under investigation, is not permitted when such averaging would skew the data set so as to mask noncompliance periods. The period of averaging should not exceed twelve months, and should have sample collection dates well distributed throughout the reporting period.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR §131.13. Water quality standards are provisions of State or Federal law

which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This entire provision addresses measurement of water quality; it does not describe the desired condition of the water or change the level of protection afforded to Washington's waters. This provision provides Washington's preferred method for the averaging period and data collection samples for bacteria; it does not preclude other methodologies from being used.

28. WQS Provision: Marine water compliance, WAC 173-201A-210(3)(b)(ii)

(ii) When determining compliance with the bacteria criteria in or around small sensitive areas, such as swimming beaches, it is recommended that multiple samples are taken throughout the area during each visit. Such multiple samples should be arithmetically averaged together (to reduce concerns with low bias when the data is later used in calculating a geometric mean) to reduce sample variability and to create a single representative data point.

EPA ACTION: EPA is not taking action on the new language (i.e., the language that is underlined) in this provision because it is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR §131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision addresses how to measure water quality; it does not address the desired condition of the water or change the level of protection afforded to Washington's waters. In addition, this provision merely provides Washington's recommended guidance for compliance determination.

29. WQS Provision: Marine water, more stringent criteria, WAC 173-201A-210(3)(b)(iii)

(iii) As determined necessary by the department, more stringent bacteria criteria may be established for waters that cause, or significantly contribute to, the decertification or conditional certification of commercial or recreational shellfish harvest areas, even when the pre-assigned bacteria criteria for the water is being met.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is simply a general statement that a more stringent site-specific criterion may be authorized at some future date. The Washington Department of Ecology's Responsiveness Summary (*WAC 173-201A Surface Water Quality Standards for the State of Washington*, July 1, 2003) clarified that the State will set site-specific criteria for bacteria in the same way it does for other pollutant parameters. Furthermore, Washington has adopted a provision for developing site-

specific criteria, and EPA approved that provision as consistent with the CWA on January 12, 2005. If Washington develops a site-specific criterion EPA will act on it when the State submits it to EPA for approval.

30. WQS Provision: Marine water, alternative indicator criteria, WAC 173-201A-210(3)(b)(iv)

(iv) Where information suggests that sample results are due primarily to sources other than warm-blooded animals (e.g., wood waste), alternative indicator criteria may be established on a site-specific basis by the department.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is simply a general statement that a more stringent site-specific criterion may be authorized at some future date. Washington has adopted a provision for developing site-specific criteria, and EPA approved that provision as consistent with the CWA on January 12, 2005. If the state develops a site-specific criterion EPA will act on it when the State submits it to EPA for approval.

31. WQS Provision: Marine water miscellaneous uses, WAC 173-201A-210(4)

(4) Miscellaneous uses. The miscellaneous marine water uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

EPA ACTION: EPA approves the formatting and editorial changes associated with the miscellaneous uses in WAC 173-210A-200(4) (i.e., wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics). These changes do not alter the uses that EPA previously approved, and that were in effect in the 1997 WQS. EPA is acting on these changes to the provision to ensure that the editorial changes and reformatted provision are in effect under the CWA. EPA is not reassessing or re-approving the underlying, previously approved, standard.

As stated previously, the formatting used to assign designated uses to waters has been revised in the 2003 WQS. The 1997 WQS used a "Class" format which assigned each water body to a "Class." For example, marine water had four "Classes": Class AA, Class A, Class B, and Class C. Each "Class" contained a suite of designated uses (e.g., recreational use, fish and shellfish use, wildlife habitat, etc.). The 2003 WQS removed the "Class" system and instead applies the designated uses that were contained in a "Class" directly to specific water bodies.

The table below identifies some of the use categories associated with 1997 WQS "Class" format:

Class	Use categories
Class AA	(i) Water supply… …(iv) Wildlife habitat (v) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment) (vi) Commerce and navigation
Class A	(i) Water supply… ….(iv) Wildlife habitat (v) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment) (vi) Commerce and navigation
Class B	(i) Water supply… ….(iv) Wildlife habitat (v) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment) (vi) Commerce and navigation
Class C	(i) Water supply… ….(iii) Recreation (secondary contact recreation, sport fishing, boating and aesthetic enjoyment) (iv) Commerce and navigation

As a result of the reformatting in the 2003 WQS, the term "miscellaneous uses" includes wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics. Additionally, in the 2003 WQS, "sport fishing" is now part of the "harvesting" use designation, and "aesthetic enjoyment" has been renamed "aesthetics."

32. WQS Provision: Marine water general criteria, WAC 173-201A-210(4)(a)

(a) General criteria. General criteria that apply to miscellaneous marine water uses are described in WAC 173-201A-260 (2)(a) and (b), and are for:

(i) Toxic, radioactive, and deleterious materials; and
(ii) Aesthetic values

EPA ACTION: EPA approves this provision as an editorial and formatting change that does not alter the water quality standard that EPA previously approved and that was in effect in the 1997 WQS.

The 1997 WQS was a Class-based format which assigned each water body to a particular "Class." Each "Class" contained a suite of designated uses, and the

criteria necessary to protect the uses. In the 1997 WQS the "toxic, radioactive, and deleterious" narrative criterion, and the "aesthetic" narrative criterion was assigned to each "Class." The 2003 WQS removed the "Class" format and instead applies the designated uses and the criteria that were in the "Class" directly to individual water bodies. This provision makes clear that the same narrative criteria that applied in the Class-based format now apply directly to individual waters. The criteria are described in the referenced provisions (i.e., WAC 173 201A-260(2)(a) and (b)).

EPA is acting on the changes to this provision to ensure that the edited and reformatted provision is in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved standard.

E. TOXIC SUBSTANCES (WAC 173-201A-240)

1. WQS Provision: WAC 173-240 (1): Toxic narratives and criteria

WAC 173-201A-240, Toxic Substances

EPA ACTION: EPA approves the regulatory re-numbering of the toxic substances provision as a minor formatting change that does not alter the underlying toxic criteria that EPA previously approved and that were in effect in the 1997 WQS. EPA is acting on the changes to this provision to ensure that the reformatted numbering of the provision is in effect under the CWA.

2. WQS Provision: WAC 173-240(3)(note f): Shall not exceed the numerical value in total ammonia nitrogen (mg N/L) given by:

$$\text{For salmonids present: } \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

$$\text{For salmonids absent: } \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

EPA ACTION: This note is part of Table 240(3) and is referenced as Washington's freshwater acute criteria for ammonia. The note provides the equations for calculating Washington's acute criteria for ammonia.

EPA approves, subject to completion of ESA consultation, Washington's revised acute ammonia criteria for freshwaters as consistent with the CWA and implementing regulations at 40 C.F.R. ' 131.11(a) which require that criteria be sufficient to protect the designated uses established by the State.

Washington's revised freshwater aquatic life acute ammonia criteria are identified in Table 240(3), note f of its WQS. The criteria consist of two equations: an equation which applies where salmonids are present, and a second equation which applies where salmonids are absent. These equations are consistent with EPA's most recent

CWA Section 304(a) recommended freshwater aquatic life acute ammonia criterion value. (EPA, 1999. *1999 Update of Ambient Water Quality Criteria for Ammonia*. EPA-822-R-99-014) Therefore, EPA approves these criteria as consistent with EPA's 304(a) criteria recommendations and as protective of designated uses in waters of Washington state.

3. **WQS Provision: WAC 173-240(3)(note g):** Shall not exceed the numerical concentration calculated as follows:

Unionized ammonia concentration for waters where salmonid habitat is an existing or designated use:

$$0.80 \div (FT)(FPH)(RATIO)$$

where:
RATIO = 13.5; $7.7 \leq pH \leq 9$
RATIO = $(20.25 \times 10^{(7.7-pH)}) \div (1\ 10^{(7.4-pH)})$; $6.5 \leq pH \leq 7.7$
FT = 1.4; $15 \leq T \leq 30$
FT = $10^{[0.03(20-T)];}$ $0 \leq T \leq 15$
FPH = 1; $8 \leq pH \leq 9$
FPH = $(1+10^{(7.4-pH))} \div 1.25$; $6.5 \leq pH \leq 8.0$

Total ammonia concentrations for waters where salmonid habitat is not an existing or designated use and other fish early life stages are absent:

$$ChronicCriterion = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) x(1.45x10^{0.028(25-A)})$$

where: A= the greater of either T (temperature in degrees Celsius) or 7.
Applied as a thirty-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three years on average. The highest four-day average within the thirty-day period should not exceed 2.5 times the chronic criterion.

Total ammonia concentration for waters where salmonid habitat is not an existing or designated use and other fish early life stages are present:

$$ChronicCriterion = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) xB$$

where: B= the lower of either 2.85, or 1.45 x $10^{0.028 \text{ x } (25-T)}$
T= temperature in degrees Celsius.

Applied as a thirty-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three years on average. The highest four-day average within the thirty-day period should not exceed 2.5 times the chronic criterion.

EPA ACTION: This note is part of Table 240(3) and is referenced as Washington's freshwater chronic criterion for ammonia. This note provides the equations for calculating Washington's chronic criteria for ammonia and where each is applicable. The criteria consist of three equations: 1) an equation which applies where salmonid habitat is an existing or designated use, 2) an equation which applies where salmonid habitat is not an existing or designated use and other fish early life stages are present, and 3) an equation that applies where salmonid habitat is not an existing or designated use and other fish early life stages are absent. In addition, the note contains some conditions applicable to each criteria.

EPA previously approved the equation for waters where salmonid habitat is an existing or designated use. In this action EPA approves the 2003/2006 language changes which do not alter the underlying, previously approved, criteria for salmonid waters. (details in a and b below) EPA also approves the two new chronic ammonia criteria for waters in which salmonid habitat is not an existing or designated use (details in c below).

a. "Shall not exceed the numerical concentration calculated as follows:"
EPA approves this minor language change. Washington replaced the words "value given by" with the words "concentrated calculated as follows." The change in this provision does not alter the meaning from that EPA previously approved, and that was in effect in the 1997 WQS. While EPA is not reassessing or re-approving the underlying, previously approved water quality standard, EPA is acting on this revised language to ensure that the editorial change is in effect under the CWA.

b. "Unionized ammonia concentration for waters where salmonid habitat is an existing or designated use"
EPA approves the minor language changes in the heading of this subpart of the criteria. There are two changes to this sentence. The first change in the sentence adds the words 'unionized ammonia concentration" to this heading. This repeats information also presented in Table 240(3) and note hh and included in the 1997 WQS. Therefore, the substance of this provision was previously approved and this change does not alter the meaning from that EPA previously approved and that was in effect in the 1997 WQS. While EPA is not reassessing or re-approving the underlying, previously approved water quality standard, EPA is acting on this revised language to ensure that the editorial change is in effect under the CWA.

The second change to this sentence specifies that this criteria applies where "salmonid habitat is an existing or designated use". The 1997 criteria applied where "salmonids present". Therefore this change does not alter, from that previously approved, the scope of waters to which this criterion is applied from that which were in effect in the 1997 WQS. While EPA is not reassessing or re-approving the underlying, previously approved water quality standard, EPA is acting on this revision to ensure that the change is in effect under the CWA.

c. "Total ammonia concentrations for waters where salmonid habitat is not an existing or designated use and other fish early life stages are absent:

$$ChronicCriterion = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) x (1.45 x 10^{0.028(25-A)})$$

where: A= the greater of either T (temperature in degrees Celsius) or 7. Applied as a thirty-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three years on average. The highest four-day average within the thirty-day period should not exceed 2.5 times the chronic criterion.

Total ammonia concentration for waters where salmonid habitat is not an existing or designated use and other fish early life stages are present:

$$ChronicCriterion = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) xB$$

where: B= the lower of either 2.85, or 1.45 x $10^{0.028 \text{ x } (25-T)}$
T= temperature in degrees Celsius.

Applied as a thirty-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three years on average. The highest four-day average within the thirty-day period should not exceed 2.5 times the chronic criterion.

EPA approves, subject to completion of ESA consultation, Washington's two revised chronic ammonia criteria for waters where salmonid habitat is not an existing or designated use as consistent with the CWA and implementing regulations at 131.11(a) which require that criteria be sufficient to protect the designated uses established by the State.

EPA's action on the two equations where salmonid habitat is not an existing or designated use, are addressed in this subsection . These equations are consistent with EPA's most recent CWA Section 304(a) recommended freshwater aquatic life chronic ammonia criteria. (EPA, 1999. *1999 Update of Ambient Water Quality Criteria for Ammonia*. EPA-822-R-99-014)

In their water quality standards regulations Washington does not specify where each of these equations will apply. However, at this time, all freshwaters in Washington are designated as salmonid habitat. If, at any time in the future, the salmonid use is removed, at that time the state will need to identify whether early life stages are present or absent, thus delineating which chronic ammonia criterion applies. The State must identify the "fish early life stage" consistent with EPA guidance outlined in the1999 Federal Register Notice (Federal Register Notice *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia*

(64 FR 71974-71980)).[12] These revisions would need to be adopted pursuant to State law and submitted to EPA for review and CWA action as site specific criteria under 40CFR 131.11(b)(1)(ii).

4. WQS Provision: WAC 173 201A-240 (3) Toxics Substances Criteria.

Notes to Table 240(3), footnote dd:

dd. These ambient criteria in the table are for the dissolved fraction. The cyanide criteria are based on the weak acid dissociable method. The metals criteria may not be used to calculate total recoverable effluent limits unless the seasonal partitioning of the dissolved to total metals in the ambient water are known. When this information is absent, these metals criteria shall be applied as total recoverable values, determined by back-calculation, using the conversion factors incorporated in the criterion equations. Metals criteria may be adjusted on a site-specific basis when data are made available to the department clearly demonstrating the effective us of the water effects ratio approach established by USEPA as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983 as supplemented or replaced by USEPA or ecology. Information which is used to develop effluent limits based on applying metals partitioning studies or water effects ratio approach shall be identified in the permit fact sheet developed pursuant to WAC 173-220-060 or WAC 173-226-110, as appropriate, and shall be made available for the public comment period required pursuant to WAC 173-220-050 or WAC 173-226-130(3), as appropriate. Ecology has developed supplemental guidance for conducting water effect ratio studies.

EPA ACTION: EPA approves the changes to this provision which adds the use of Ecology guidance to the approaches and general procedures for developing water effect ratios. The federal water quality standards regulations at 40 CFR 131.36(c)(4)(iii) and 131.11 allow for the development of WERs for metals criteria so long as the resulting criteria protects the designated uses from the toxic effects of the pollutant and are developed using scientifically defensible methods.

EPA reviewed Appendix 6, Chapter 5 of Ecology's Water Quality Program Permit Writers Manual (Revised July 2006) which contains Ecology's current supplemental guidance on Water Effect Ratios. The information contained in Chapter 5 of Appendix 6 is based on scientifically defensible methods and is appropriate in providing guidance in developing WERs and based on our evaluation would be as protective as EPA's guidance for developing WERs. When EPA reviews the application of a WER, we will review any method used to develop each WER to ensure consistency with EPA's guidance. The additional language referring to Ecology guidance does not alter the substance of footnote "dd", but simply provides additional guidance which can be used for conducting WER studies. EPA is not reassessing or re-approving the underlying previously approved standard.

[12] In a December 18, 2007 letter the State agreed it would follow these procedures.

5. **WQS Provision: WAC 173-240(3)(note hh):** The listed fresh water criteria are based on unionized or total ammonia concentrations, while those for marine water are based on total ammonia concentrations. Tables for the conversion of total ammonia to un-ionized ammonia for freshwater can be found in the USEPA's Quality Criteria for Water, 1986. Criteria concentrations based on total ammonia for marine water can be found in USEPA Ambient Water Quality Criteria for Ammonia (Saltwater)-1989, EPA440/5-88-004, April 1989.

EPA ACTION: The intent of the first sentence in this provision was to clarify that the chronic ammonia equations for "waters in which salmonids were not a designated or existing use" were to be expressed as total ammonia. On January 16, 2008 Ecology acknowledged than they made a technical editing error in this sentence and incorrectly expressed the marine ammonia criteria as total ammonia rather than unionized ammonia. The State intends to correct this error during the next revision to their WQS. The correct form for expression of the marine criteria are expressed in Table 240(3). Therefore, EPA is not acting action on this sentence at this time.

F. NATURAL CONDITIONS AND OTHER WATER QUALITY CRITERIA AND APPLICATIONS, WAC 173-201A-260(1)

1. WQS Provision: Natural and irreversible human conditions, WAC 173-201A-260(1)

(1) Natural and irreversible human conditions.

(a) It is recognized that portions of many water bodies cannot meet the assigned criteria due to the natural conditions of the water body. When a water body does not meet its assigned criteria due to natural climatic or landscape attributes, the natural conditions constitute the water quality criteria.
(b) When a water body does not meet its assigned criteria due to human structural changes that cannot be effectively remedied (as determined consistent with the federal regulations at 40 CFR 131.10), then alternative estimates of the attainable water quality conditions, plus any further allowances for human effects specified in this chapter for when natural conditions exceed the criteria, may be used to establish an alternative criteria for the water body (see WAC 173-201A-440).

EPA ACTION: EPA approves WAC 173-201A-260(1)(a) because it is consistent with Section 303(c) of the CWA and its implementing regulations. EPA's basis for approving this provision is provided in more detail below. EPA is not taking action on WAC 173-201A-260(1)(b) because this provision is not a water quality standard under Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.13. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). WAC 173-201A-260(1)(b) simply identifies an intention to develop site specific criteria when a Use Attainability Analysis, consistent with 40 CFR 131.10, results in removing a

designated use. Any criteria developed under this provision would need to be submitted to EPA for approval. Additionally, EPA does not see the basis for a human use allowance (i.e., "plus any further effects specified in this chapter for when natural conditions exceed the criteria") since this is not a natural condition criterion. The basis for EPA's approval of WAC 173-201A-260(1)(a) is provided below:

EPA believes it is acceptable for state or tribal water quality standards to include narrative natural conditions criteria for parameters that naturally occur in the environment, such as temperature, iron, zinc, copper, phosphorus, dissolved oxygen, and suspended sediments. These pollutants may occur in amounts that are higher (or lower for dissolved oxygen) than the more generally applicable numeric criteria. EPA has determined that it is acceptable, under certain circumstances, for water quality criteria to reflect the natural condition of a water body, as an alternative to the generally applicable numeric criteria. The rationale for this is that the designated uses that Washington's rule establishes were supported by the water in its natural condition, prior to any human effects on water quality.[13] Washington's regulations at WAC 173-201A-020 define natural conditions surface water quality that was present before any human caused pollution. For example, historical records (see EPA Temperature Guidance) show that salmonid uses thrived prior to human influence and that natural stream conditions were not inconsistent with salmonid uses. Where a numeric criterion is more stringent than the natural condition and the numeric criterion is more stringent than necessary to protect the use; applying a criterion based on natural condition is an appropriate level of protection for the use.

Several EPA documents have addressed the establishment of water quality criteria based on naturally occurring conditions. A 1997 EPA policy memorandum on natural background from Tudor Davies, Director of the Office of Science and Technology, provided some guidance for states and tribes wishing to establish site specific aquatic life criteria for pollutants at levels equal to natural background concentrations. (See *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background*, November 5, 1997.[14]) EPA also addressed water quality criteria based on natural background conditions in EPA's Advance Notice of Proposed Rule Making (ANPRM) for the Water Quality Standards program. (See 63 FR 36742, 36761 (July 7, 1998), Section III.B.4.d.iii.[15]) The ANPRM discusses considerations regarding site-specific criteria for aquatic life protection that are based on natural conditions, and explains EPA's 1997 memorandum. Although

[13] If for some reason a use is designated that did not exist naturally and that is not supported by the natural condition, then the use could be removed if the requirements of 40 C.F.R. § 131.10(g) are satisfied.

[14] Available at http://www.epa.gov/waterscience/library/wqcriteria/naturalback.pdf

[15] Available at http://www.epa.gov/fedrgstr/EPA-WATER/1998/July/Day-07/w17513.htm

those documents pertained specifically to using a site-specific criteria provision as a means of establishing natural background criteria, they set forth several policy considerations that are relevant to establishing water quality criteria based on natural background.

In WAC 173-201A-260(1)(a), Washington has chosen to provide for alternative criteria to apply based on the natural conditions through a narrative criterion that allows criteria based on the natural condition to supersede the otherwise applicable numeric criterion. Under EPA's regulations criteria are expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use (40 C.F.R. § 131.3(b)). Furthermore, under 40 C.F.R. § 131.11(b)(2), states may establish narrative criteria "to supplement numerical criteria." EPA has determined it is appropriate to use narrative criteria in this manner in order to provide flexibility where naturally occurring water quality is protective of the designated use.

In order to assert that a State's natural condition criteria fully support the uses, EPA evaluates whether the criteria truly reflect conditions absent human impacts and whether the criteria do not allow concentrations of naturally occurring parameters that are also present from past human activities to be considered as part of the natural condition. This is one of the policy considerations identified in the 1997 EPA policy memorandum for criteria based on natural conditions. The narrative criterion that Washington has adopted for natural conditions, WAC 173201A-260(1)(a), and the associated definition, WAC 173-201A-020, meet this test. The narrative criterion provides that the "natural condition" may supersede a numeric criterion that would otherwise apply. The regulation defines "natural condition" as water quality that was present before any human caused pollution. EPA has determined that this definition sufficiently excludes human effects from the "natural condition" that supersedes the numeric criterion.

As discussed in the ANPRM, the 1997 EPA policy memorandum, and the Temperature Guidance, EPA recommends that when estimating natural conditions under state water quality standards, the best available scientific information and techniques should be utilized. Washington has described the methods it will use to determine natural condition for temperature in its letter to EPA dated January 19, 2006. EPA views the methods identified by Washington as the best available scientific methods.

Both the ANPRM and the 1997 EPA policy memorandum suggest that states or tribes provide an opportunity for public notice and comment on natural background determinations. Those documents contemplated the use of natural background determinations in site-specific criteria, which would involve a state revision of its applicable standards and be subject to EPA review and approval. Implementation of WAC 173-201A-260(1)(a) may occur in contexts that would not involve adoption of revised criteria, such as identification of natural condition through a listing of impaired water bodies or development of TMDLs under CWA § 303(d), or in

issuance of NPDES permits under CWA § 402. Each of these contexts require state public process and EPA oversight.

Under the CWA, EPA is required to approve or disapprove Washington's TMDLs and 303(d) listing of impaired waters. If a natural condition determination is inconsistent with Washington's narrative natural condition criterion, EPA would have the authority to disapprove the TMDL or 303(d) listing decision based on its inconsistency with Washington's WQS. In addition, natural background determinations in TMDLs and 303(d) lists would be subject to public notice and comment through the requirements that apply generally to those two types of actions (40 CFR 130.7(c)(1)(ii) and 130.7 (d)(2)).

Under the CWA, EPA has oversight authority of state-issued NPDES permits and EPA has the authority to object and issue a permit if the state permit does not meet all applicable criteria, including appropriate application of the natural conditions criterion. In addition, the public is entitled to notice and an opportunity for comment on any state-issued NPDES permit, which would ensure public review of a natural conditions determination that is made in that context. NPDES permits are subject to judicial review under state procedures for state-issued permits (40 C.F.R. § 123.30) or, following an administrative challenge to EPA under 40 C.F.R. § 124.19, judicial review in federal court under CWA § 509(b), 33 U.S.C. § 1369(b).
In addition to the required public participation processes required by regulations applicable to establishment of TMDLs, 303(d) lists, and issuance of NPDES permits, Washington has agreed that it is necessary to have a mechanism to track natural condition determinations (see Washington's January 19, 2006 letter to EPA). This may occur through an interactive map or WRIA coded list on the internet to link people to these "natural condition" decisions.

2. WQS Provision: Applying water quality criteria, WAC 173-201A-260(3)(a)

(3) Procedures for applying water quality criteria. In applying the appropriate water quality criteria for a water, the department will use the following procedure:

(a) The department will establish water quality requirements for water bodies, in addition to those specifically listed in this chapter, on a case-specific basis where determined necessary to provide full support for designated and existing uses.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision is simply a general statement that additional criteria may be authorized at a future date if necessary.

3. WQS Provision: Upstream actions, WAC 173-201A-260(3)(b)

(b) Upstream actions must be conducted in manners that meet downstream water body criteria. Except where and to the extent described otherwise in this chapter, the criteria associated with the most upstream uses designated for a water body are to be applied to headwaters to protect nonfish aquatic species and the designated downstream uses.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c), and 131.11. This provision identifies the criteria that apply to the headwaters of a stream when the headwater is not specifically designated in WAC 173-201A-602, Table 602. EPA believes that this provision is protective because it ensures that the most sensitive use of the water body is being protected

4. WQS Provision: Multiple criteria, WAC 173-201A-260(3)(c)

(c) Where multiple criteria for the same water quality parameter are assigned to a water body to protect different uses, the most stringent criterion for each parameter is to be applied.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 C.F.R. § 131.11(a) which states "…for waters with multiple use designations, the criteria shall support the most sensitive use."

5. WQS Provision: Criteria at boundaries, WAC 173-201A-260(3)(d)

(d) At the boundary between water bodies protected for different uses, the more stringent criteria apply.

EPA ACTION: EPA approves the change to this provision as a minor editorial change that does not alter the water quality standard that EPA previously approved and that was in effect in the 1997 WQS. This provision has been edited from the water quality standard that was contained in the 1997 WQS at WAC 173-201A-060(1). The 1997 standard stated "At the boundary between waters of different classifications, the water quality criteria for the higher classification shall prevail." Since the 2003 WQS changed the formatting to a "Use based" system from a "Class" based system, the 2003 provision was edited to conform to the "Use based" language used in the 2003 WQS. EPA is not reassessing or re-approving the underlying, previously approved, standard.

6. WQS Provision: Brackish waters, WAC 173-201A-260(3)(e)

(e) In brackish waters of estuaries, where different criteria for the same use occurs for fresh and marine waters, the decision to use the fresh water or the marine water criteria must be selected and applied on the basis of vertically averaged daily maximum salinity, referred to below as "salinity."

(i) The fresh water criteria must be applied at any point where ninety-five percent of the salinity values are less than or equal to one part per thousand, except that the fresh water criteria for bacteria applies when the salinity is less than ten parts per thousand; and

(ii) The marine water criteria must apply at all other locations where the salinity values are greater than one part per thousand, except that the marine criteria for bacteria applies when the salinity is ten parts per thousand or greater.

EPA ACTION: EPA approves the changes to this provision as minor editorial changes that do not alter the water quality standards that EPA previously approved and that were in effect in the 1997 WQS. This provision was contained in the 1997 WQS at WAC 173-201A-060(2). In the 2003 WQS the language has been edited for clarity. EPA is not reassessing or re-approving the underlying, previously approved, standard.

7. WQS Provision: Human created waters, WAC 173-201A-260(3)(f)

(f) Numeric criteria established in this chapter are not intended for application to human created waters managed primarily for the removal or containment of pollution. This special provision also includes private farm ponds created from upland sites that did not incorporate natural water bodies.

(i) Waters covered under this provision must be managed so that:

(A) They do not create unreasonable risks to human health or uses of the water; and

(B) Discharges from these systems meet down gradient surface and ground water quality standards.

(ii) This provision does not apply to waterways designed and managed primarily to convey or transport water from one location to another, rather than to remove pollution en route.

EPA ACTION: EPA approves this provision as consistent with Section 303(c) of the CWA and its implementing regulations at 40 CFR 131.5(a)(2), 131.6(c), 131.10, 131.11, and 131.13. Washington intended this provision to be consistent with the federal regulations at 40 CFR 122.2 which exclude certain waste treatment systems from the definition of waters of the United States (see WAC 170-201A, Surface Water Quality Standards for the State of Washington, Responsiveness Summary, July 1, 2003). To the extent that this provision affects any waters of the United States, the narrative provisions in Washington's water quality standards (e.g., WAC 173-201A-260(2), Toxics and aesthetics criteria), and the narratives within this provision would apply and are protective of the designated uses.

8. WQS Provision: Precision and accuracy, WAC 173-201A-260(3)(g)

(g) When applying the numeric criteria established in this chapter, the department will give consideration to the precision and accuracy of the sampling and analytical methods used, as well as the existing conditions at the time.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision simply outlines factors that should be considered when sampling.

9. WQS Provision: Analytical methods, WAC 173-201A-260(3)(h)

(h) The analytical testing methods for these numeric criteria must be in accordance with the "*Guidelines Establishing Test Procedures for the Analysis of Pollutants*" (*40 CFR Part 136*) or superseding methods published. The department may also approve other methods following consultation with adjacent states and with the approval of the EPA.

EPA ACTION: EPA is not taking action on this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision lists the monitoring methodologies the State requires for testing waters for pollutant levels; it does not describe the desired condition of the water or affect the level of protection afforded to a water body.

10. WQS Provision: Wetlands, WAC 173-201A-260(3)(i)

(i) The primary means for protecting water quality in wetlands is through implementing the antidegradation procedures described in Part III of this chapter.

(i) In addition to designated uses, wetlands may have existing beneficial uses that are to be protected that include ground water exchange, shoreline stabilization, and storm water attenuation.

(ii) Water quality in wetlands is maintained and protected by maintaining the hydrologic conditions, hydrophytic vegetation, and substrate characteristics necessary to support existing and designated uses.

(iii) Wetlands must be delineated using the *Washington State Wetlands Identification and Delineation Manual,* in accordance with WAC 173-22-035.

EPA ACTION: EPA approves the changes to this provision as minor editorial changes that do not alter the water quality standard that EPA previously approved and that was in effect in the 1997 WQS. This same water quality standard was contained in the 1997 WQS at WAC 173-201A-060(10). In the 2003 WQS the term "described in Part III if this chapter" was added to clarify where the antidegradation

provisions are in the 2003 WQS. EPA is not reassessing or re-approving the underlying, previously approved, standard.

G. MIXING ZONES

1. WQS Provision: Mixing Zone, WAC 173-201A-400

WAC 173-201A-400, Mixing Zones

EPA ACTION: EPA approves the regulatory re-numbering of the mixing zone provision as a minor formatting change that does not alter the underlying standard for mixing zones that EPA previously approved and that were in effect in the 1997 WQS. EPA is acting on the re-numbering of this provision to ensure that the reformatted numbering of the provision is in effect under the CWA. (Note: the remainder of the mixing zone provisions in the 2003 WQS have not changed from the provisions contained in the 1997 WQS, therefore, EPA is not reviewing those provisions).

H. SHORT TERM MODIFICATIONS

1. WQS Provision: Short term modification, Introduction, WAC 173-210A-410

The criteria and special conditions established in WAC 173-201A-200 through 173-201A-260 , 173-201A-602 and 173-201A-612 may be modified for a specific water body on a short-term basis (e.g., actual periods of nonattainment would generally be limited to hours or days rather than weeks or months) when necessary to accommodate essential activities, respond to emergencies, or to otherwise protect the public interest, even though such activities may result in a temporary reduction of water quality conditions.

(1) A short-term modification will:

(a) Be authorized in writing by the department, and conditioned, timed, and restricted in a manner that will minimize degradation of water quality, existing uses, and designated uses;

(b) Be valid for the duration of the activity requiring modification of the criteria and special conditions in WAC 173-201A-200 through 173-201A-260, 173-201A-602 or 173-201A-612, as determined by the department;

(c) Allow degradation of water quality if the degradation does not significantly interfere with or become injurious to existing or designated water uses or cause long-term harm to the environment; and

(d) In no way lessen or remove the proponent's obligations and liabilities under other federal, state, and local rules and regulations.

(2) The department may authorize a longer duration where the activity is part of an ongoing or long-term operation and maintenance plan, integrated pest or noxious

weed management plan, water body or watershed management plan, or restoration plan. Such a plan must be developed through a public involvement process consistent with the Administrative Procedure Act (chapter 34.05 RCW) and be in compliance with SEPA, chapter 43.21C RCW, in which case the standards may be modified for the duration of the plan, or for five years, whichever is less. Such long-term plans may be renewed by the department after providing for another opportunity for public and intergovernmental involvement and review.

(3) The department may allow a major watershed restoration activity that will provide greater benefits to the health of the aquatic system in the long-term (examples include removing dams or reconnecting meander channels) that, in the short term, may cause significant impacts to existing or designated uses as a result of the activities to restore the water body and environmental conditions. Authorization will be given in accordance with subsection (2) of this section.

(4) A short-term modification may be issued in writing by the director or his/her designee to an individual or entity proposing the aquatic application of pesticides, including but not limited to those used for control of federally or state listed noxious and invasive species, and excess populations of native aquatic plants, mosquitoes, burrowing shrimp, and fish, subject to the following terms and conditions:

(a) A request for a short-term modification shall be made to the department on forms supplied by the department. Such request shall be made at least thirty days prior to initiation of the proposed activity, and after the project proponent has complied with the requirements of the State Environmental Policy Act (SEPA);

(b) Appropriate public notice as determined and prescribed by the director or his/her designee shall be given, identifying the pesticide, applicator, location where the pesticide will be applied, proposed timing and method of application, and any water use restrictions specified in USEPA label provisions;

(c) The pesticide application shall be made at times so as to:

(i) Minimize public water use restrictions during weekends; and

(ii) Avoid public water use restrictions during the opening week of fishing season, Memorial Day weekend, Independence Day weekend, and Labor Day weekend;

(d) Any additional conditions as may be prescribed by the director or his/her designee.

(5) A short-term modification may be issued for the control or eradication of noxious weeds identified as such in accordance with the state noxious weed control law, chapter 17.10 RCW, and Control of spartina and purple loosestrife, chapter 17.26 RCW. Short-term modifications for noxious weed control shall be included in a water quality permit issued in accordance with RCW 90.48.445, and the following requirements:

(a) The department may issue water quality permits for noxious weed control to the Washington state department of agriculture (WSDA) for the purposes of coordinating and conducting noxious weed control activities consistent with WSDA's responsibilities under chapters 17.10 and 17.26 RCW. Coordination may include noxious weed control activities identified in a WSDA integrated noxious weed management plan and conducted by individual landowners or land managers.
(b) The department may also issue water quality permits to individual landowners or land managers for noxious weed control activities where such activities are not covered by a WSDA integrated noxious weed management plan.

EPA ACTION: EPA has reviewed this provision and has determined that it is not a water quality standard under Section 303(c) of the CWA. Therefore, EPA is not taking action on this provision.

In 2003 Washington revised the Short Term Modification language contained in their 1997 Water Quality Standards. This provision was revised from the 1997 version in the following ways:

(1) The 1997 provision required short term modifications to be limited to "hours or days" whereas the language in 2003 provision does not contain this specific timing limitation;
(2) The 1997 provision allowed Washington to authorize a longer duration for aquatic pesticide application only, where this activity was part of a long-term operation or management plan. The language in the 2003 provision allows Washington to authorize a longer duration for any activity that is part of a long term operation or management plan.
(3) The 2003 revision includes a provision to allow a major watershed activity at the discretion of the State. This provision was not in the 1997 water quality standards.
(4) The requirements for turbidity that were contained in the 1997 provision have been moved to sections WAC 173-201A-200(1)(e)(i) and WAC 173-201A-210(1)(e). In addition, the timing restrictions for the turbidity requirements were removed.

As a result of these revisions, EPA requested that Washington clarify how they implement the Short Term Modification provision. On January 19, 2006, EPA received a letter from Washington which provided the following information:

- The short-term modification provision does not revise the underlying numeric criterion, but does allow short term excursions of the criteria in permits and 401 certifications.
- Short term modification provisions have been included in NPDES permits, 404 permits, and in licensing agreements established under 401 certifications.
- The duration of a criterion exceedance is determined on a case-by-case basis.

EPA had approved the prior provisions in 1997. However, EPA has reconsidered its determination as to whether this provision is a water quality standard under Section 303(c) of the CWA based on Washington's clarification letter. The federal regulation at 40 CFR 131.3(h) defines water quality standards as:

"…provisions of State or federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act."[16]

The Short Term Modification provision does not define or revise the designated use of a water body or the water quality criterion. This provision does not directly affect the level of protection afforded by narrative or numeric water quality criteria, and EPA does not consider these provisions to be water quality standards under Section 303(c) of the CWA. Therefore, EPA is not taking action on these provisions. Rather, the Short Term Modification provisions give the State the discretion to exercise its enforcement authority to allow exceedances of water quality standards for certain activities. For example, provision (1) allows the State to authorize a short term modification for the duration of the activity; provision (2) allows the state to authorize a "longer duration" short term modification where the activity is part of an ongoing operation; provision (3) allows the state to authorize short term modifications for watershed restoration activities; and provisions (4) and (5) allow the State to authorize short term modifications for pesticide and herbicide applications.

Under the CWA, water quality standards are not directly enforceable, rather they are implemented through NPDES or 404 permitting programs, and/or the total maximum daily load (TMDLs) program under CWA Section 303(d). As this provision is not a water quality standard under the CWA it cannot be used in Clean Water Act actions, *eg.* establishing permit limits in NPDES permits or developing wasteload allocations or load allocations in TMDLs. The Short Term Modification provision is in the nature of an enforcement discretion provision under State law.

I. IMPLEMENTATION OF STANDARDS

1. WQS Provision: Compliance schedules, WAC 173-201A-510(4)

WAC 173-201A-<u>510(4)</u> – <u>General</u> allowance for compliance schedules

[16] "Serve the purposes of the Act" means that water quality standards: (1) include provisions for restoring and maintaining chemical, physical, and biological integrity of the State waters; (2) wherever attainable, achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water; and consider the use and value of State waters for public water supplies, propagation of fish and wildlife, recreation, agriculture and industrial purposes, and navigation (see Water Quality Standards Handbook: Second Edition, EPA, August 1994)

EPA ACTION: EPA approves the regulatory re-numbering of this provision, and the inclusion of the word "general" in the title of this provision for compliance schedules as a minor editorial change that does not alter the water quality standards that EPA previously approved and that were in effect in the 1997 WQS. EPA is acting on the changes to this provision to ensure that the edited provision is in effect under the CWA. EPA is not reassessing or re-approving the underlying previously approved standard (Note: the remainder of the general allowance for compliance schedules provision in the 2003 WQS has not changed from the provision contained in the 1997 WQS, therefore, it is not addressed in this document).

J. USE DESIGNATIONS FOR WATERS OF THE STATE

1. WQS Provision: Use designations, fresh waters - WAC 173-201A-600(1)

(1) All surface waters of the state not named in Table 602 are to be protected for the designated uses of: Salmonid spawning, rearing, and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values.

(a) Additionally, the following waters are also to be protected for the designated uses of Core summer salmonid habitat; and extraordinary primary contact recreation:

(i) All surface waters lying within national parks, national forests, and/or wilderness areas;
(ii) All lakes and all feeder streams to lakes (reservoirs with a mean detention time greater than fifteen days are to be treated as a lake for use designation);
(iii) All surface waters that are tributaries to waters designated Core summer salmonid habitat; or extraordinary primary contact; and
(iv) All fresh surface waters that are tributaries to extraordinary quality marine waters (WAC 173-201A-610 through 173-201A-612).

EPA ACTION: EPA approves the default uses identified in this provision because they are consistent with Section 303(c) and 101(a) of the CWA and EPA's implementing regulations at 40 CFR 131.10 which requires States and Tribes to specify the uses to be achieved and protected.

2. WQS Provision: Washington water quality standards and tribal waters – WAC 173-201A-600(2)

(2) The water quality standards for surface waters for the state of Washington do not apply to segments of waters listed in Table 602 that are on Indian reservations.

EPA ACTION: EPA is not acting on this provision because it is not a water quality standard under Section 303(c) of the CWA. Water quality standards are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria necessary to protect the uses (40 CFR 131.3(i)). This provision simply states that Washington water quality standards do not apply to waters on Indian reservations. While EPA is not acting on this provision, we agree that Washington water quality standards are not applicable to waters on Tribal land since Washington does not have jurisdiction over these waters.

3. WQS Provision: Table 600 – WAC 173-201A-600, Table 600

Table 600 (Key to Table 602)

Abbreviation	General Description
Aquatic Life Uses:	(see WAC 173-201A-200(1))
Char	**Char spawning and rearing.** The key identifying characteristics of this use are spawning or early juvenile rearing by native char (bull trout and Dolly Varden), or use by other aquatic species similarly dependent on such cold water. Other common characteristic aquatic life uses for waters in this category include summer foraging and migration of native char; and spawning, rearing, and migration by other salmonid species
Core summer habitat	**Core summer salmonid habitat.** The key identifying characteristics of this use are summer (June 15 – September 15) salmonid spawning or emergence, or adult holding; use as important summer rearing habitat by one or more salmonids; or foraging by adult and subadult native char. Other common characteristic aquatic life uses for waters in this category include spawning outside of the summer season, rearing, and migration by salmonids.
Spawning/Rearing	**Salmonid spawning, rearing, and migration.** The key identifying characteristic of this use is salmon or trout spawning and emergence that only occurs outside of the summer season (September 16 - June 14). Other common characteristic aquatic life uses for waters in this category include rearing and migration by salmonids.
Rearing/ migration only	**Salmonid rearing and migration only.** The key identifying characteristic of this use is use only for rearing or migration by salmonids (not used for spawning).
Redband Trout	**Non-anadromous interior redband trout.** For the protection of waters where the only trout species is a non-anadromous form of self-reproducing interior redband trout (*O. mykis*), and other associated aquatic life.
Warm Water Species	**Indigenous warm water species.** For the protection of waters where the dominant species under natural conditions would be temperature tolerant indigenous nonsalmonid species. Examples include dace, redside shiner, chiselmouth, sucker, and northern pikeminnow.
Recreational Uses:	(see WAC 173-201A-200(2))
Extraordinary Primary Cont.	Extraordinary quality primary contact waters. Waters providing

	extraordinary protection against waterborne disease or that serve as tributaries to extraordinary quality shellfish harvesting areas.
Primary Cont.	Primary contact recreation.
Secondary Cont.	Secondary contact recreation.
Water Supply Uses:	(see WAC 173-201A-200(3))
Domestic Water	Domestic water supply.
Industrial Water	Industrial water supply.
Agricultural Water	Agricultural water supply.
Stock Water	Stock watering.
Miscellaneous Uses:	(see WAC 173-201A-200 (4))
Wildlife Habitat	Wildlife habitat.
Harvesting	Fish harvesting.
Commerce/Navigation	Commerce and navigation.
Boating	Boating.
Aesthetics	Aesthetic values.

EPA ACTION: This table restates the fresh water designated uses contained within Washington's water quality standards and identifies the abbreviations that Washington is using in Table 602. EPA acknowledges that these abbreviations are being used in Table 602. EPA has already provided its determination on the uses (for aquatic life uses see part IV.C.1 of this document; for recreational uses, water supply uses, and miscellaneous uses see EPA's January 15, 2005 letter to the Washington Department of Ecology).

4. WQS Provision: WAC 173-201A-200-600 TABLE 602, Aquatic life uses

Washington provided a revised Table 602 in its 2006 WQS revision (see Appendix A for a copy of Table 602). Table 602 lists fresh waters in the State of Washington and the designated uses applicable to those waters. Today=s action deals with aquatic life use designations (all other designated uses for fresh waters were approved in EPA's January 12, 2005 action).

EPA ACTION: EPA approves the application of the aquatic life designated uses identified in this provision because they are consistent with Section 303(c) of the CWA and EPA's implementing regulations at 40 CFR 131.10. EPA has reviewed Washington's application of the aquatic life designated uses and concluded that the application of the designated uses ensure the protection of aquatic life. The methods used to apply designate uses to water bodies are described below:

Application of "Char spawning and rearing" designated use

Washington converted streams that were designated as Class AA and A water bodies under the 1997 WQS to the "Char spawning and rearing" (hereafter referred to as "Char") use designation if Washington knew or had reason to believe that char spawning and rearing took place in those waters. Washington's methodology is explained below.

When designating streams for "Char" use, Washington used the Washington Department of Fish and Wildlife (WDFW) database that identifies known char spawning areas. Databases are not available that document known early tributary rearing areas, however, Washington determined that early tributary rearing was typically in the same general locations as the known spawning areas. Because the databases documenting char spawning locations are incomplete, Washington could not use them exclusively to depict the locations of this use. Therefore, Washington developed a method to estimate "Char" use based on physical characteristics of Washington streams where char use has been confirmed. Washington studied the locations of known char spawning areas in the WDFW database and found that their occurrence is largely restricted to a relatively narrow range of elevations and stream orders. Washington used this pattern of elevation and stream order to determine which streams would reasonably be expected to be current or potential char habitat.

Washington found that approximately 92% of all known spawning occurs in 1st, 2nd, and 3rd order streams[17]. The following table shows the stream orders of the known spawning areas.

Table - Stream orders of known char spawning streams.

Stream Order	**Known Spawning Streams**		
	East Side	**West Side**	**Combined**
1	18%	24%	21%
2	36%	36%	36%
3	35%	35%	35%
4	10%	5%	8%
5	1%	0%	0%

Washington also analyzed the spawning data in relation to elevation. For each known spawning stream, the lowest elevation was calculated. The following table provides summary information of known spawning steams and their elevations:

Table -- Elevation of known char spawning streams.

Elevation (in feet) of known spawning streams	**East Side**	**West Side**

[17]. The stream order concept is a method of classifying streams. Headwater streams are assigned a stream order of 1. When two 1st order streams join, they form a 2nd order stream. When two second order streams join, they form a 3rd order stream, and so on.

Number of Streams	77	67
Average Elevation	3136	1395
Maximum Elevation	4650	3320
Minimum Elevation	1419	420
Lower 95th percentile	1889	676

Washington also found that the known spawning areas were concentrated at high elevation streams. Washington found that 94% of known spawning areas were above 2000 feet on the east side of the State, and above 700 feet on the west side of the State. Using the information about stream order and elevation of known spawning areas, Washington developed the following factors for determining which streams should be protected for char use:

1. All known spawning areas
2. All streams upstream of know spawning areas
3. All 3rd order streams and their tributaries, if they join a 4th order stream
4. All 2nd order streams and their tributaries will be protected if they join 4th order stream and they are above a stream protected by criteria 1 and 2, above.

In addition to the above process for identifying waters that have the char spawning and rearing designated use, Washington included waters that were identified by EPA as needing this same designation. In general, EPA believes that Washington's methodology is a reasonable approach, however, EPA conducted an analysis and identified other stream segments that needed the "Char" designation. EPA's methodology is discussed below.

EPA conducted an analysis of all waters that were identified by the U.S. Fish and Wildlife Service (USFWS) in their Draft Recovery Plans for Bull Trout[18]. These draft plans include streams USFWS determined to be key bull trout spawning and juvenile rearing habitat for the 124 local bull trout populations in Washington State. There were approximately 92 stream reaches covering an estimated 600 stream miles the USFWS considered key spawning and juvenile rearing habitat that were not designated as "Char" use by the physical/landscape process used by Washington (described above).

EPA reviewed the information contained in USFWS draft recovery plan as well as WDFW Databases for bull trout spawning, and other available information on bull trout use in each of these 92 stream reaches. EPA determined that streams should have the "Char" designated use if: 1) bull trout spawning has been documented based on WDFW data or other sources, 2) bull trout spawning/early tributary juvenile rearing is presumed

[18]. Draft recovery plan for the Columbia River/Klamath River bull trout (Salvelinus confluentus), 2002, U.S. Fish and Wildlife Service. Portland, Oregon; Draft recovery plan for the Coastal-Puget Sound distinct population segment of bull trout (Salvelinus confluentus), Volume I (of II) Puget Sound management unit, May 2004, U.S. Fish and Wildlife Service. Portland, Oregon; Draft recovery plan for the Coastal-Puget Sound distinct population segment of bull trout (Salvelinus confluentus), Volume II (of II) Olympic Peninsula Management Unit, May 2004, U.S. Fish and Wildlife Service. Portland, Oregon.

based on indicators of such use (e.g., documentation of adult spawners, multiple age class use, proximity to known spawning, or isolated juvenile rearing in conjunction with available spawning habitat), or 3) bull trout spawning/early tributary juvenile rearing is likely to occur in the near future because the stream reach is viewed to be within the historic range, has suitable habitat, and is necessary to connect areas of known use and provide sufficient area to support a local bull trout population. Following this procedure, the EPA concluded that approximately 69 of the 92 stream reaches identified in the USFWS draft recovery plans should receive the "Char" use and should be protect with a 12°C temperature criterion. EPA considered the documentation of "Char" use in the other 23 stream reaches as more speculative and without adequate basis to designation these stream segments as char.

Washington concurred with the EPA's findings and included the 69 stream reaches as 'Char' use in its 2006 WQS revisions. All stream reaches upstream of the 'Char' use were also designated as 'Char' to assure that the downstream water bodies attain the 12°C criterion necessary to support their "Char" use designation. All waters that receive a 'Char' use and application of the 12°C water quality standard are shown on Washington's GIS maps (see website: http://www.ecy.wa.gov/pubs/0610038/start.pdf.).

Application of "Core Summer Salmonid Habitat" designated use

As stated previously, Washington converted streams that were designated as Class AA and A water bodies in the 1997 WQS to the "Char spawning and rearing" (hereafter referred to as "Char") designated use if they knew or had reason to believe that char spawning and rearing took place in those waters. Any Class AA waters which were not determined to be "Char" were converted to the "Core summer salmonid habitat" designated use in the 2006 WQS revision. Additionally, Washington converted waters designated as Lake Class in the 1997 WQS to the "Core summer salmonid habitat" designated use in the 2006 WQS revision.

In addition to the above process for identifying waters as "Core summer salmonid habitat" designated use, Washington also included waters that were identified by EPA as needing this designation. In general, EPA believes that Washington's methodology correctly identified many of the water bodies that require a "Core summer salmonid habitat" designated use. However, EPA conducted an analysis of fish distribution data to identify other water bodies that required the application of "Core summer salmonid habitat." The process used by EPA is discussed in detail in EPA's March 22, 2006 partial disapproval letter to Washington (see Appendix D of the March 22, 2006 letter) and is summarized as follows.

EPA analyzed available fish information documenting the types of salmonid uses by life history phase in Washington State. EPA assessed these data in terms of five general fish presence categories where the EPA Temperature Guidance recommends applying a use designation with a 16° C temperature criterion (e.g., Core summer salmonid habitat). These use factors are:

1. moderate-to-high density *summer* juvenile salmon rearing

2. *summer* salmon/steelhead spawning or incubation
3. *summer* adult/sub-adult bull trout foraging and migration
4. *summer* juvenile rearing with current streams temperature at or below 16°C
5. the potential to support moderate-to-high density *summer* juvenile rearing that is important for the recovery of salmonids

The primary data used for this analysis were databases available from WDFW. These databases contain salmon/steelhead distribution and spawning timing data. WDFW Databases do not contain information documenting the timing/location of summer juvenile salmon rearing and summer adult/sub-adult bull trout foraging and migration. Therefore, EPA could not directly determine which streams should be designated for these two uses from WDFW Databases. Besides the WDFW databases, a thorough solicitation for additional information from Indian Tribes and local biologists was conducted to add updates and rectify any gaps or omissions in these databases (see Appendix C and D of EPA's March 22, 2006 Partial Disapproval letter for additional information).

EPA determined that if the WDFW database indicated stream reaches had summer salmon/steelhead spawning or incubation, this was an adequate indication of other important fish uses that occur in these streams during summer (e.g. adult holding, juvenile rearing, bull trout foraging and migration). EPA concluded that the areas depicted as summer salmon/steelhead spawning or incubation in the WDFW GIS database should be assigned the 'Core Summer Salmonid Habitat' designated use and should be protected with a 16°C summer maximum criterion.

The rationale for designating streams with summer salmon/steelhead spawning or incubation as "Core Summer Salmonid Habitat" use, with an associated 16°C temperature criterion, is summarized below.

1. Adult Chinook, pink, sockeye, and chum salmon runs that begin spawning in the summer (i.e., mid-September or earlier) are present at the spawning grounds days to weeks, or sometimes months (e.g., spring Chinook) prior to the onset of spawning. These holding adult salmon require summer maximum temperatures at or below 16°C with declining temperature prior to spawning to protect the adults from disease and maintain the viability of developed gametes (after ovulation in females and after sperm maturation in males)[19] (hereafter referred to as McCullough et al. 2001). The period prior to spawning essentially "straddles" the period of declining temperatures from 16°C to those temperatures protective of the spawning (13°C).

2. Salmon stocks need daily maximum temperatures to decrease to 13°C during the time of spawning for survival and growth of eggs (McCullough et al. 2001). Based on a

[19]. Issue paper 5: Summary of technical literature examining the physiological effects of temperature on salmonids, McCullough, D., S. Spalding, D. Sturdevant, and M. Hicks. 2001, Prepared as Part of USEPA Region 10 Temperature Water Quality Criteria Guidance Development Project. EPA-910-D-01-005, May 2001

review of the temperature patterns in Washington, streams with a 17.5°C summer maximum temperature (i.e., those waters designated as "Salmonid spawning, rearing, and migration") are unlikely to cool to 13°C maximum temperatures by mid-September, but streams with a 16°C summer maximum temperature are more likely to cool to 13°C maximum temperatures by mid-September (Washington Department of Ecology, March 2005, Unpublished Data).

3. Incubating steelhead eggs need maximum temperatures to be at, or below, 13°C through the final stages of egg incubation and fry emergence for good survival and growth (McCullough et al. 2001). Based on a review of the temperature patterns in Washington, streams with a 17.5°C summer maximum temperature are unlikely to have 13°C maximum temperatures needed to protect egg incubation at the end of June, while those rivers with a 16°C summer maximum temperature are more likely to have 13°C maximum temperatures at the end of June (Washington Department of Ecology, March 2005). Steelhead stocks that end spawning in early June will likely have significant number of eggs in the final stages of incubation and fry emerging in late June. Steelhead eggs generally incubate in the gravels for 5-7 week. Time to emergence is also influence by the well known relationship between temperature and embryonic development where the rate of development is faster in warmer water[20].

A review of site-specific spawning and redd information indicates steelhead stocks that end spawning in early June (according to WDFW's SaSI Database) will typically have a substantial portion of spawning activity in mid to late May and occasionally have a few fish that spawn in early June. With the 5-7 week incubation period, steelhead stocks where the SaSI database indicates spawning ends in early June (and thus most spawning occurs in May), will likely have a substantial number of eggs in the final stages of incubation and fry emerging into late June because most of the spawning occurred in May. Some of these fry emerge into July.

4. Salmon fry emerge from the gravel in the spring (and into the summer for steelhead). These juveniles begin rearing near where they emerged from the spawning grounds. Some juvenile Chinook and all steelhead rear over the summer during their first year of life. The waters in the vicinity of the salmon/steelhead spawning areas are important initial rearing areas for these juveniles and often have relatively moderate-to-high density juvenile rearing use throughout the summer.

EPA determined that streams reaches depicted by WDFW as: 1) salmon spawning beginning in mid-September or earlier, *or* 2) steelhead spawning ending in early June or later, should be designated as "Core summer salmonid habitat" use and protected with a 16°C temperature criterion.

[20]. The behavior and ecology of Pacific salmon and trout. University of Washington Press. Seattle, Quinn, T.P., 2005.

There are several situations where EPA relied on site specific information that resulted in exceptions to EPA's general approach of relying on WDFW's Databases for determining where "Core summer salmonid habitat" is the appropriate use. In some situations, the WDFW Databases did not show summer salmon/steelhead spawning or incubation, but EPA did make a "Core summer salmonid habitat" use determination based on one or more of the other factors listed previously (e.g., moderate to high summer juvenile salmon rearing). In other situations, the WDFW Databases showed summer salmon/steelhead spawning or incubation, but EPA did *not* make a "Core summer salmonid habitat" use determination. Details of these specific determinations are explained in EPA's Partial Disapproval Letter contained in Appendix D of this document (see Appendix C and D of EPA's Partial Disapproval Letter for specific determinations).

EPA determined that tributaries that drain into water bodies that EPA identified as needing the "Core Summer Salmonid Habitat' use and 16°C criterion should also have the "Core summer salmonid habitat" use designation. The reason for the extension of the use upstream is to assure that the downstream reaches attain the 16°C criterion necessary to support their "Core summer salmonid habitat" use designation. This is consistent with Washington's approach for tributaries (see WAC 173-201A-600(1)). The only exceptions to this convention are in the lower elevation portion of several rivers. EPA determined it is not necessary for all tributaries to these river segments to have a 16°C criterion, unless summer salmon/steelhead spawning or incubation occurs in the tributary. This applies to: 1) the lower portions of the Nooksack, Skagit, Snohomish, Nisqually, and Klickitat Rivers and 2) the lower portion of four tributaries to the upper Yakima River (Teanaway River, Swauk Creek, Taneum Creek, and Manastash Creek). These lower elevation rivers are unique because EPA has determined that they should be "Core summer salmonid habitat" use to (or nearly to) the mouth and they are glacially fed or drain mountainous regions. EPA believes a few relatively low flow tributaries with a 17.5°C criterion in the lower downstream portion of these rivers will have a negligible impact on attaining the rivers "Core summer salmonid habitat" use designation.

Washington Ecology concurred with the methods used by EPA to apply the 16°C criterion to the specified waters of the State and adopted the results of this analysis into their water quality standards. The waters with the 16°C criterion are shown on maps (website: http://www.ecy.wa.gov/pubs/0610038/start.pdf.) and are listed in the Table 602.

Application of "Salmonid Spawning, Rearing, and Migration" designated use

Washington State converted Class A waters under the 1997 WQS which were not otherwise designated as "Core summer salmonid habitat" waters, to the "Salmonid Spawning, Rearing and Migration" designated use. In addition, Washington included waters that were identified by EPA as needing this same designation. EPA conducted an analysis of fish distribution data to identify other water bodies that warranted the application of the "Core summer salmonid habitat" with an associated 16°C criterion based on use by spawning and rearing salmonids. The process used by EPA is summarized above. Although, the EPA did not conduct a specific analysis to identify waters that should have the "Salmonid spawning, rearing, and migration" designated use with an associated 17.5°C temperature criterion, the EPA analysis resulted in the

identification of many waters that did have the a designated use with a 17.5°C criterion but required the more stringent standard of 16°C based on timing of spawning and incubation. Washington concurred with the EPA and redesignated the waters as "Core summer salmonid habitat" with an associated 16°C criterion. Waters that were not changed are considered correctly designated by EPA as these waters are not used by salmonid species for spawning before mid-September and are not used by incubating eggs after mid-June.

Application of "Salmonid Rearing and Migration Only" designated use
Washington converted waters designated as Class B in the 1997 WQS to the "Salmonid Rearing and Migration Only" designated use in the 2006 WQS. EPA did not analyze the application of this use classification in relation to actual fish distribution and presence by life history phase. EPA believes that this method is generally appropriate. However, during the analysis of the appropriate application of the 16°C criterion, EPA did identify two streams that Washington had classified as "Salmonid Rearing and Migration Only" that actually had salmonid spawning. EPA determined that these streams (Mill Creek in WRIA 32 and the lower Palouse River in WRIA 34) should be assigned the designated use of "Salmonid spawning, rearing, and migration" as spawning/incubation within the mid-September to mid-June timeframe is known to occur in these reaches. Washington concurred with these results and assigned the "Salmonid Spawning, Rearing, and Migration" use to these streams. The total number of stream miles where this designated use is applied is very limited. The only WRIAs that have any stream miles in this use category are WRIAs 9, 10, 22, 32, 34, and 37. EPA considered waters that were not converted to the more stringent 16°C to be correctly classified as either "Salmonid Spawning, Rearing, and Migration" (see section 5.H.5.) or "Salmonid Rearing and Migration Only" use, both of which have an associated 17.5°C temperature criterion.

5. WQS Provision: WAC 173-201A-610,

Use designations -- Marine waters. All marine surface waters have been assigned specific uses for protection under Table 612.

Table 610 (Key to Table 612)

Abbreviation	General Description
Aquatic Life Uses:	(see WAC 173-201A-210(1))
Extraordinary	Extraordinary quality salmonid and other fish migration, rearing, and

	spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.
Excellent	Excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.
Good	Good quality salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.
Fair	Fair quality salmonid and other fish migration.
Shellfish Harvesting:	(see WAC 173-201A-210-(2))
Shellfish Harvest	Shellfish (clam, oyster, and mussel) harvesting.
Recreational Uses:	(see WAC 173-201A-210 (3))
Primary Cont.	Primary contact recreation.
Secondary Cont.	Secondary contact recreation.
Miscellaneous Uses:	(see WAC 173-210A-210 (4))
Wildlife Habitat	Wildlife habitat.
Harvesting	Salmonid and other fish harvesting, and crustacean and other shellfish (crabs, shrimp, scallops, etc.) harvesting.
Com./Navig.	Commerce and navigation.
Boating	Boating.
Aesthetics	Aesthetic values.

EPA ACTION: This table restates the marine water designated uses contained within Washington's water quality standards and identifies the abbreviations that Washington is using in Table 612. EPA acknowledges that these abbreviations are being used in Table 612. EPA has already provided its determination on the uses (for aquatic life uses see part IV.D.1; for shellfish harvesting see IV.D.7; for recreational uses see IV.D.24, and for miscellaneous uses see IV.D.34).

6. WQS Provision: WAC 173-201A-612, TABLE 612

Table 612 lists marine waters in the State of Washington and the designated uses that are applicable to those waters (see Appendix B for a copy of Table 612).

EPA ACTION: EPA is approving the editorial changes to this table as a non-substantive editorial and formatting change that does not alter the use designations that were in effect in the 1997 WQS. EPA is acting on this table to ensure that the reformatted provisions are in effect under the CWA. However, EPA is not reassessing or re-approving the underlying, previously approved, standard. For a detailed description of the editorial and formatting changes for: (1) aquatic life uses see part IV.D.1; (2) shellfish harvesting see IV.D.7; (3) recreational uses see IV.D.24, and (4) miscellaneous uses see IV.D.34.