*Presented below are water quality standards that are in effect for Clean Water Act purposes.*

*EPA is posting these standards as a convenience to users and has made a reasonable effort to assure their accuracy. Additionally, EPA has made a reasonable effort to identify parts of the standards that are not approved, disapproved, or are otherwise not in effect for Clean Water Act purposes.*

# *MAKAH TRIBE*

# *WATER QUALITY STANDARDS*

# *FOR SURFACE WATERS*

***March 2019***

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# PART I - INTRODUCTION

## *SECTION 1. Authority, Purpose and Scope*

(1) The standards are adopted by the Makah Tribal Council pursuant to the sovereign authority of the Makah Indian Tribe as recognized and reserved by the 1855 Treaty of Neah Bay and as delegated to the Council by Article VI of the Constitution and By-laws of the Makah Indian Tribe. These water quality standards covering all surface waters of, on, flowing through, or flowing over the Makah Indian Reservation including the Ozette Reservation, and any other lands held in trust by the United States for the Makah Indian Tribe. These standards shall provide a mechanism for managing and regulating the quality and use of said waters by establishing the water quality goals for specific water bodies, and providing a legal basis for regulatory controls.

(2) Pursuant to Section 518(e) of the Clean Water Act, on December 23, 2003, the United States Environmental Protection Agency (EPA) approved the Makah Tribe's application for treatment in the same manner as a State for the purpose of administering water quality standards under Section 303(c) of the Act and certifying that discharges comply with those water quality standards under Section 401 of the Act. These standards have been adopted pursuant to Sections 303(c) of the Act and in accordance with the authority recognized by EPA in its approval of the Tribe's treatment as a state application. These standards shall serve to protect the public health and welfare, protect and enhance the quality of waters on the Makah Indian Reservation, and fulfill the objectives of the Clean Water Act.

(3) The purposes of these water quality standards are to maintain, protect, and enhance the chemical, physical, biological, and cultural integrity of the surface waters of the Makah Indian Reservation; to promote the health, safety, social welfare, and economic well-being of the Makah Tribe, its people, and all the residents of the Makah Indian Reservation; to achieve a level of water quality that provides for all cultural uses of the water, for the protection of habitat which will promote viable sustainable fisheries, for the propagation of fish, shellfish, wildlife, and other aquatic resources, for recreation in and on the water, and for all existing and designated uses of the water; to promote a watershed approach to management of the reservation's water; and to provide for protection of threatened and endangered species, and their habitat.

(4) These standards are designed to establish the uses, for which the surface waters of the Makah Indian Reservation shall be protected, to prescribe water quality criteria (narrative and numeric), which sustain the designated uses, and to protect existing water quality.

(5) The water use and quality criteria set forth herein are established in conformance with water uses of the surface waters of the Makah Indian Reservation and in consideration of the natural water quality potential and limitations of the same.

## *SECTION 2. Definitions*

**"1B3"** is a biologically based flow that indicates an allowable exceedance of water quality standards once in three years. It is determined by EPA's DFLOW computerized model.

**"1-D-Max"** or **"1 day maximum temperature"** is the highest water temperature reached on any given day. This measure includes maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

**"4B3"** is a biologically based flow that indicates an allowable exceedance of water quality standards for 4 consecutive days once in 3 years. It is determined by EPA's DFLOW computerized model.

**"7-DADMax"** or **"7-day average of the daily maximum temperatures"** is the arithmetic average of seven consecutive 1-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperature 7 days after that date.

**"Acute toxicity"** is a relatively short term lethal or other adverse effect to an organism caused by pollutants, and usually defined as occurring within 4 days for fish and large invertebrates and shorter times for smaller organisms.

**"AKART"** is an acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART shall represent the most current methodology that can reasonably be required for preventing, controlling, or abating the pollutants associated with a discharge. The concept of AKART applies both to point and nonpoint sources of pollution.

**"Appropriate reference site or region"** means a site on the same water body or within the same basin or eco-region that has similar habitat conditions and which is expected to represent the water quality and biological community attainable within the area(s) of concern.

**"Aquatic species"** means any biota that lives in water for at least part of its life cycle.

**"Background"** means the biological, physical, and chemical conditions of a water body, outside and up-slope of the area of influence of the point source discharge, nonpoint source, or instream activity under consideration. For example, in rivers or streams background sampling activity would be upstream from the source or activity, but not upstream from other inflows. If several sources to any water body exist, background sampling would be taken immediately upstream from each source.

**"Bank-full width"** means the distance from bank-to-bank, perpendicular to the stream flow, at the point where the stream reaches high flows approximately every 1.5 to 2 years. Bank-full width is typically determined by a combination of vegetative and channel-form indicators. Vegetative indicators include a change from annual to perennial vegetation, excluding flood-tolerant species. Channel-form indicators include distinct terraces, or the tops of low banks.

**"Best management practices (BMP)"** means physical, structural, and/or managerial practices that, when used singularly or in combination, prevent or reduce pollution, with the goal of meeting applicable water quality standards.

**"Bioaccumulation"** means the process by which a compound is taken up and accumulates in an organism, from elements of its environment, such as water, food, and sediments.

**"Bioaccumulative pollutant"** means any chemical that accumulates in aquatic organisms by a human health bioaccumulation factor greater than 1000 and has the potential upon entering surface waters to cause adverse effects, either by itself or in a form of its toxic transformation product, as a result of that accumulation.

**"Biological assessment"** is an evaluation of the biological condition of a water body using surveys of aquatic community structure, function, diversity, presence or absence, or other direct measurements of resident biota in surface waters.

**"Biological criteria"** means numerical values or narrative expressions that describe the biological integrity or aquatic communities inhabiting waters of a given designated aquatic life use. Biological criteria serve as an index of aquatic community health.

**"Carcinogen"** means any substance or agent that produces or tends to produce cancer in humans. For implementation of this ordinance, the term carcinogen will apply to substances on the EPA lists of A (known human), B (probable human), and C (possible human) carcinogens, as well as any substance which causes a significant increased incidence of benign or malignant tumors in a single, well conducted animal bioassay, consistent with the weight of evidence approach specified in the EPA "Guidelines for Carcinogenic Risk Assessment" as set forth in 51 FR 33992 et seq. as presently published or as subsequently amended or republished.

**"Ceremonial and spiritual water use"** means activities involving Native American spiritual and cultural practices that may involve primary and secondary contact with water as well as consumption of water. This shall include uses of a water body to fulfill cultural, traditional, spiritual, or religious needs of the Makah Indian Tribe, as approved by the Makah Tribal Council.

**"Chronic toxicity"** means a fairly long-term adverse effect to an organism (when compared to the life-span of the organism) caused by or related to changes in feeding, growth, metabolism, reproduction, a pollutant, genetic mutation, etc. Short-term test methods for detecting chronic toxicity may be used.

**"Constructed wetlands"** means those wetlands intentionally created from non-wetland sites for the sole purpose of wastewater or storm water treatment.

**"Created wetlands"** means the wetlands intentionally created from non-wetland sites to produce or replace natural wetland habitat.

**"Critical conditions"** means the physical, chemical, and biological characteristics of the receiving water and point source discharge, nonpoint source, or instream activity that interact to produce the greatest potential adverse impact on aquatic biota and existing or designated water uses, including cultural and spiritual uses.

**"Cultural water use"** means waters which are used to support and maintain the way of life of the Makah People including, but not limited to: use for instream flow, habitat for fisheries and wildlife, and preservation of habitat for berries, roots, medicines, and other vegetation which may be significant to the values of the Makah People.

**"CWA"** means the Federal Clean Water Act (33 USC 1251 et seq.), as amended.

**"Damage to the ecosystem"** means any demonstrated or predicted stress to aquatic or terrestrial organisms or communities of organisms which the department concludes may interfere with the health or survival success or natural structure and functioning of such populations. This stress may be due to alteration in habitat or changes in water temperature, chemistry, turbidity, or other causes. In making a determination regarding ecosystem damage, the department shall consider the cumulative effects of pollutants or incremental changes in habitat that may create stress over the long term.

**"Department"** means the Makah Fisheries Management Department.

**"Director"** means the Director of the Makah Fisheries Management Department.

**"Designated use"** means a use that is specified in water quality standards as a goal for a water body segment, whether or not it is currently being attained.

**"Ephemeral stream"** means a stream that flows only in direct response to precipitation, receiving little or no water from groundwater, snowmelt, or other sources of water storage.

**"EPA"** means the United States Environmental Protection Agency.

**"Existing uses"** means all uses actually attained in the water body on or after November 28, 1975, whether or not they are explicitly stated as designated uses in the water quality standards or presently exist.

**"Fecal coliform"** means that portion of the coliform group which is present in the intestinal tracts and feces of warm-blooded animals as detected by the product of acid or gas from lactose in a suitable culture medium within twenty-four hours at 44.5 plus or minus 0.2 degrees Celsius.

**"Geometric mean"** means either the nth root of a product of n factors or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.

**"Hardness"** means a measure of the calcium and magnesium salts present in water. For the purpose of this ordinance, hardness is measured in milligrams per liter and expressed as calcium carbonate ($CaCO_3$).

**"Intermittent stream"** means a waterway that flows only at certain times of the year or does not flow continuously.

**"Makah Indian Reservation"** – see "**Reservation."**

**"Mean detention time"** is the mean amount of time that water remains in a basin. The time is computed by dividing a reservoir's mean annual minimum total storage by the thirty-day, ten-year, low flow from the reservoir.

**"mg/L"** means milligrams per liter.

**"Migration or translocation"** means any natural movement of an organism or community of organisms from one locality to another locality.

**"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 numeric criteria may be exceeded in a mixing zone as conditioned and provided for in Section 11.

**"Natural conditions"** mean surface water quality that would be present without human-caused pollution. When assessing natural conditions in the headwaters of a disturbed watershed it may be necessary to use the natural background conditions of a neighboring or similar watershed as a reference condition.

**"Near instantaneous and complete mix"** means no more than a 10 percent difference in bank-to-bank concentrations within a longitudinal distance not greater than 2 bank-full widths.

**"Nonpoint source"** means pollution that enters any waters from any dispersed land-based or water-based activities including, but not limited to, atmospheric deposition; surface water runoff from agricultural lands, urban areas, or forest lands; subsurface or underground sources; or discharges from boats or marine vessels not otherwise regulated under the National Pollutant Discharge Elimination System program.

**"NPDES"** means National Pollutant Discharge Elimination System, the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing water discharge permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the CWA.

**"Ordinance"** means the Water Quality Standards of the Makah Indian Tribe, as set forth within this regulation.

**"ppm"** means parts per million.

**"Permit"** means a document issued pursuant to tribal code or federal laws (such as NPDES; CWA, Section 401; CWA, Section 404) specifying the waste treatment and control requirements and waste discharge conditions.

**"Persistent pollutant"** means a pollutant that is slow to or does not decay, degrade, transform, volatilize, hydrolyze, or photolyze; specifically, a chemical found in the water column, sediment, or biota, with a half-life equal to or greater than two months.

**"pH"** means the negative logarithm of the hydrogen ion concentration.

**"Point source"** means any discernible, confined and discrete conveyance including, but not limited to, any pipe, ditch, channel, sewer, tunnel, conduit, well, discrete fissure, container, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

**"Pollutant"** includes, but is not limited to dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 USC 2011 et seq.)), heat, wrecked or discarded equipment, oil, mine tailings, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

**"Pollution"** includes such contamination, or other alteration of the physical, chemical, or biological properties of any waters of the tribe, including change in temperature, taste, color, turbidity, or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive, or other substance, or any exotic biota into any waters of the tribe as will or is likely to create a nuisance or impair any beneficial use of such waters.

**"Primary contact recreation"** means activities where a person would have direct contact with water to the point of complete submergence including, but not limited to, skin diving, swimming and water skiing.

**"Receiving waters"** means any water course or water body that receives treated or untreated wastewater.

**"Reservation"** means all lands and waters within the exterior boundaries of the Makah Indian Reservation as set forth in the Treaty of January 31$^{st}$, 1855, between the Makah Indian Tribe and the United States of America and in the Executive Order of October 21, 1873; all lands within the exterior boundaries of the Ozette Reservation, set apart by Executive Order of April 12$^{th}$, 1893, and declared by Congress in Pub.L. 91-489 (Oct. 22, 1970) to be held in trust for the use and benefit of the Makah Indian Tribe; and any additions or subtractions thereof which are further recognized by the governments of both the Makah Tribe and the United States of America.

**"Resident aquatic community"** means native aquatic life expected to exist in a particular habitat when water quality standards for a specific ecoregion, basin, or water body are met. This shall be established by accepted biomonitoring techniques.

**"Secondary contact recreation"** means activities where a person's water contact would be limited (wading or fishing) to the extent that bacterial infections of the eyes, ears, respiratory, or digestive systems or urogenital areas would normally be avoided.

**"Storm water"** means that portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**"Surface waters of the tribe"** include lakes, rivers, ponds, streams (including intermittent and ephemeral streams), wetlands, inland waters, saltwater, and all other surface waters and watercourses within the exterior boundaries of the reservation.

**"Temperature"** means water temperature expressed in degrees Celsius (° C).

**"Threatened or endangered species (listed species)"** means any species of fish, wildlife, or plant that has been determined to be endangered or threatened under Section 4 of the Endangered Species Act. Listed species are found in 50 CFR 17.11–17.12 and 227.4.

**"Toxicity"** means acute or chronic toxicity.

**"Toxicity test"** means a test using selected organisms to determine the acute or chronic effects of a pollutant or whole effluent.

**"Toxic pollutant"** means those pollutants, or combinations of pollutants which after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to EPA or the department, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring.

**"Tribal Council"** means the governing body of the Makah Indian Tribe exercising those sovereign powers recognized and reserved by the Treaty of January 31$^{st}$, 1855, between the Makah Indian Tribe and the United States of America, as delegated by the Constitution and By-laws of the Makah Indian Tribe approved on May 16, 1936 by the Secretary of the Interior.

**"Tribe"** means the Makah Indian Tribe.

**"Turbidity"** means the clarity of water expressed as nephelometric turbidity units (NTU) and measured with a calibrated turbidimeter.

**"μg/L"** means micrograms per liter.

**"Wastes"** include sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive, or other substances that will or may cause pollution or tend to cause pollution of any water body.

**"Water quality"** means the chemical, physical, biological, and cultural characteristics of a water body.

**"Wetland"** means any area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**"Wildlife habitat"** means the waters of the tribe used by, or that directly or indirectly provide food support to fish, other aquatic life, and wildlife for any life history stage or activity.

**"Zone of initial dilution"** means the region of initial mixing surrounding or adjacent to the outfall pipe or diffuser port, in which dilution is caused by the momentum and buoyancy of the discharge.

## *SECTION 3. General Considerations*

The following criteria shall apply to the water quality criteria and classifications set forth herein:

(1) All waters shall be free from pollutants in concentrations or combinations that do not protect the most sensitive use of the water body, except as provided for under Mixing Zones (Section 17).

(2) Whenever the natural conditions of surface waters of the tribe are of a lower quality than the assigned criteria, the department may determine that the natural conditions shall constitute the water quality criteria, subject to Tribal Council approval, provided, however, that any such determination shall have a documented scientifically defensible basis. The department may, at its discretion, determine a natural condition for one or more seasonal or shorter time period(s) to reflect variable ambient conditions. Site-specific criteria based on natural conditions shall also be subject to public review and EPA approval.

(3) At the boundary between waters of different classifications, the more stringent water quality criteria shall prevail. When a distinction cannot be made among surface water, wetlands, groundwater, or sediments, the applicable standards shall depend on which existing or designated use is, or could be, adversely affected. If existing or beneficial uses of more than one resource are affected, the most protective criteria shall apply.

(4) In brackish waters of estuaries, where the fresh and marine water quality criteria differ within the same classification, the aquatic life criteria apply as follows:

    (a) For waters in which the salinity is equal to or less than one part per thousand 95 percent or more of the time, the applicable criteria are the fresh water criteria.

(b) For waters in which the salinity is equal to or greater than ten parts per thousand 95 percent or more of the time, the applicable criteria are the marine water criteria.

(c) For waters in which the salinity is between one and ten parts per thousand, the applicable criteria are the more stringent of the fresh water or the marine water criteria.

(5) Subject to review and approval by the Tribal Council and EPA, the department may revise criteria on a reservation-wide or water body specific basis as needed to protect aquatic life, human health, cultural resources, and other existing and designated uses, and to increase the technical accuracy of the criteria being applied. The department may propose revised criteria only following public notice and an opportunity to comment.

# PART II - DESIGNATED USES AND CRITERIA

## *SECTION 4. Freshwater Designated Uses and Criteria*

The following uses are designated for protection of the fresh surface waters of the Makah Indian Reservation:

(1) *Characteristic uses.* Characteristic uses shall include, but not be limited to the following:

(a) **Ceremonial and religious**.

(b) **Cultural**.

(c) **Water supply** (domestic, industrial, agricultural).

(d) **Aquatic Life Uses.** The categories for aquatic uses are:

(i) *Salmon and trout spawning.* This category applies to waterbodies that are protected *where* and *when* spawning, egg incubation, and fry emergence for native species of salmon and trout *occurs* or *may occur*. This use and the associated criteria are to be applied seasonally, from February 15th through July 1st.

(ii) *Salmon and trout rearing and migration.* This category applies to waterbodies that are protected *where* and *when* rearing and migration by native species of salmon and trout *occurs* or *may occur*. This use and the associated criteria are to be applied year round.

(e) **Wildlife habitat**.

(f) **Recreation uses**. The recreational uses are:

(i) Primary contact recreation.

(ii) Secondary contact recreation.

(g) **Commerce and navigation**.

(2) *Water quality criteria*.

(a) **General characteristic.** The water quality of the Makah Reservation shall meet or exceed the requirements for all or substantially all uses.

(b) **Aquatic life freshwater temperature criteria**.

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

(ii) Temperature measurements should represent the waterbody segment as a whole and should:

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

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

(iii) When a waterbody's temperature is warmer than the criteria in Table 1, and that condition is due to natural conditions, then human actions considered cumulatively (including both point and nonpoint sources) may not cause the 7-DADMax temperature of that waterbody to increase more than 0.25°C.

(iv) Temperatures must be maintained to fully protect uses of downstream waters.

(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 these standards:

(A) Moderately acclimated (16-20°C) 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 and the 1-day maximum (1-DMax) temperature at or below 23°C.

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

(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 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 and the adjacent downstream water temperatures are 3°C or more cooler.

**Table 1. Aquatic Life Temperature Criteria in Freshwater**

| Category | Highest 7-DADMax |
|---|---|
| Salmon and trout spawning | 13°C |
| Salmon and trout rearing and migration | 16°C |

(c) **Dissolved oxygen**.

(i) Freshwater-dissolved oxygen shall exceed the criteria listed in Table 2. Dissolved oxygen is measured in milligrams per liter (mg/L).

(ii) Unless site-specific knowledge of the patterns of aquatic life use in a waterbody indicate otherwise, dissolved oxygen measurements should represent the water segment as a whole and should:

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

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

(C) Dissolved oxygen must be maintained to fully protect all existing and designated aquatic life uses of downstream waters.

**Table 2. Aquatic Life Dissolved Oxygen in Freshwater**

| Category | 7-DADMean | Minimum |
|---|---|---|
| Salmon and trout spawning | 11mg/L | 9.5 mg/L |
| Salmon and trout rearing and migration | 8.5 mg/L | 6.5 mg/L |

(d) **Total dissolved gas.** Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection.

(e) **pH**.

(i) Measurement of pH is expressed as the negative logarithm of the hydrogen ion concentration. Table 3 lists the pH levels for each of the aquatic life use categories.

**Table 3. Aquatic Life pH Criteria in Freshwater**

| Use Category | pH Units |
|---|---|
| Salmon and trout spawning | 6.5-8.5, human variation within the above range of less than 0.2 unit |
| Salmon and trout rearing, and migration | 6.5-8.5 human variation within the above range of less than 0.5 units |

(f) **Turbidity**. Turbidity is measured in "nephelometric turbidity units" or "NTUs" and is specified for freshwater in Table 4.

**Table 4. Aquatic Life Turbidity Criteria in Fresh Water**

| Category | NTUs |
|---|---|
| Salmon and trout spawning | Turbidity shall not exceed:<br>(i) 5 NTU over background when the background is 50 NTU or less;<br>or<br>(ii) A 10 percent increase in turbidity when the background turbidity is more than 50 NTU. |
| Salmon and trout rearing and migration | Turbidity shall not exceed:<br>(i) 5 NTU over background when the background is 50 NTU or less;<br>or<br>(ii) A 10 percent increase in turbidity when the background turbidity is more than 50 NTU. |

(g) **Recreation uses**.

**Table 5. Water Contact Recreation Bacteria Criteria in Fresh Water**

| Category | Criteria Element | Magnitude | |
|---|---|---|---|
| | Indicator | GM (organisms/100 mL) | STV (organisms/100 mL) |
| Primary contact recreation | Enterococci | 30 | 110 |

| | | | |
|---|---|---|---|
| Secondary contact recreation | Enterococci | 165 | |
| **Duration and Frequency:** The water body GM should not be greater than the selected GM magnitude in any 90-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 90-day interval. | | | |
| **GM**: geometric mean; **STV**: statistical threshold value | | | |

(i) 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.

(ii) It is preferable to average by season and include five or more data collection events within a period of 90 days.

(iii) When averaging bacteria sample data for comparison to the geometric mean criteria, the period of averaging should not exceed 90 days, and should have sample collection dates well distributed throughout the averaging period.

(iv) Beach average: When determining compliance with the geometric mean and single sample bacteria criteria in or around small sensitive areas, such as popular swimming beaches, it is recommended that at least 3 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.

(v) The Department may, at its discretion, establish site-specific bacteria criteria for rivers and streams 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 river or stream are being met.

(vi) 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.

(h) **Toxic, radioactive, or deleterious material concentrations** shall be below those that have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.

(i) **Cultural, ceremonial, religious, and aesthetic values** shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

(3) *Applicability of water quality criteria to freshwater use designations.*

**Table 6. Applicability of Criteria to Freshwater Use Designations**

| Criteria | Ceremonial And Religious | Cultural | Water Supply | Salmon Spawning | Salmon Rearing And Migration | Wildlife | Primary Contact Recreation | Secondary Contact Recreation | Commerce And Navigation |
|---|---|---|---|---|---|---|---|---|---|
| Aquatic Life Temperature | | | | X | X | | | | |
| Dissolved Oxygen | | | | X | X | | | | |
| Total Dissolved Gas | | | | X | X | | | | |
| pH | | | | X | X | | | | |
| Turbidity | | | | X | X | | | | |
| Water Contact Bacteria | X | X | X | | | | X | X | X |
| Narrative Criteria | X | X | X | X | X | X | X | X | X |
| Biological Criteria | X | X | X | X | X | X | X | X | X |
| Wildlife Criteria | X | X | X | X | X | X | X | X | X |
| Instream Flow | X | X | X | X | X | X | X | X | X |
| Toxic Substances: | | | | | | | | | |
| CMC | X | X | X | X | X | X | X | X | X |
| CCC | X | X | X | X | X | X | X | X | X |
| Organisms | X | X | X | | | | X | X | |
| Water + Organisms | | | X | | | | | | |
| Radioactive Substances | X | X | X | | | | X | X | X |

## *SECTION 5. Marine Water Designated Uses and Criteria*

The following criteria shall apply to the various use designations of surface waters of the Makah Indian Reservation:

(1) *Use designations*. Use designations shall include, but not be limited to the following:

(a) **Ceremonial and religious.**

(b) **Cultural.**

(c) **Aquatic Life Uses.**

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

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

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

(d) **Wildlife habitat.**

(e) **Recreation.**

(i) *Primary contact recreation.*

(ii) *Secondary contact recreation.*

(f) **Commerce and navigation.**

(2) *Water quality criteria*.

(a) **General characteristic**. The water quality of the Makah Reservation shall meet or exceed the requirements for all or substantially all uses.

(b) **Aquatic Life Marine Temperature Criteria**. Temperature shall not exceed the criteria listed in Table 6 due to human activities. When natural conditions exceed the criteria listed in Table 6, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.25°C.

**Table 7. Aquatic Life Temperature Criteria in Marine Water**

| Category | Highest 1- Dmax |
|---|---|
| Extraordinary quality | 13°C (55°F) |
| Excellent quality | 16°C (61°F) |
| Good quality | 19°C (66°F) |

(c) **Dissolved oxygen**. Dissolved oxygen concentrations are measured as a 1-day minimum in milligrams per liter. (Except where noted.)

(i) *Marine water* - dissolved oxygen shall exceed the criteria listed in Table 7. When natural conditions, such as upwelling, occur, causing the dissolved oxygen to be depressed near or below the criteria listed in Table 7, natural dissolved oxygen levels may be degraded by up to 0.2 mg/L by human caused activities.

(ii) Dissolved oxygen measurements should be taken to represent the dominant aquatic habitat of the monitoring site. Samples should not be taken from shallow stagnant backwater areas, within isolated thermal refuges, at the surface, or at the waters edge.

**Table 8. 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 |

(d) **pH**. Shall be within range of 7.0 to 8.5 with a human-caused variation within a range of less than 0.2 units.

(e) **Turbidity**. Turbidity is measured in "nephelometric turbidity units" or "NTUs" and is specified for marine waters in Table 8.

**Table 9. Aquatic Life Turbidity Criteria in Marine Waters**

| Category | NTUs |
|---|---|
| Extraordinary quality | Turbidity shall not exceed:<br>(i) 5 NTU over background when the background is 50 NTU or less; or<br>(ii) Have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU. |
| Excellent quality | Same as above |
| Good quality | Turbidity shall not exceed:<br>(i)10 NTU over background when the background is 50 NTU or less; or<br>(ii) A 20 percent increase in turbidity when the background turbidity is more than 50 NTU. |

(f) **Aquatic life bacteria criteria**. Table 9 lists the bacteria criteria to protect humans who consume aquatic life in marine waters.

**Table 10. Aquatic Life Bacteria Criteria in Marine Waters**

| Category | Criteria |
|---|---|
| Extraordinary quality | Fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100mL, 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/100mL. |
| Excellent quality | Same as above |
| Good quality | Same as above |

(g) **Toxic, radioactive, or deleterious material concentrations** shall be below those that have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.

(h) **Cultural, ceremonial, religious, and aesthetic values** shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

(i) **Recreation**.

**Table 11. Water Contact Recreation Bacteria Criteria in Marine Water**

| Category | Criteria Element | Magnitude | |
|---|---|---|---|
| | Indicator | GM (organisms/100 mL) | STV (organisms/100 mL) |
| Primary contact recreation | Enterococci | 30 | 110 |
| Secondary contact recreation | Enterococci | 160 | |
| **Duration and Frequency:** The water body GM should not be greater than the selected GM magnitude in any 90-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 90-day interval. | | | |
| **GM**: geometric mean; **STV**: statistical threshold value | | | |

(i) 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.

(ii) It is preferable to average by season and include five or more data collection events within a period of 90 days.

(iii) When averaging bacteria sample data for comparison to the geometric mean criteria, the period of averaging should not exceed 90 days, and should have sample collection dates well distributed throughout the reporting period.

(iv) Beach average: When determining compliance with the geometric mean and single sample bacteria criteria in or around small sensitive areas, such as popular swimming beaches, it is recommended that at least 3 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.

(v) The Department may, at its discretion, establish site-specific bacteria criteria for marine 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 marine waters are being met.

(vi) 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.

(3) Applicability of water quality criteria to freshwater use designations.

**Table 12. Applicability of Criteria to Marine Use Designations**

| Criteria | Ceremonial And Religious | Cultural | Extraordinary Quality Aquatic Life | Excellent Quality Aquatic Life | Good Quality Aquatic Life | Wildlife | Primary Contact Recreation | Secondary Contact Recreation | Commerce And Navigation |
|---|---|---|---|---|---|---|---|---|---|
| Aquatic Life Temperature | | | X | X | X | | | | |
| Dissolved Oxygen | | | X | X | X | | | | |
| pH | | | X | X | X | | | | |
| Turbidity | | | X | X | X | | | | |
| Aquatic Life Bacteria | | | X | X | X | | | | |
| Water Contact Bacteria | X | X | | | | | X | X | X |
| Narrative Criteria | X | X | X | X | X | X | X | X | X |
| Biological Criteria | X | X | X | X | X | X | X | X | X |
| Wildlife Criteria | X | X | X | X | X | X | X | X | X |
| Toxic Substances: | | | | | | | | | |
| CMC | X | X | X | X | X | X | X | X | X |
| CCC | X | X | X | X | X | X | X | X | X |
| Organisms | X | X | X | X | X | | X | X | |
| Radioactive Substances | X | X | | | | | X | X | X |

## *SECTION 6. Water Quality Standards for Wetlands*

(1) All wetlands within the exterior boundaries of the reservation, which are not constructed wetlands, are subject to the Narrative Criteria (Section 8), Antidegradation Policy (Section 16), and Narrative Toxic Substances Criterion provisions (Section 12) within this ordinance.

(2) Water quality in wetlands shall be maintained at naturally occurring levels, within the natural range of variation for the individual wetland.

(3) Physical and biological characteristics shall be maintained and protected by:

(a) Maintaining hydrological conditions, including hydroperiod, hydrodynamics, and natural water temperature variations;

(b) Maintaining the native hydrophytic vegetation; and

(c) Maintaining substrate characteristics necessary to support existing and designated uses.

(4) Wetlands shall not be used in lieu of storm water treatment, except as specified by subsection 7, below. Storm water shall be treated before discharge to a wetland.

(5) Point and nonpoint sources of pollution shall not cause destruction or impairment of wetlands except where authorized by the department and the Tribal Council and approved by the United States Army Corps of Engineers under Section 404 of the CWA.

(6) Wetlands shall not be used as repositories or treatment systems for wastes from human sources, except as specified by subsection 7, below.

(7) Wetlands intentionally created from non-wetland sites for the sole purpose of wastewater or storm water treatment (constructed wetlands) are not considered "surface waters of the tribe" and are not subject to the provisions of this section.

## *SECTION 7. Lake Designated Uses and Criteria*

(1) *General characteristic*. Water quality of these criteria shall meet or exceed the requirements for all or substantially all uses.

(2) *Characteristic uses*. Characteristic uses shall include, but not be limited to the following:

(a) **Ceremonial and religious**.

(b) **Cultural**.

(c) **Water supply** (domestic, industrial, agricultural).

(d) **Fish.**

(i) ***Salmon and trout spawning***. For the protection of spawning of aquatic life.

(ii) ***Salmon and trout rearing and migration*.** For the protection of rearing and migration of salmon and trout and other associated aquatic life.

(e) **Wildlife habitat**.

(f) **Recreation**.

(i) ***Primary contact recreation***.

(ii) ***Secondary contact recreation***.

(g) **Commerce and navigation**.

(3) *Water quality criteria*.

(a) **Recreation Uses**.

**Table 13. Water Contact Recreation Bacteria Criteria in Lakes**

| Category | Criteria Element | Magnitude | |
|---|---|---|---|
| | Indicator | GM (organisms/100 mL) | STV (organisms/100 mL) |
| Primary contact recreation | Enterococci | 30 | 110 |
| Secondary contact recreation | Enterococci | 165 | |
| **Duration and Frequency:** The water body GM should not be greater than the selected GM magnitude in any 90-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 90-day interval. | | | |
| **GM**: geometric mean; **STV**: statistical threshold value | | | |

(i) 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.

(ii) It is preferable to average by season and include five or more data collection events within a period of 90 days.

(iii) When averaging bacteria sample data for comparison to the geometric mean criteria, the period of averaging should not exceed 90 days, and should have sample collection dates well distributed throughout the reporting period.

(iv) Beach average: When determining compliance with the geometric mean and single sample bacteria criteria in or around small sensitive areas, such as popular swimming beaches, it is recommended that at least 3 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.

(v) The Department may, at its discretion, establish site-specific bacteria criteria for lakes 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 lake are being met.

(vi) 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.

(b) **Dissolved oxygen** no measurable decrease from natural conditions.

(c) **Total dissolved gas** shall not exceed 110 percent of saturation at any point of sample collection.

(d) **Temperature**.

(i) No measurable change from natural conditions.

(e) **pH**.

(i) No measurable change from natural conditions.

(f) **Turbidity** shall not exceed 5 NTU over background conditions.

(g) **Toxic, radioactive, or deleterious material concentrations** shall be below those that have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.

(h) **Cultural, ceremonial, religious, and aesthetic values** shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

(4) Applicability of water quality criteria to wetland use designations.

**Table 14. Applicability of Criteria to Lake Use Designations**

| Criteria | Ceremonial And Religious | Cultural | Water Supply | Salmon & Trout Spawning | Salmon & Trout Rearing & Migration | Wildlife | Primary Contact Recreation | Secondary Contact Recreation | Commerce And Navigation |
|---|---|---|---|---|---|---|---|---|---|
| Water Contact Bacteria | X | X | X | | | | X | X | X |
| Dissolved Oxygen | | | | X | X | | | | |
| Total Dissolved Gas | | | | X | X | | | | |
| Aquatic Life Temperature | | | | X | X | | | | |
| pH | | | | X | X | | | | |
| Turbidity | | | | X | X | | | | |
| Narrative Criteria | X | X | X | X | X | X | X | X | X |
| Biological Criteria | X | X | X | X | X | X | X | X | X |
| Wildlife Criteria | X | X | X | X | X | X | X | X | X |
| Instream Flow | X | X | X | X | X | X | X | X | X |
| Toxic Substances: | | | | | | | | | |
| CMC | X | X | X | X | X | X | X | X | X |
| CCC | X | X | X | X | X | X | X | X | X |
| Organisms | X | X | X | | | | X | X | |
| Water + Organisms | | | X | | | | | | |
| Radioactive Substances | X | X | X | | | | X | X | X |

## *SECTION 8. Narrative Water Quality Criteria*

All surface waters of the tribe, including those within designated mixing zones, shall be free from substances attributable to point source discharges, nonpoint sources, vessel discharges, or instream activities in accordance with the following:

(1) *Floating solids, oil, and grease.* All waters shall be free from visible oils, including crude oil and petroleum, scum, foam, grease, and other floating materials and suspended substances of a persistent nature resulting from anthropogenic causes.

(2) *Color*. True color-producing materials resulting from anthropogenic causes shall not create an aesthetically undesirable condition; nor should color inhibit photosynthesis or otherwise impair the existing and designated uses of the water.

(3) *Odor and taste*. Water contaminants from anthropogenic causes shall be limited to concentrations that will not impart unpalatable flavor to fish, or result in offensive odor or taste arising from the water, or otherwise interfere with the existing and designated uses of the water.

(4) *Nuisance conditions.* Nutrients or other substances from anthropogenic causes shall not be present in concentrations which will produce objectionable algal densities or nuisance aquatic vegetation, result in a dominance of nuisance species, result in acute toxicity to any aquatic biota or wildlife, adversely affect public health or safety, or otherwise cause nuisance conditions.

(5) *Turbidity*. Turbidity shall not be at a level to potentially impair designated uses or aquatic biota.

(6) *Bottom deposits*. All surface waters of the tribe shall be free from anthropogenic contaminants that may settle and have a deleterious effect on the aquatic biota or that will significantly alter the physical or chemical properties of the water or the bottom sediments.

(7) *Erosion.* All waters shall be free from deleterious levels of soil particles resulting from erosion of land involved in earthwork, such as construction of public works, highways, or commercial or industrial developments, or the cultivation and management of agricultural or forested lands.

## *SECTION 9. Biological Criteria*

(1) All surface waters of the tribe shall be of sufficient quality to support aquatic biota without detrimental changes in the resident aquatic communities.

(2) Waters of the tribe shall be free from substances, whether attributable to point source discharges, nonpoint sources, or instream activities, in concentrations or combinations which would impair the structure or limit the function of the resident aquatic community as it naturally occurs.

(3) The structure and function of the resident aquatic community will be measured by biological assessment methods approved by the department.

(4) Determination of impairment or limitation of the resident aquatic community may be based on a comparison with the aquatic community found at an appropriate reference site or region.

(5) Waters of the tribe shall be free from non-native forms of aquatic biota in concentrations which would alter the habitat, impair the structure or limit the function of the resident aquatic community as it naturally occurs, or which would be detrimental to the health or safety of the tribe, or wildlife that depends upon said waters for food or other support.

## *SECTION 10. Wildlife Criteria*

All surface waters of the tribe shall be of sufficient quality to protect and support all life stages of resident and/or migratory wildlife species which live in, on, or near the waters of the Makah Indian Reservation.

## *SECTION 11. Instream Flow*

Except as necessary to meet beneficial uses expressly authorized by the Council, those flows and levels, including tributary surface and ground waters, necessary to maintain the physical, chemical, biological, and cultural integrity of the Makah Reservation's waters shall be maintained and restored to the fullest extent practicable in order to maintain and restore existing and designated uses. Such uses shall include migration, spawning, incubation, and rearing by anadromous fish. The Makah Tribe will, from time-to-time, set habitat-specific flows and levels for existing and restored anadromous fish habitat within the reservation boundaries.

## *SECTION 12. Toxic Substances*

(1) Toxic substances shall not be introduced into waters of the tribe in concentrations which have the potential either singularly or cumulatively to adversely affect existing and designated or characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or otherwise adversely affect public health or safety, as determined by the department, except as allowed under Mixing Zones (Section 17).

(2) The department may employ or require chemical testing, acute and/or chronic toxicity testing, and biological assessments, as appropriate, to monitor and evaluate compliance with subsection (1) of this section and to verify whether aquatic communities and the existing and characteristic beneficial uses of waters are being fully protected.

(3) Criteria for toxic, and other substances not listed will be determined with consideration of the most recent published version of USEPA National Recommended Water Quality Criteria, and other relevant information as appropriate.

(4) Risk-based criteria for carcinogenic substances will be applied such that the upper bound excess cancer risk is less than or equal to one in one million, which means the probability of one excess cancer per 1,000,000 people exposed. In assessing the maximum allowable risk the department shall consider traditional subsistence uses of aquatic resources by tribal members.

(5) The aquatic organism consumption rate utilized in determining the human health criteria is 142.4 g/day (based on EPA default subsistence consumption rate). This is the average

daily consumption of the 99$^{th}$ percentile of the general population, and within the range of averages for subsistence fishers and minority anglers (see 63 FR 43762).

(6) Criteria for metals will be applied as dissolved values, except where otherwise noted.

(7) The criteria in the tables in Appendix A apply to all surface waters of the Makah Indian Reservation for the protection of aquatic life and human health.

(8) Hardness-dependent metals criteria will be calculated using the ambient hardness, up to a maximum of 400 mg/L, measured as calcium carbonate ($CaCO_3$). For ambient hardness values over 400 mg/L, the criteria will be calculate using a default Water Effect Ratio (WER) of 1.0 and using a hardness of 400 mg/L in the hardness equation. There is no minimum ambient hardness value for calculation of the criteria.

## *SECTION 13. Radioactive Substances*

(1) Radioisotope concentrations in all waters shall not exceed concentrations that result in a significant hazard to humans.

(2) Concentrations of radioactive materials for all waters shall not exceed the following:

(a) Gross Alpha Particle Activity: 15 pCi/L

(b) Gross Beta Particle Activity: 50 pCi/L

(c) Tritium: 20,000 pCi/L

(d) Strontium 90: 8 pCi/L

(e) Radium 226 and 228: 5 pCi/L

(f) Uranium: 30 ug/L

## *SECTION 14. General Use Designations*

All fresh waters not assigned specific designated uses in Section 15 shall be assigned the following uses: ceremonial and religious use; cultural use; water supply; Salmon spawning, rearing, and migration; wildlife habitat; and primary contact recreation.

All lakes not assigned specific designated uses in Section 15 shall be assigned the following uses: ceremonial and religious use; cultural use; water supply; Salmon spawning, rearing, and migration; wildlife habitat; and primary contact recreation.

All marine waters not assigned specific designated uses in Section 15 shall be assigned the following uses: ceremonial and religious use; cultural use; excellent quality salmonid and other

fish rearing, migration, and harvesting; clam, oyster, and mussel spawning, rearing, and harvesting; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) spawning, rearing, and harvesting; wildlife habitat; primary contact recreation; and commerce and navigation.

## *SECTION 15. Specific Use Designations–Freshwater*

Specific fresh surface waters of the Makah Indian Reservation are assigned uses as described in Table 12.

**Table 15. Specific Fresh Surface Waters of the Makah Indian Reservation**

| Waterbody | Ceremonial And Religious | Cultural | Water Supply | Salmon Spawning | Salmon Rearing And Migration | Wildlife | Primary Contact Recreation | Secondary Contact Recreation | Commerce And Navigation |
|---|---|---|---|---|---|---|---|---|---|
| Agency Creek | X | X | X | X | X | X | X | X | X |
| Anderson Creek | X | X | X | X | X | X | X | X | X |
| Archawat Creek | X | X | X | X | X | X | X | X | X |
| Beach Creek | X | X | X | X | X | X | X | X | X |
| Bear Creek | X | X | X | X | X | X | X | X | X |
| Cheeka Creek | X | X | X | X | X | X | X | X | X |
| Colby Creek | X | X | X | X | X | X | X | X | X |
| Classet Creek | X | X | X | X | X | X | X | X | X |
| Educket Creek | X | X | X | X | X | X | X | X | X |
| Flattery Creek | X | X | X | X | X | X | X | X | X |
| Grimes Creek | X | X | X | X | X | X | X | X | X |
| Hobuck Creek | X | X | X | X | X | X | X | X | X |
| Hobuck Lake | X | X | X | X | X | X | X | X | X |
| Holden Creek | X | X | X | X | X | X | X | X | X |
| Kabusie Creek | X | X | X | X | X | X | X | X | X |
| Middle Creek | X | X | X | X | X | X | X | X | X |
| Ocean Creek | X | X | X | X | X | X | X | X | X |
| Ozette River | X | X | X | | X | X | X | X | X |
| Sail River | X | X | X | X | X | X | X | X | X |
| Scow Creek | X | X | X | X | X | X | X | X | X |
| Sooes River (lower) | X | X | X | | X | X | X | X | X |
| Sooes River (upper) | X | X | X | X | X | X | X | X | X |

| Waterbody | Ceremonial And Religious | Cultural | Water Supply | Salmon Spawning | Salmon Rearing And Migration | Wildlife | Primary Contact Recreation | Secondary Contact Recreation | Commerce And Navigation |
|---|---|---|---|---|---|---|---|---|---|
| Tyler Creek | X | X | X | X | X | X | X | X | X |
| Village Creek | X | X | X | X | X | X | X | X | X |
| Waatch Creek | X | X | X | X | X | X | X | X | X |
| Waatch River (lower) | X | X | X | | X | X | X | X | X |
| Waatch River (upper; above swamp inlet) | X | X | X | X | X | X | X | X | X |

# PART III - ANTIDEGRADATION

## *SECTION 16. Antidegradation Policy*

(1) Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Where designated uses of the water body are impaired, there shall be no lowering of water quality with respect to the pollutant or pollutants that are causing or contributing to the impairment.

(2) Where the quality of the waters exceeds levels necessary to support propagation of fish and wildlife, and recreational and ceremonial uses in and on the water, that quality shall be maintained and protected unless the department and the Tribal Council find, after the tribe's intergovernmental coordination and public participation provisions have been met, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. Such degradation or lower water quality will be allowed only if existing uses are fully protected. Further, the tribe will not approve any degradation or lower water quality under this section except in response to a water quality certification application that incorporates the highest statutory and regulatory requirements for all new and existing point sources and all approved and reasonable best management practices for nonpoint source control.

(3) *Outstanding resource waters*. Waters meeting one or more of the following criteria will be considered for outstanding water resource designation:

(a) Outstanding tribal resource.

(b) Documented critical habitat for populations of threatened or endangered species.

(c) Waters of exceptional recreational, ceremonial, cultural, or ecological significance.

(d) Waters supporting priority species as determined by the tribe.

(4) Where waters constitute an outstanding resource water, the water quality and uses shall be maintained and protected and pollutants that will reduce the existing quality thereof shall not be allowed to enter such waters. To accomplish this the Makah Tribal Council, acting on the advice of the department, will require water quality controls, maintenance of natural flow regimes, protection of in-stream habitats, and pursuit of land use practices protective of the watershed as determined necessary and appropriate.

(5) In those cases where potential water quality impairments associated with thermal discharge are involved, the Antidegradation Policy and implementing methods shall be consistent with Section 316 of the Clean Water Act, as amended.

# PART IV - GENERAL POLICIES

## *SECTION 17. Mixing Zone and Dilution Policy*

(1) *General conditions.*

(a) Mixing zones may be established for whole effluent or on a pollutant-by-pollutant basis.

(b) A mixing zone may be established in water quality certifications under Section 401 of the CWA. The allowable size and location of any mixing zone shall be precisely determined in such certifications. The Makah ordinance for CWA Section 401 certification is included in Appendix B of these standards.

(c) Water quality criteria shall not be violated outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized.

(d) The department may, as appropriate, require mixing zone monitoring studies, and/or bioassays and biological surveys as appropriate to be conducted at the expense of the water quality certification applicant to evaluate water quality or biological status within and outside of the mixing zone boundary.

(e) The department may require revision, revocation, or denial of water quality certification authorizing mixing zones upon expiration of the certification, or prior to expiration if information suggests that the nature and impacts of the mixing zone are different than the conditions used to determine mixing zone criteria.

(f) No mixing zone shall be established unless the water quality certification applicant provides supporting information which clearly indicates the mixing zone would not have a reasonable potential to:

(i) Cause a loss of or impair recovery of aquatic life, wildlife, or sensitive or important habitat;

(ii) Create a barrier to migration of species;

(iii) Substantially interfere with the existing or characteristic uses of the water body;

(iv) Result in damage to the ecosystem;

(v) Adversely affect threatened or endangered species or public safety or health as determined by the department; or

(vi) Cause lethality to organisms passing through the mixing zone.

(g) Mixing zones will not be established for discharges to outstanding resource waters, wetlands, or ephemeral or intermittent streams.

(h) The department may prohibit mixing zones under the following circumstances:

(i) Where discharges could create or foster conditions in sediments within and outside of the mixing zone that have the reasonable potential to cause damage to the ecosystem;

(ii) For known or suspected carcinogens or bioaccumulative or persistent pollutants;

(iii) Where discharges could cause an exceedence of the chronic criteria (WET or chemical specific) in the surface microlayer outside of the mixing zone boundary;

(iv) Where aquatic life could be attracted to the plume and harmed;

(v) Where the mixing zone could impact drinking water intakes, recreation sites, cultural areas, and biologically important areas such as fish spawning/nursery areas and shellfish harvesting; and

(vi) Where the discharge could adversely impact threatened and endangered species.

(i) Mixing zones shall not be used for, or considered as, a substitute for waste treatment. A water quality certification applicant shall show, to the satisfaction of the department, that all reasonable current technology for wastewater treatment, pollution control, and waste reduction have been fully applied before a mixing zone is granted.

(j) Except as specified in Section 8 (Narrative Water Quality Criteria) water quality standards may be exceeded within the mixing zone as provided for in a water quality certification. Determination of the dilution available and size of mixing zones will consider the following:

(i) Critical conditions.

(ii) Mixing characteristics of the receiving water.

(iii) Characteristics of the effluent.

(iv) Impacts to use designations of the receiving water.

(k) Mixing zones shall be as small as feasible, and in no case shall be larger than specified in subsection 17(2) of this section.

(l) In estuaries or waters influenced by tides, mixing zone determinations will be made considering possible effects due to tidal flux.

(m) Where mixing zones are overlapping or adjacent, the total size of all mixing zones shall not exceed the size allowed for one mixing zone, as described in subsection 11(B) of this section.

(2) *Mixing zone specifications*.

(a) Where mixing is rapid and complete and the pollutants are not persistent or bioaccumulative, the water quality certification applicant may be allowed the following flows for dilution:

(i) Chronic criteria: the 7Q10 flow.

(ii) Acute criteria: at the point of discharge.

(iii) Human health criteria–carcinogens: harmonic mean flow.

(iv) Health criteria–non-carcinogens: the 30Q5 flow.

(b) Where mixing is not rapid and complete, or for the discharge of persistent or bioaccumulative pollutants the following apply:

(i) In rivers and streams, criteria shall be met at the following locations:

(A) Chronic criteria: a point not to exceed ten percent of length of any given cross-section of the water body, and a distance of two hundred feet downstream from the point of discharge.

(B) Acute criteria: at the point of discharge.

(C) Human health criteria–carcinogens: at the point of discharge.

(D) Human health criteria–non-carcinogens: at the point of discharge.

(ii) In reservoirs with a mean detention time of less than 15 days, and lakes, mixing zones shall not be allowed unless it can be demonstrated to the satisfaction of the department that:

(A) Other siting, technical, and managerial options that would avoid the need for a lake mixing zone are not reasonably achievable;

(B) Overriding considerations of the public interest will be served; and

(C) All technological and managerial methods for pollution reduction and removal that are economically achievable would be

implemented prior to discharge. Such methods may include, but are not limited to, advanced waste treatment techniques.

(iii) In reservoirs with a mean detention time of less than 15 days, and lakes, criteria shall be met at the following locations:

(A) Chronic criteria: at a point not to exceed ten percent of the volume of the water body or ten percent of the surface area or fifteen percent of the width of the water body, whichever is most stringent.

(B) Acute criteria: at the point of discharge.

(C) Human health criteria–carcinogens: at the point of discharge.

(D) Human health criteria–non-carcinogens: at the point of discharge.

(iv) In estuaries and enclosed bays, criteria shall be met at the following locations:

(A) Chronic criteria: a point not to exceed five percent of the length of any given cross-section of the water body, or five percent of the surface area of the water body, whichever is most stringent.

(B) Acute criteria: at the point of discharge.

(C) Human health criteria–carcinogens: at the point of discharge.

(D) Human health criteria–non-carcinogens: at the point of discharge.

(v) In oceanic waters, mixing zones, singularly or in combination with other mixing zones, shall not extend in any horizontal direction from the discharge port(s) for a distance greater than three hundred feet plus the depth of the discharge port(s) as measured during mean lower low water:

(A) Chronic criteria: a point not to exceed the mixing zone boundary.

(B) Acute criteria: at the point of discharge.

(C) Human health criteria–carcinogens: at the point of discharge.

(D) Human health criteria–non-carcinogens: at the point of discharge.

# PART V - IMPLEMENTATION OF STANDARDS

## *SECTION 18. Short-Term Exceedences*

(1) *Short-term exceedences*. The criteria and special conditions established in these water quality standards may be modified for a specific water body on a short-term basis when necessary to accommodate essential activities, respond to emergencies, or to otherwise protect the public health and welfare, even though such activities may result in a temporary reduction of water quality conditions below those criteria and classifications established by this ordinance. Such exceedences shall be issued in writing by the director or his/her designee, subject to such terms and conditions as he/she may prescribe, provided that:

(a) Such exceedences shall not exceed a seven-day period.

(b) In cases where short-term exceedences result in quantifiable losses to existing aquatic resources or other water uses, the responsible party or parties shall compensate for these losses through mitigation activities to be determined by the department.

(c) In no case will any degradation of water quality be allowed if this degradation significantly interferes with or becomes injurious to existing water uses, including cultural and spiritual uses, or causes long-term harm to the environment or cultural resources. No short-term exceedence authorization may be issued where it could adversely impact threatened or endangered species or their critical habitat.

(d) A request for a short-term exceedence shall be made, in writing, to the department. Such requests shall be made at least thirty days prior to the start of the activity impairing water quality, unless the exceedence is in response to an emergency requiring immediate attention in which case notification shall be provided within twenty-four hours of the response decision.

## *SECTION 19. Implementation*

(1) *Nonpoint source and storm water pollution.*

(a) Activities that generate nonpoint source pollution shall be conducted so as to comply with the Makah Tribe's Water Quality Standards. The primary means to be used for requiring compliance with the standards shall be through the application of all known and reasonable methods of prevention, control, and treatment (AKART), including best management practices (BMPs), required in water quality certifications issued by the department for federally permitted activities which generate nonpoint source pollution.

(b) Best management practices (BMPs) shall be applied so that when all appropriate combinations of individual best management practices are utilized, violation of water quality criteria shall be prevented.

(c) Activities which discharge pollutants in storm water shall be conducted so as to comply with the Makah Tribe's Water Quality Standards. The primary means to be used for requiring compliance with the standards shall be through the application of AKART, including BMPs, required in water quality certifications issued by the Department for federally permitted activities which generate storm water pollution.

(2) *Discharges from municipal, commercial, and industrial operations*. The primary means to be used for controlling point source discharge from or onto lands or waters under the jurisdiction of the Makah Tribe shall be through the issuance of water quality certifications issued by the Department for federally permitted activities that discharge pollutants into the surface waters of the Reservation.

(3) *Miscellaneous water quality effect sources and waste discharge*. It is noted that, from time to time, certain short-term activities which are deemed necessary to accommodate essential activities or to otherwise protect the public interest may be specially authorized by the department, under such conditions as the department may prescribe, even though such activities may result in a reduction of water quality conditions below those criteria and classifications established by this ordinance.

## *SECTION 20. Enforcement*

To ensure that the standards for water quality are being adhered to, the terms of water quality certifications, and other lawful orders and directives of the department are fully complied with, the following enforcement and monitoring tools will be relied upon by the department:

(1) *Monitoring*.

(a) Monitoring receiving water quality.

(b) Monitoring compliance at edge of mixing zones.

(c) Pre- and post-monitoring efforts in areas subject to nonpoint source pollution.

(2) *Issuance of notices of violation and regulatory orders*. In the event where the Makah Tribe's Water Quality Standards are not being met, or a violation is either taking place or about to occur, the department shall notify the said person of its determination. Within a thirty-day time period, or a shorter length of time if the department deems necessary, of the notice given the said person shall notify the department of the action taken or being taken in response to the department's determination. The department may issue a cease and desist or other regulatory order, as it deems appropriate on a case-by-case basis. If

immediate action is required, based upon the department's determination, it may issue a regulatory order without first giving notice and thirty days for response.

(3) *Civil liability.* Any person who violates a water quality certification or regulatory order issued under these standards may be ordered by the Department to pay a civil penalty not to exceed ($5,000). Cease and desist and other civil regulatory orders issued by the Department may be enforced by the Department in Tribal Court consistent with the procedures in the Makah Law and Order Code. Any person aggrieved by a civil regulatory order issued by the Department may file an appeal of the order in Tribal Council within 30 days of receipt of such order. Failure to comply with a lawful civil regulatory order or to pay a penalty lawfully imposed by the Department may result initiation of proceedings for exclusion from the Reservation or suspension or termination of rights and privileges to engage in activities on the Reservation. For the purposes of this section, each day in which a person is out of compliance shall be deemed to be a separate violation.

(4) *Criminal liability.* Any Indian who violates a water quality certification or other permit or approval issued under these standards shall, upon conviction thereof in Tribal Court, be subject to a term of imprisonment not to exceed one year, or be ordered to pay a criminal penalty not to exceed ($5,000) or both, in accordance with the procedures of the Makah Law and Order Code. For the purposes of the monetary penalties imposed by this section, each day in which a person is out of compliance shall be deemed to be a separate violation.

# APPENDIX A - WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

## *Table A-1. National Recommended Water Quality Criteria for Priority Pollutants*

| Priority Pollutant | | CAS Number | Freshwater | | Saltwater | | Human Health For Consumption of: | | FR Cite / Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | CMC (Φg/L) | CCC (Φg/L) | CMC (Φg/L) | CCC (Φg/L) | Water + Organism (Φg/L) | Organism Only (Φg/L) | |
| 1 | Antimony | 7440360 | | | | | 5.2 B | 79 B | 65FR66443 |
| 2 | Arsenic | 7440382 | 340 A,D,K | 150 A,D,K | 69 A, D, bb | 36 A, D, bb | 0.0048 C, M, S | 0.0064 C, M, S | 65FR31682<br>57FR60848 |
| 3 | Beryllium | 7440417 | | | | | Z | | 65FR31682 |
| 4 | Cadmium | 7440439 | 2.0 D, E, K, bb | 0.25 D, E, K, bb | 40 D, bb | 8.8 D, bb | Z | | EPA-822-R-01-001<br>65FR31682 |
| 5a | Chromium (III) | 16065831 | 570 D, E, K | 74 D, E, K | | | Z Total | | EPA820/B-96-001<br>65FR31682 |
| 5b | Chromium (VI) | 18540299 | 16 D,K | 11 D,K | 1,100 D, bb | 50 D, bb | Z Total | | 65FR31682 |
| 6 | Copper | 7440508 | 13 D, E, K, cc | 9.0 D, E, K, cc | 4.8 D, cc, ff | 3.1 D, cc, ff | 1,300 U | | 65FR31682 |
| 7 | Lead | 7439921 | 65 D, E, bb, gg | 2.5 D, E, bb, gg | 210 D, bb | 8.1 D, bb | | | 65FR31682 |
| 8 | Mercury | 7439976 | [reserved] | [reserved] | 1.8 D, ee, hh | 0.94 D, ee, hh | 0.0054 | 0.0055 | 62FR42160 |
| 9 | Nickel | 7440020 | 470 D, E, K | 52 D, E, K | 74 D, bb | 8.2 D, bb | 160 B | 210 B | 65FR31682 |
| 10 | Selenium | 7782492 | [reserved] | 5.0 T | 290 D, bb, dd | 71 D, bb, dd | 130 Z | 510 | 62FR42160<br>65FR31682 |
| 11 | Silver | 7440224 | 3.2 D ,E, G | | 1.9 D, G | | | | 65FR31682 |
| 12 | Thallium | 7440280 | | | | | 0.051 | 0.058 | 68FR75510 |
| 13 | Zinc | 7440666 | 120 D, E, K | 120 D, E, K | 90 D, bb | 81 D, bb | 2,400 U | 3,100 U | 65FR31682<br>65FR66443 |
| 14 | Cyanide | 57125 | 22 K, Q | 5.2 K, Q | 1 Q, bb | 1 Q, bb | 130 jj | 130 jj | EPA820/B-96-001<br>57FR60848<br>68FR75510 |
| 15 | Asbestos | 1332214 | | | | | 7 million fibers/L I | | 57FR60848 |
| 16 | 2,3,7,8-TCDD (Dioxin) | 1746016 | | | | | 6.3E-10 C | 6.3E-10 C | 65FR66443 |
| 17 | Acrolein | 107028 | | | | | 34 | 36 | 65FR66443 |
| 18 | Acrylonitrile | 107131 | | | | | 0.021 B, C | 0.030 B, C | 65FR66443 |
| 19 | Benzene | 71432 | | | | | 1.7 B, C | 6.2 B, C | IRIS 01/19/00<br>&65FR66443 |
| 20 | Bromoform | 75252 | | | | | 3.5 B, C | 17 B, C | 65FR66443 |
| 21 | Carbon Tetrachloride | 56235 | | | | | 0.12 B, C | 0.20 B, C | 65FR66443 |
| 22 | Chlorobenzene | 108907 | | | | | 81 Z,U, | 190 U | 68FR75510 |
| 23 | Chlorodibromomethane | 124481 | | | | | 0.33 B, C | 1.6 B, C | 65FR66443 |

## *Table A-1. (cont.) National Recommended Water Quality Criteria for Priority Pollutants*

| Priority Pollutant | | CAS Number | Freshwater | | Saltwater | | Human Health For Consumption of: | | FR Cite / Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | CMC (Φg/L) | CCC (Φg/L) | CMC (Φg/L) | CCC (Φg/L) | Water + Organism (Φg/L) | Organism Only (Φg/L) | |
| 24 | Chloroethane | 75003 | | | | | | | |
| 25 | 2-Chloroethylvinyl Ether | 110758 | | | | | | | |
| 26 | Chloroform | 67663 | | | | | 4.5 C, P | 22 C, P | 62FR42160 |
| 27 | Dichlorobromomethane | 75274 | | | | | 0.45 B, C | 2.1 B, C | 65FR66443 |
| 28 | 1,1-Dichloroethane | 75343 | | | | | | | |
| 29 | 1,2-Dichloroethane | 107062 | | | | | 0.35 B, C | 4.5 B, C | 65FR66443 |
| 30 | 1,1-Dichloroethylene | 75354 | | | | | 250 | 880 | 68FR75510 |
| 31 | 1,2-Dichloropropane | 78875 | | | | | 0.40 B, C | 1.8 B, C | 65FR66443 |
| 32 | 1,3-Dichloropropene | 542756 | | | | | 0.31 c | 2.6 c | 68FR75510 |
| 33 | Ethylbenzene | 100414 | | | | | 190 | 260 | 68FR75510 |
| 34 | Methyl Bromide | 74839 | | | | | 39 B | 180 B | 65FR66443 |
| 35 | Methyl Chloride | 74873 | | | | | | | 65FR31682 |
| 36 | Methylene Chloride | 75092 | | | | | 4.4 B, C | 73 B, C | 65FR66443 |
| 37 | 1,1,2,2-Tetrachloroethane | 79345 | | | | | 0.13 B, C | 0.49 B, C | 65FR66443 |
| 38 | Tetrachloroethylene | 127184 | | | | | 0.28 C | 0.40 C | 65FR66443 |
| 39 | Toluene | 108883 | | | | | 800 Z | 1,800 | 68FR75510 |
| 40 | 1,2-Trans-Dichloroethylene | 156605 | | | | | 130 Z | 1,200 | 68FR75510 |
| 41 | 1,1,1-Trichloroethane | 71556 | | | | | Z | | 65FR31682 |
| 42 | 1,1,2-Trichloroethane | 79005 | | | | | 0.47 B, C | 1.9 B, C | 65FR66443 |
| 43 | Trichloroethylene | 79016 | | | | | 1.6 C | 3.7 C | 65FR66443 |
| 44 | Vinyl Chloride | 75014 | | | | | 0.023 C, kk | 0.30 C, kk | 68FR75510 |
| 45 | 2-Chlorophenol | 95578 | | | | | 17 B, U | 18 B, U | 65FR66443 |
| 46 | 2,4-Dichlorophenol | 120832 | | | | | 27 B, U | 36 B, U | 65FR66443 |
| 47 | 2,4-Dimethylphenol | 105679 | | | | | 91 B | 110 B, U | 65FR66443 |
| 48 | 2-Methyl-4,6-Dinitrophenol | 534521 | | | | | 9.8 | 35 | 65FR66443 |
| 49 | 2,4-Dinitrophenol | 51285 | | | | | 63 B | 660 B | 65FR66443 |
| 50 | 2-Nitrophenol | 88755 | | | | | | | |
| 51 | 4-Nitrophenol | 100027 | | | | | | | |
| 52 | 3-Methyl-4-Chlorophenol | 59507 | | | | | U | U | |
| 53 | Pentachlorophenol | 87865 | 19 F, K | 15 F, K | 13 bb | 7.9 bb | 0.16 B, C | 0.37 B, C, H | 65FR31682<br>65FR66443 |
| 54 | Phenol | 108952 | | | | | 19,000 B, U | 210,000 B, U | 65FR66443 |
| 55 | 2,4,6-Trichlorophenol | 88062 | | | | | 0.27 B, C | 0.30 B, C, U | 65FR66443 |
| 56 | Acenaphthene | 83329 | | | | | 120 B, U | 120 B, U | 65FR66443 |
| 57 | Acenaphthylene | 208968 | | | | | | | |
| 58 | Anthracene | 120127 | | | | | 3,400 B | 4,900 B | 65FR66443 |

## *Table A-1. (cont.) National Recommended Water Quality Criteria for Priority Pollutants*

| Priority Pollutant | | CAS Number | Freshwater | | Saltwater | | Human Health For Consumption of: | | FR Cite / Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | CMC (Φg/L) | CCC (Φg/L) | CMC (Φg/L) | CCC (Φg/L) | Water + Organism (Φg/L) | Organism Only (Φg/L) | |
| 59 | Benzidine | 92875 | | | | | 0.000021 B,C | 0.000024 B,C | 65FR66443 |
| 60 | Benzo(a)Anthracene | 56553 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 61 | Benzo(a)Pyrene | 50328 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 62 | Benzo(b)Fluoranthene | 205992 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 63 | Benzo(ghi)Perylene | 191242 | | | | | | | |
| 64 | Benzo(k)Fluoranthene | 207089 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 65 | Bis(2-Chloroethoxy)Methane | 111911 | | | | | | | |
| 66 | Bis(2-Chloroethyl)Ether | 111444 | | | | | 0.021 B, C | 0.065 B,C | 65FR66443 |
| 67 | Bis(2-Chloroisopropyl)Ether | 108601 | | | | | 1,200 B | 8,000 B | 65FR66443 |
| 68 | Bis(2-Ethylhexyl)Phthalate | 117817 | | | | | 0.24 B, C | 0.27 B, C | 65FR66443 |
| 69 | 4-Bromophenyl Phenyl Ether | 101553 | | | | | | | |
| 70 | Butylbenzyl Phthalate[W] | 85687 | | | | | 230 B | 240 B | 65FR66443 |
| 71 | 2-Chloronaphthalene | 91587 | | | | | 180 B | 200B | 65FR66443 |
| 72 | 4-Chlorophenyl Phenyl Ether | 7005723 | | | | | | | |
| 73 | Chrysene | 218019 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 74 | Dibenzo(a,h)Anthracene | 53703 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 75 | 1,2-Dichlorobenzene | 95501 | | | | | 130 | 160 | 68FR75510 |
| 76 | 1,3-Dichlorobenzene | 541731 | | | | | 95 | 120 | 65FR66443 |
| 77 | 1,4-Dichlorobenzene | 106467 | | | | | 19 | 24 | 68FR75510 |
| 78 | 3,3'-Dichlorobenzidine | 91941 | | | | | 0.0034 B, C | 0.0035 B, C | 65FR66443 |
| 79 | Diethyl Phthalate[W] | 84662 | | | | | 4,500 B | 5,400 B | 65FR66443 |
| 80 | Dimethyl Phthalate[W] | 131113 | | | | | 98,000 | 140,000 | 65FR66443 |
| 81 | Di-n-Butyl Phthalate[W] | 84742 | | | | | 480 B | 550 B | 65FR66443 |
| 82 | 2,4-Dinitrotoluene | 121142 | | | | | 0.089 C | 0.42 C | 65FR66443 |
| 83 | 2,6-Dinitrotoluene | 606202 | | | | | | | |
| 84 | Di-n-Octyl Phthalate | 117840 | | | | | | | |
| 85 | 1,2-Diphenylhydrazine | 122667 | | | | | 0.016 B, C | 0.025 B, C | 65FR66443 |
| 86 | Fluoranthene | 206440 | | | | | 17 B | 17 B | 65FR66443 |
| 87 | Fluorene | 86737 | | | | | 450 B | 660 B | 65FR66443 |
| 88 | Hexachlorobenzene | 118741 | | | | | 0.000035 B, C | 0.000035 B ,C | 65FR66443 |
| 89 | Hexachlorobutadiene | 87683 | | | | | 0.38 B, C | 2.3 B, C | 65FR66443 |
| 90 | Hexachlorocyclopentadiene | 77474 | | | | | 32 U | 140 U | 68FR75510 |
| 91 | Hexachloroethane | 67721 | | | | | 0.35 B, C | 0.40 B, C | 65FR66443 |
| 92 | Ideno(1,2,3-cd)Pyrene | 193395 | | | | | 0.0015 B, C | 0.0022 B, C | 65FR66443 |
| 93 | Isophorone | 78591 | | | | | 28 B, C | 120 B, C | 65FR66443 |
| 94 | Naphthalene | 91203 | | | | | | | |

## *Table A-1. (cont.) National Recommended Water Quality Criteria for Priority Pollutants*

| Priority Pollutant | | CAS Number | Freshwater | | Saltwater | | Human Health For Consumption of: | | FR Cite / Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | CMC (Φg/L) | CCC (Φg/L) | CMC (Φg/L) | CCC (Φg/L) | Water + Organism (Φg/L) | Organism Only (Φg/L) | |
| 95 | Nitrobenzene | 98953 | | | | | 15 B | 85 B ,H, U | 65FR66443 |
| 96 | N-Nitrosodimethylamine | 62759 | | | | | 0.00068 B, C | 0.37 B, C | 65FR66443 |
| 97 | N-Nitrosodi-n-Propylamine | 621647 | | | | | 0.0046 B, C | 0.062 B, C | 65FR66443 |
| 98 | N-Nitrosodiphenylamine | 86306 | | | | | 0.67 B, C | 0.74 B, C | 65FR66443 |
| 99 | Phenanthrene | 85018 | | | | | | | |
| 100 | Pyrene | 129000 | | | | | 340 B | 490 B | 65FR66443 |
| 101 | 1,2,4-Trichlorobenzene | 120821 | | | | | 7.7 | 8.6 | 68FR75510 |
| 102 | Aldrin | 309002 | 3.0 G | | 1.3 G | | 0.0000062B,C | 0.0000062 B,C | 65FR31682<br>65FR66443 |
| 103 | alpha-BHC | 319846 | | | | | 0.00054 B, C | 0.00060 B, C | 65FR66443 |
| 104 | beta-BHC | 319857 | | | | | 0.0019 B, C | 0.0021 B, C | 65FR66443 |
| 105 | gamma-BHC (Lindane) | 58899 | 0.95 K | | 0.16 G | | 0.20 | 0.23 | 65FR31682<br>68FR75510 |
| 106 | delta-BHC | 319868 | | | | | | | |
| 107 | Chlordane | 57749 | 2.4 G | 0.0043 G, aa | 0.09G | 0.004 G,.aa | 0.00010 B, C | 0.00010 B, C | 65FR31682<br>65FR66443 |
| 108 | 4,4'-DDT | 50293 | 1.1 G, ii | 0.001 G, aa, ii | 0.13 G, ii | 0.001 G, aa, ii | 0.000027 B, C | 0.000027 B, C | 65FR31682<br>65FR66443 |
| 109 | 4,4'-DDE | 72559 | | | | | 0.000027 B,C | 0.000027 B,C | 65FR66443 |
| 110 | 4,4'-DDD | 72548 | | | | | 0.000038 B, C | 0.000038 B, C | 65FR66443 |
| 111 | Dieldrin | 60571 | 0.24 K | 0.056 K,O | 0.71,G | 0.0019 G, aa | 0.0000066 B, C | 0.0000066 B, C | 65FR31682<br>65FR66443 |
| 112 | alpha-Endosulfan | 959988 | 0.22 G,Y | 0.056 G,Y | 0.034 G,Y | 0.0087 G,Y | 10 B | 11 B | 65FR31682<br>65FR66443 |
| 113 | beta-Endosulfan | 33213659 | 0.22 G,Y | 0.056 G,Y | 0.034 G,Y | 0.0087 G,Y | 10 B | 11 B | 65FR31682<br>65FR66443 |
| 114 | Endosulfan Sulfate | 1031078 | | | | | 10 B | 11 B | 65FR66443 |
| 115 | Endrin | 72208 | 0.086 K | 0.036 K,O | 0.037 G | 0.0023 G, aa | 0.0074 | 0.0074 | 65FR31682<br>68FR75510 |
| 116 | Endrin Aldehyde | 7421934 | | | | | 0.037 B | 0.037 B, H | 65FR66443 |
| 117 | Heptachlor | 76448 | 0.52 G | 0.0038 G, aa | 0.053 G, V | 0.0036 G, aa | 0.0000097 B, C | 0.0000098 B, C | 65FR31682<br>65FR66443 |
| 118 | Heptachlor Epoxide | 1024573 | 0.52 G,V | 0.0038 G, V, aa | 0.053 G | 0.0036 G, V, aa | 0.0000048 B, C | 0.0000048 B, C | 65FR31682<br>65FR66443 |
| 119 | Polychlorinated Biphenyls PCBs: | | | 0.014 N, aa | | 0.03 N, aa | 0.0000079 B, C, N | 0.0000079 B, C, N | 65FR31682<br>65FR66443 |
| 120 | Toxaphene | 8001352 | 0.73 | 0.0002 aa | 0.21 | 0.0002 aa | 0.000034 B, C | 0.000034 B, C | 65FR31682<br>65FR66443 |

## Footnotes:

A This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.

B This criterion has been revised to reflect The Environmental Protection Agency=s q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.

C This criterion is based on carcinogenicity of $10^{-6}$ risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of $10^{-5}$, move the decimal point in the recommended criterion one place to the right).

D Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. The recommended water quality criteria value was calculated by using the previous 304(a) aquatic life criteria expressed in terms of total recoverable metal, and multiplying it by a conversion factor (CF). The term "Conversion Factor" (CF) represents the recommended conversion factor for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column. (Conversion Factors for saltwater CCCs are not currently available. Conversion factors derived for saltwater CMCs have been used for both saltwater CMCs and CCCs). See "Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria,@ October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR ' 131.36(b)(1). Conversion Factors applied in the table can be found in Appendix A to the Preamble- Conversion Factors for Dissolved Metals.

E The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 100 mg/L. Criteria values for other hardness may be calculated from the following: CMC (dissolved) = $\exp\{m_A [\ln(\text{hardness})] + b_A\}$ (CF), or CCC (dissolved) = $\exp\{m_C [\ln(\text{hardness})] + b_C\}$ (CF) and the parameters specified in Appendix B- Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent.

F Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005(pH)-4.869); CCC = exp(1.005(pH)-5.134). Values displayed in table correspond to a pH of 7.8.

G This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA 440/5-80-046), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Hexachlorocyclohexane (EPA 440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a ACMC@ derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

H No criterion for protection of human health from consumption of aquatic organisms excluding water was presented in the 1980 criteria document or in the *1986 Quality Criteria for Water*. Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.

I This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act (SDWA).

J This fish tissue residue criterion for methylmercury is based on a total fish consumption rate of 0.0175 kg/day.

K This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*, (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.

M EPA is currently reassessing the criteria for arsenic.

N This criterion applies to total pcbs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses.)

O The derivation of the CCC for this pollutant (Endrin) did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.

P Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.

Q This recommended water quality criterion is expressed as Φg free cyanide (as CN)/L.

S This recommended water quality criterion for arsenic refers to the inorganic form only.

T This recommended water quality criterion for selenium is expressed in terms of total recoverable metal in the water column. It is scientifically acceptable to use the conversion factor (0.996- CMC or 0.922- CCC) that was used in the GLI to convert this to a value that is expressed in terms of dissolved metal.

U The organoleptic effect criterion is more stringent than the value for priority toxic pollutants.

V This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.

W Although EPA has not published a completed criteria document for butylbenzyl phthalate it is EPA=s understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.

X There is a full set of aquatic life toxicity data that show that DEHP is not toxic to aquatic organisms at or below its solubility limit.

Y This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha-endosulfan and beta-endosulfan.

Z A more stringent MCL has been issued by EPA. Refer to drinking water regulations (40 CFR 141) or Safe Drinking Water Hotline (1-800-426-4791) for values.

aa This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated biphenyls (EPA 440/5-80-068), Toxaphene (EPA 440/5-86-006). This CCC is currently based on the Final Residue Value (FRV) procedure. Since the publication of the Great Lakes Aquatic Life Criteria

Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.

bb This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA-822-R-01-001), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5- 84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87- 003).

cc When the concentration of dissolved organic carbon is elevated, copper is substantially less toxic and use of Water-Effect Ratios might be appropriate.

dd The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 Φg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.

ee This recommended water quality criterion was derived on page 43 of the mercury criteria document (EPA 440/5-84-026, January 1985). The saltwater CCC of 0.025 ug/L given on page 23 of the criteria document is based on the Final Residue Value procedure in the 1985 Guidelines. Since the publication of the Great Lakes Aquatic Life Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the Final Residue Value procedure for deriving CCCs for new or revised 304(a) aquatic life criteria.

gg EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.

ii This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).

jj This recommended water quality criterion is expressed as total cyanide, even though the IRIS RFD we used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their differing abilities to liberate the CN-moiety. Some complex cyanides require even more extreme conditions than refluxing with sulfuric acid to liberate the CN-moiety. Thus, these complex cyanides are expected to have little or no >bioavailability= to humans. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g., $Fe_4[Fe(CN)_6]_3$), this criterion may be over conservative.

kk This recommended water quality criterion was derived using the cancer slope factor of 1.4 (LMS exposure from birth).

# *Table A-2. National Recommended Water Quality Criteria for Nonpriority Pollutants*

| Non Priority Pollutant | | CAS Number | Freshwater | | Saltwater | | Human Health For Consumption of: | | FR Cite / Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | CMC (Φg/L) | CCC (Φg/L) | CMC (Φg/L) | CCC (Φg/L) | Water + Organism (Φg/L) | Organism Only (Φg/L) | |
| 1 | Alkalinity | -- | | 20000 F | | | | | Gold Book |
| 2 | Aluminum pH 6.5 - 9.0 | 7429905 | 750 G,I | 87 G,I,L | | | | | 53FR33178 |
| 3 | Ammonia | 7664417 | FRESHWATER CRITERIA ARE pH, Temperature and Life-stage DEPENDENT<br>SALTWATER CRITERIA ARE pH AND TEMPERATURE DEPENDENT | | | | | | EPA822-R-99-014<br>EPA440/5-88-004 |
| 4 | Aesthetic Qualities | -- | NARRATIVE STATEMENT-- SEE DOCUMENT | | | | | | Gold Book |
| 5 | Bacteria | -- | FOR PRIMARY RECREATION AND SHELLFISH USES | | | | | | Gold Book |
| 6 | Barium | 7440393 | | | | | 1,000 A | | Gold Book |
| 7 | Boron | -- | NARRATIVE STATEMENT-- SEE DOCUMENT | | | | | | Gold Book |
| 8 | Chloride | 16887006 | 860000 G | 230000 G | | | | | 53FR19028 |
| 9 | Chlorine | 7782505 | 19 | 11 | 13 | 7.5 | C | | Gold Book |
| 10 | Chlorophenoxy Herbicide (2,4,5,-TP) | 93721 | | | | | 10 A | | Gold Book |
| 11 | Chlorophenoxy Herbicide (2,4-D) | 94757 | | | | | 100 A,C | | Gold Book |
| 12 | Chloropyrifos | 2921882 | 0.083 G | 0.041 G | 0.011 G | 0.0056 G | | | Gold Book |
| 13 | Color | -- | NARRATIVE STATEMENT-- SEE DOCUMENT F | | | | | | Gold Book |
| 14 | Demeton | 8065483 | | 0.1 F | | 0.1 F | | | Gold Book |
| 15 | Ether, Bis( Chloromethyl) | 542881 | | | | | 0.000030 E,H | 0.000036 E,H | 65FR66443 |
| 16 | Gases, Total Dissolved | -- | NARRATIVE STATEMENT | | | | | | Gold Book |
| 17 | Guthion | 86500 | | 0.01 F | | 0.01 F | | | Gold Book |
| 18 | Hardness | -- | NARRATIVE STATEMENT-- SEE DOCUMENT | | | | | | Gold Book |
| 19 | Hexachlorocyclo-hexane-Technical | 319868 | | | | | 0.0123 | 0.0414 | Gold Book |
| 20 | Iron | 7439896 | | 1000 F | | | 300 A | | Gold Book |
| 21 | Malathion | 121755 | | 0.1 F | | 0.1 F | | | Gold Book |
| 22 | Manganese | 7439965 | | | | | 50 A,O | 100 A | Gold Book |

## *Table A-2. (cont.) National Recommended Water Quality Criteria for Nonpriority Pollutants*

| Non Priority Pollutant | | CAS Number | Freshwater | | Saltwater | | Human Health For Consumption of: | | FR Cite / Source |
|---|---|---|---|---|---|---|---|---|---|
| | | | CMC (Φg/L) | CCC (Φg/L) | CMC (Φg/L) | CCC (Φg/L) | Water + Organism (Φg/L) | Organism Only (Φg/L) | |
| 23 | Methoxychlor | 72435 | | 0.03 F | | 0.03 F | 100 A,C | | Gold Book |
| 24 | Mirex | 2385855 | | 0.001 F | | 0.001 F | | | Gold Book |
| 25 | Nitrates | 14797558 | | | | | 10,000 A | | Gold Book |
| 26 | Nitrosamines | -- | | | | | 0.0008 | 1.24 | Gold Book |
| 27 | Dinitrophenols | 25550587 | | | | | 63 | 65 | 65FR66443 |
| 28 | Nitrosodibutylamine,N | 924163 | | | | | 0.0052 A,H | 0.027 A,H | 65FR66443 |
| 29 | Nitrosodiethylamine,N | 55185 | | | | | 0.0008 A,H | 1.24 A,H | Gold Book |
| 30 | Nitrosopyrrolidine,N | 930552 | | | | | 0.016 H | 4.2 H | 65FR66443 |
| 31 | Oil and Grease | -- | NARRATIVE STATEMENT | | | | | | Gold Book |
| 32 | Oxygen, Dissolved Freshwater<br>Oxygen, Dissolved<br>Saltwater | 7782447 | WARMWATER AND COLDWATER MATRIX | | | | | | Gold Book<br>EPA-822R-00-012 |
| 33 | Parathion | 56382 | 0.065 J | 0.013 J | | | | | Gold Book |
| 34 | Pentachlorobenzene | 608935 | | | | | 0.18 E | 0.18 E | 65FR66443 |
| 35 | pH | -- | | 6.5 - 9 F | | 6.5 - 8.5 F,K | 5 - 9 | | Gold Book |
| 36 | Phosphorus Elemental | 7723140 | | | | 0.1 F,K | | | Gold Book |
| 37 | Nutrients | -- | See EPA=s Ecoregional criteria for Total Phosphorus, Total Nitrogen, Chlorophyll *a* and Water Clarity (Secchi depth for lakes; turbidity for streams and rivers) (& Level III Ecoregional criteria) | | | | | | P |
| 38 | Solids Dissolved and Salinity | -- | | | | | 250,000 A | | Gold Book |
| 39 | Solids Suspended and Turbidity | -- | NARRATIVE STATEMENT | | | | | | Gold Book |
| 40 | Sulfide-Hydrogen Sulfide | 7783064 | | 2.0 F | | 2.0 F | | | Gold Book |
| 41 | Tainting Substances | -- | NARRATIVE STATEMENT-- SEE DOCUMENT | | | | | | Gold Book |
| 42 | Temperature | -- | SPECIES DEPENDENT CRITERIA | | | | | | Gold Book |
| 43 | Tetrachlorobenzene,1,2,4,5- | 95943 | | | | | 0.13 E | 0.13 E | 65FR66443 |
| 44 | Tributyltin (TBT) | -- | 0.46 Q | 0.072 Q | 0.42 Q | 0.074 Q | | | EPA 822-F-00-008 |
| 45 | Trichlorophenol,2,4,5- | 95954 | | | | | 400 B,E | 450 B,E | 65FR66443 |

## Footnotes:

A This human health criterion is the same as originally published in the Red Book, which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is now published in the Gold Book.

B The organoleptic effect criterion is more stringent than the value presented in the non priority pollutants table.

C A more stringent Maximum Contaminant Level (MCL) has been issued by EPA under the Safe Drinking Water Act. Refer to drinking water regulations 40CFR141 or Safe Drinking Water Hotline (1-800-426-4791) for values.

D According to the procedures described in the *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and TheirUses*, except possibly where a very sensitive species is important at a site, freshwater aquatic life should be protected if both conditions specified in Appendix C to the Preamble-Calculation of Freshwater Ammonia Criterion are satisfied.

E This criterion has been revised to reflect EPA=s q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) used to derive the original criterion was retained in each case.

F The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).

G This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chloropyrifos (EPA 440/5-86-005).

H This criterion is based on carcinogenicity of $10^{-6}$ risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of $10^{-5}$, move the decimal point in the recommended criterion one place to the right).

I This value for aluminum is expressed in terms of total recoverable metal in the water column.

J This value is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-B-96-001). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the differences between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. No decision concerning this criterion was affected by any considerations that are specific to the Great Lakes.

K According to page 181 of the Red Book:

> *For open ocean waters where the depth is substantially greater than the euphotic zone, the pH should not be changed more than 0.2 units from the naturally occurring variation or any case outside the range of 6.5 to 8.5. For shallow, highly productive coastal and estuarine areas where naturally occurring pH variations approach the lethal limits of some species, changes in pH should be avoided but in any case should not exceed the limits established for fresh water, i.e., 6.5-9.0.*

L There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 Φg/L is based on a toxicity test with the striped bass in water with pH= 6.5-6.6 and hardness <10 mg/L. Data in AAluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia@ (May 1994) indicate that

aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 Φg aluminum/L, when either total recoverable or dissolved is measured.

M U.S. EPA. 1973. Water Quality Criteria 1972. EPA-R3-73-033. National Technical Information Service, Springfield, VA.; U.S. EPA. 1977. Temperature Criteria for Freshwater Fish: Protocol and Procedures. EPA-600/3-77-061. National Technical Information Service, Springfield, VA.

N U.S. EPA. 1986. Ambient Water Quality Criteria for Dissolved Oxygen. EPA 440/5-86-003. National Technical Information Service, Springfield, VA.

O This criterion for manganese is not based on toxic effects, but rather is intended to minimize objectionable qualities such as laundry stains and objectionable tastes in beverages.

P Lakes and Reservoirs in Nutrient Ecoregion: II EPA 822-B-00-007, III EPA 822-B-01-008, IV EPA 822-B-01-009, V EPA 822-B-01-010, VI EPA 822-B-00-008 , VII EPA 822-B-00-009, VIII EPA 822-B-01-015, IX EPA 822-B-00-011, XI EPA 822-B-00-012, XII EPA 822-B-00-013, XIII EPA 822-B-00-014, XIV EPA 822-B-01-011; Rivers and Streams in Nutrient Ecoregion: I EPA 822-B-01-012, II EPA 822-B-00-015, III EPA 822-B-00-016, IV EPA 822-B-01-013, V EPA 822-B-01-014, VI EPA 822-B-00-017, VII EPA 822-B-00-018, VIII EPA 822-B-01-015, IX EPA 822-B-00-019, X EPA 822-B-01-016, XI EPA 822-B-00-020, XII EPA 822-B-00-021, XIV EPA 822-B-00-022; and Wetlands in Nutrient Ecoregion XIII EPA 822-B-00-023.

Q EPA announced the availability of a draft updated tributyltin (TBT) document on August 7, 1997 (62FR42554). The Agency has reevaluated this document and anticipates releasing an updated document for public comment in the near future.

## *Table A-3. National Recommended Water Quality Criteria for Organoleptic Effects*

| Pollutant | | CAS Number | Organoleptic Effect Criteria (µg/L) | FR Cite/Source |
|---|---|---|---|---|
| 1 | Acenaphthene | 83329 | 20 | Gold Book |
| 2 | Monochlorobenzene | 108907 | 20 | Gold Book |
| 3 | 3-Chlorophenol | -- | 0.1 | Gold Book |
| 4 | 4-Chlorophenol | 106489 | 0.1 | Gold Book |
| 5 | 2,3-Dichlorophenol | -- | 0.04 | Gold Book |
| 6 | 2,5-Dichlorophenol | -- | 0.5 | Gold Book |
| 7 | 2,6-Dichlorophenol | -- | 0.2 | Gold Book |
| 8 | 3,4-Dichlorophenol | -- | 0.3 | Gold Book |
| 9 | 2,4,5-Trichlorophenol | 95954 | 1 | Gold Book |
| 10 | 2,4,6-Trichloropehnol | 88062 | 2 | Gold Book |
| 11 | 2,3,4,6-Tetrachlorophenol | -- | 1 | Gold Book |
| 12 | 2-Methyl-4-Chlorophenol | -- | 1800 | Gold Book |
| 13 | 3-Methyl-4-Chlorophenol | 59507 | 3000 | Gold Book |
| 14 | 3-Methyl-6-Chlorophenol | -- | 20 | Gold Book |
| 15 | 2-Chlorophenol | 95578 | 0.1 | Gold Book |
| 16 | Copper | 7440508 | 1000 | Gold Book |
| 17 | 2,4-Dichlorophenol | 120832 | 0.3 | Gold Book |
| 18 | 2,4-Dimethylpehnol | 105679 | 400 | Gold Book |
| 19 | Hexachlorocyclopentadiene | 77474 | 1 | Gold Book |
| 20 | Nitrobenzene | 98953 | 30 | Gold Book |
| 21 | Pentachlorophenol | 87865 | 30 | Gold Book |
| 22 | Phenol | 108952 | 300 | Gold Book |
| 23 | Zinc | 7440666 | 5000 | 45 FR79341 |

**General Notes:**

1. These criteria are based on organoleptic (taste and odor) effects. Because of variations in chemical nomenclature systems, this listing of pollutants does not duplicate the listing in Appendix A of 40 CFR Part 423. Also listed are the Chemical Abstracts Service (CAS) registry numbers, which provide a unique identification for each chemical.

## *National Recommended Water Quality Criteria*

**Additional Notes:**

1. **Criteria Maximum Concentration and Criterion Continuous Concentration:** The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. The CMC and CCC are just two of the six parts of an aquatic life criterion; the other four parts are the acute averaging period, chronic averaging period, acute frequency of allowed exceedence, and chronic frequency of allowed exceedence. Because 304(a) aquatic life criteria are national guidance, they are intended to be protective of the vast majority of the aquatic communities in the United States.

2. **Criteria Recommendations for Priority Pollutants, Non Priority Pollutants and Organoleptic Effects:** This compilation lists all priority toxic pollutants and some non priority toxic pollutants, and both human health effect and organoleptic effect criteria issued pursuant to CWA '304(a). Blank spaces indicate that EPA has no CWA '304(a) criteria recommendations. For a number of non-priority toxic pollutants not listed, CWA '304(a) Awater + organism@ human health criteria are not available, but EPA has published MCLs under the SDWA that may be used in establishing water quality standards to protect water supply designated uses. Because of variations in chemical nomenclature systems, this listing of toxic pollutants does not duplicate the listing in Appendix A of 40 CFR Part 423. Also listed are the Chemical Abstracts Service CAS registry numbers, which provide a unique identification for each chemical.

3. **Human Health Risk:** The human health criteria for the priority and non-priority pollutants are based on carcinogenicity of $10^{-6}$ risk. Alternate risk levels may be obtained by moving the decimal point (e.g., for a risk level of $10^{-5}$, move the decimal point in the recommended criterion one place to the right).

4. **Water Quality Criteria published pursuant to Section 304(a) or Section 303(c) of the CWA:** Many of the values in the compilation were published in the California Toxics Rule. Although such values were published pursuant to Section 303(c) of the CWA, they represent the Agency=s most recent calculation of water quality criteria and are thus the Agency=s 304(a) criteria.

5. **Calculation of Dissolved Metals Criteria:** The 304(a) criteria for metals, shown as dissolved metals, are calculated in one of two ways. For freshwater metals criteria that are hardness-dependent, the dissolved metal criteria were calculated using a hardness of 100 mg/L as $CaCO_3$ for illustrative purposes only. Saltwater and freshwater metals= criteria that are not hardness-dependent are calculated by multiplying the total recoverable criteria before rounding by the appropriate conversion factors. The final dissolved metals= criteria in the

table are rounded to two significant figures. Information regarding the calculation of hardness dependent conversion factors are included in the footnotes.

6. **Maximum Contaminant Levels:** The compilation includes footnotes for pollutants with Maximum Contaminant Levels (MCLs) more stringent than the recommended water quality criteria in the compilation. MCLs for these pollutants are not included in the compilation, but can be found in the appropriate drinking water regulations (40 CFR 141.11-16 and 141.60-63), or can be accessed through the Safe Drinking Water Hotline (800-426-4791) or the Internet (http://www.epa.gov/waterscience/drinking/standards/dwstandards.pdf).

7. **Organoleptic Effects:** The compilation contains 304(a) criteria for pollutants with toxicity-based criteria as well as non-toxicity based criteria. The basis for the non-toxicity based criteria are organoleptic effects (e.g., taste and odor), which would make water and edible aquatic life unpalatable but not toxic to humans. The table includes criteria for organoleptic effects for 23 pollutants. Pollutants with organoleptic effect criteria more stringent than the criteria based on toxicity (e.g., included in both the priority and non-priority pollutant tables) are footnoted as such.

8. **Gold Book:** The AGold Book@ is Quality Criteria for Water: 1986. EPA 440/5-86-001.

9. **Correction of Chemical Abstract Services Number:** The Chemical Abstract Services number (CAS) for Bis(2-Chlorisoprpyl) Ether, has been revised in IRIS and in the table. The correct CAS number for this chemical is 108-60-1. The previous CAS number for this pollutant was 39638-32-9.

10. **Contaminants with Blanks:** EPA has not calculated criteria for contaminants with blanks. However, permit authorities should address these contaminants in NPDES permit actions using the States= existing narrative criteria for toxics.

11. **Specific Chemical Calculations:** A. Selenium

12. **Aquatic Life:** This compilation contains aquatic life criteria for selenium that are the same as those published in the proposed CTR. In the CTR, EPA proposed an acute criterion for selenium based on the criterion proposed for selenium in the Water Quality Guidance for the Great Lakes System (61 FR 58444). The GLI and CTR proposals take into account data showing that selenium=s two prevalent oxidation states in water, selenite and selenate, present differing potentials for aquatic toxicity, as well as new data indicating that various forms of selenium are additive. The new approach produces a different selenium acute criterion concentration, or CMC, depending upon the relative proportions of selenite, selenate, and other forms of selenium that are present.

    EPA is currently undertaking a reassessment of selenium, and expects the 304(a) criteria for selenium will be revised based on the final reassessment (63FR26186). However, until such time as revised water quality criteria for selenium are published by the Agency, the recommended water quality criteria in this compilation are EPA=s current 304(a) criteria.

## *Table A-4. EPA Appendix A - Conversion Factors for Dissolved Metals*

| Metal | Conversion Factor Freshwater CMC | Conversion Factor Freshwater CCC | Conversion Factor Saltwater CMC | Conversion Factor Saltwater CCC[1] |
|---|---|---|---|---|
| Arsenic | 1.000 | 1.000 | 1.000 | 1.000 |
| Cadmium | 1.136672-[(ln hardness)(0.041838)] | 1.101672-[(ln hardness)(0.041838)] | 0.994 | 0.994 |
| Chromium III | 0.316 | 0.860 | -- | -- |
| Chromium VI | 0.982 | 0.962 | 0.993 | 0.993 |
| Copper | 0.960 | 0.960 | 0.83 | 0.83 |
| Lead | 1.46203-[(ln hardness)(0.145712)] | 1.46203-[(ln hardness)(0.145712)] | 0.951 | 0.951 |
| Mercury | 0.85 | 0.85 | 0.85 | 0.85 |
| Nickel | 0.998 | 0.997 | 0.990 | 0.990 |
| Selenium | -- | -- | 0.998 | 0.998 |
| Silver | 0.85 | -- | 0.85 | -- |
| Zinc | 0.978 | 0.986 | 0.946 | 0.946 |

## *Table A-5. EPA Appendix B - Parameters for Calculating Freshwater Dissolved Metals Criteria that Are Hardness-Dependent*

| Chemical | $m_A$ | $b_A$ | $m_C$ | $b_C$ | Freshwater Conversion Factors (CF) | |
|---|---|---|---|---|---|---|
| | | | | | CMC | CCC |
| Cadmium | 1.0166 | -3.924 | 0.7409 | -4.719 | 1.136672-[(ln hardness)(0.041838)] | 1.101672-[(ln hardness)(0.041838)] |
| Chromium III | 0.8190 | 3.7256 | 0.8190 | 0.6848 | 0.316 | 0.860 |
| Copper | 0.9422 | -1.700 | 0.8545 | -1.702 | 0.960 | 0.960 |
| Lead | 1.273 | -1.460 | 1.273 | -4.705 | 1.46203-[(ln hardness)(0.145712)] | 1.46203-[(ln hardness)(0.145712)] |
| Nickel | 0.8460 | 2.255 | 0.8460 | 0.0584 | 0.998 | 0.997 |
| Silver | 1.72 | -6.59 | -- | -- | 0.85 | -- |
| Zinc | 0.8473 | 0.884 | 0.8473 | 0.884 | 0.978 | 0.986 |

Hardness-dependant metals= criteria may be calculated from the following:

$$\text{CMC (dissolved)} = \exp\{m_A [\ln(\text{hardness})] + b_A\} \text{ (CF)}$$

$$\text{CCC (dissolved)} = \exp\{m_C [\ln(\text{hardness})] + b_C\} \text{ (CF)}$$

## *EPA Appendix C - Calculation of Freshwater Ammonia Criterion*

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations:
   - Where salmonid fish are present:
     - $CMC = (0.275/(1 + 10^{7.204-pH})) + (39.0/(1 + 10^{pH-7.204}))$
   - Or where salmonid fish are not present:
     - $CMC = (0.411/(1 + 10^{7.204-pH})) + (58.4/(1 + 10^{pH-7.204}))$

2A. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equations:
   - When fish early life stages are present:
     - $CCC = ((0.0577/(1 + 10^{7.688-pH})) + (2.487/(1 + 10^{pH-7.688}))) \times MIN (2.85, 1.45 \cdot 10^{0.028 \cdot (25-T)})$
   - When fish early life stages are absent:
     - $CCC = ((0.0577/(1 + 10^{7.688-pH})) + (2.487/(1 + 10^{pH-7.688}))) \times 1.45 \cdot 10^{0.028 \cdot (25-MAX(T,7))}$

2B. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

# APPENDIX B - CLEAN WATER ACT § 401 CERTIFICATION

**1. Definitions.**

"Council" means the Makah Tribal Council.

"Director" means the Director of the Makah Fisheries Management Department.

"Reservation" means the Makah Indian Reservation.

"Tribe" means and "Tribal" refers to the Makah Indian Tribe.

**2. Designated Agency for Water Quality Certification Applications.**

The Makah Fisheries Management Department, under the direction of the Makah Tribal Council, shall be the tribal agency responsible for collecting, reviewing, evaluating, processing, approving or denying all applications to the Tribe for certification pursuant to Section 401 of the Federal Clean Water Act, 33 U.S.C. § 1341.

**3. Procedure for Receiving and Processing Water Quality Certification Applications.**

(A) All applications, correspondence and notifications with regard to water quality certification applications are to be directed to the Director of the Makah Fisheries Management Department, P.O. Box 115, Neah Bay, Washington, 98357.

(B) Any applicant for a federal license or permit to conduct any activity which may result in a discharge into the waters of the Reservation must apply for a certification under this Ordinance that such activity will not cause or contribute to a violation of Tribal water quality standards or any other appropriate requirement of Tribal law relating to water quality.

(C) A complete water quality certification application shall contain the following information:

(1) Name and address of project owner and project operator;

(2) Name and address of the designated legal representative of the project owner and project operator;

(3) Legal description of the project location;

(4) Names and addresses of immediately adjacent property owners or lessees;

(5) Complete description of the project proposal, including plans, maps, and other appropriate materials;

(6) Name or description of water bodies which may be affected by a discharge

from the proposed project;

(7) Copies of any environmental assessments, environmental impact statements or other environmental review documents prepared pursuant to the National Environmental Policy Act or Washington State Environmental Policy Act relating to the proposed project;

(8) Other environmental documents required by the federal licensing or permitting agency relating to water quality;

(9) Copies of any public notice or supporting information issued by the federal licensing or permitting agency for the proposed project;

(10) An exhibit complying with 40 C.F.R. § 121.22 which contains:

(a) A description of the proposed facility or activity, and of any discharge into Reservation waters which may result from the proposal, including the biological, chemical, and physical characteristics of the discharge and the locations at which such discharge may enter Reservation waters;

(b) A description of the function and operation of equipment or facilities to treat waste or other effluents which may be discharged, including specification of the degree of treatment expected to be attained;

(c) The date or dates on which the proposed activity will commence and terminate, and the date or dates during which the discharge will occur;

(d) A description of the methods and means proposed to monitor the quality and characteristics of the discharge and the operation of equipment or facilities employed in the treatment or control of wastes or other effluents;

(11) A declaration signed by an authorized representative of the owner and operator of the proposed project attesting under penalty of perjury that to the best of his or her knowledge the proposed project will not cause or contribute to a violation Tribal water quality standards or any other requirement of Tribal law relating to water quality.

(D) Each application submitted must be accompanied by an application fee to be determined by the Director. Such application fee shall fully compensate the Tribe for all costs, fees and expenses reasonably incurred in processing the water quality certification application. If the initial fee proves to be inadequate to compensate the Tribe for its reasonably incurred costs, fees and expenses, the Director shall require payment of a supplemental application fee as

a condition for continued processing of the application. Any application fees collected that are in excess of the amount reasonably expended by the Director in processing the application shall be returned to the applicant at the conclusion of the certification process.

(E) The Director may require an applicant to submit any additional information deemed necessary by the Director to adequately evaluate the project's impacts on Reservation water quality.

(F) Failure to complete an application, provide additional information reasonably requested by the Director, or pay an application fee reasonably required by the Director shall be grounds for denial of certification under Section 4(F) and (G) of this Ordinance.

(G) Upon receipt of a complete application, the Director shall prepare a public notice. Such notice shall be mailed to all adjacent property owners or lessees listed in the application and published in a newspaper of general circulation on the Reservation. The Director shall provide a period of not less than 30 days following the date of the public notice for submission of written comments.

(H) The Director may, in his discretion, hold a public hearing with respect to the certification application prior to his decision to grant or deny the application.

**4. <u>Water Quality Certification Decisions</u>.**

(A) Within 120 days after an application is deemed complete by the Director, the Director shall either notify the applicant of his or her decision on the application or notify the applicant that additional time (not to exceed a total 1 year from the time the application is deemed complete) is required to process the application.

(B) If, after considering a complete application and such other information the Director deems relevant, the Director finds that the project will not cause or contribute to a violation of Tribal water quality standards or any other appropriate requirement of Tribal law relating to water quality, the Director shall issue a certification imposing such conditions that are necessary to ensure that the proposed project will not cause or contribute to a violation of Tribal water quality standards or any other appropriate requirement of Tribal law relating to water quality. The certification shall be mailed to the applicant and the federal licensing or permitting agency.

(C) Any water quality certification approved by the Director shall be made in writing and include:

(1) The name and address of the project owner or operator;

(2) The name and location of the project;

(3) A description of the project as approved;

(4) Findings that the project will not cause or contribute to a violation of Tribal water quality standards or any other appropriate requirements of Tribal law relating to water quality;

(5) Conditions that the Director deems necessary to ensure that the proposed project will not cause or contribute to a violation of Tribal water quality standards or other appropriate Tribal requirements relating to water quality. Such conditions may include but are not limited, to restrictions on effluent discharge, effluent monitoring and reporting, minimum flow requirements, consent to tribal inspections, and requirements for decommissioning or closure of the facility.

(D) A water quality certification shall require the project owner and operator to notify the Director of all changes in the project subsequent to certification.

(E) A water quality certification shall not be transferable without the written approval of the Director.

(F) If, after considering a complete application and such other information the Director deems relevant, the Director finds that the project is likely to cause or contribute to a violation of Tribal water quality standards or any other appropriate requirement of Tribal law relating to water quality, notwithstanding the implementation of all feasible measures designed to mitigate the impact of the facility, the Director shall deny the application.

(G) A denial of an application for water certification shall be made in writing and shall set forth the reasons for the denial. The notice shall be mailed to the applicant and to the federal licensing or permitting agency. The notice shall advise the applicant of the appeal rights and procedures provided for in this ordinance.

(H) If the Director fails to act on an application for water quality certification within one year of receiving a complete application, the certification requirement of this Ordinance shall be waived with respect to the application for a federal license or permit.

**5. Modification, Revocation or Suspension of Certification.**

(A) The Director may modify, suspend or revoke a water qualify certification issued under this Ordinance:

(1) to conform to a modification, suspension or revocation of the pertinent federal permit or license for the project;

(2) if the project is modified in a manner inconsistent with the certification;

(3) if the application contained material misrepresentations or omissions;

(4) if the conditions included in the certification have been violated;

(5) if the project causes or contributes to a violation of Tribal water quality standards or other appropriate requirement of Tribal law relating to water quality.

(B) The Director may not modify, suspend or revoke the certification without providing the certificate holder with 20 days written notice of the proposed modification, suspension or revocation and the reasons therefor and affording the certificate holder an opportunity to contest the proposed action before the Director.

(C) A modification, suspension or revocation of a water quality certification must be in writing and set forth the reasons for and findings in support of such action.

**6. <u>Appeals of Decisions Relating to Water Quality Certifications</u>.**

Any person adversely affected by a decision of the Director to issue, condition or deny a water quality certification, or to modify, suspend or revoke a water quality certification may appeal such decision by filing a Notice of Appeal with the Makah Tribal Council within 45 days of the Director's decision. The Council shall afford the appellant a hearing within 30 days of receiving the Notice of Appeal, during which the appellant and the Director shall have the right to call and cross-examine witnesses and submit other evidence to the Council. At the conclusion of the hearing, the Council may affirm the Director's decision, affirm the decision with modifications, remand the decision to the Director for additional findings, or reverse the decision. The Council's decision shall be in writing and shall be mailed to the appellant, the Director and the federal licensing or permitting agency. If the Council's decision reverses or modifies the decision of the Director, the Council's decision shall set forth the reasons for such modification or reversal. The decision of the Council on appeal shall be final and binding on all parties.

# APPENDIX C - IMPLEMENTATION PROCEDURES
## FOR DETERMINING NATURAL CONDITIONS FOR APPLYING THE MAKAH TRIBE'S WATER QUALITY STANDARDS

Section 3 of the Makah Tribe's Water Quality Standards state that the Tribe will, in its discretion, establish site-specific water quality criteria, including when the natural conditions of a waterbody are demonstrated to be of lower quality than a water quality criterion for a given use. In those situations, the natural condition will constitute the applicable water quality criterion. The following sets forth the Department's implementation procedures for determining natural conditions in the application of the Tribe's water quality standards. Once the Site Specific Criteria is authorized by the Tribe, EPA will be officially notified of any final decision in order to carry out approval/disapproval duties under CWA section 303(c)(3).

### 1. List of potential pollutants

By definition, "natural conditions" are the water quality that was present before human-caused pollution. Rather, these conditions are caused by local geophysical, hydrological, and meteorological processes and wildlife. The Department anticipates that possible site-specific natural conditions might be identified for the following parameters:

- Bacteria (attributed to wildlife)
- Metals (attributed to naturally eroding ore deposits)
- Nutrients (attributed to background soil vegetation and/or wildlife conditions)
- Sediment and Turbidity (attributed to soil erosion and/or organic matter not accelerated by human activities)
- Other parameters attributed to similar natural processes

### 2. General description of methods

Prior to a natural condition superceding otherwise applicable numeric criteria, the Department will make a finding as to the level at which the pollutant is present with no influence from anthropogenic activities. Similarly, the Department will document the natural process contributing to the presence of the pollutant. The specific methodology used to support a natural condition finding may vary in each local situation. As noted in the definition of "natural conditions" within the water quality standards, the assessment of natural conditions in the headwaters of a disturbed watershed may necessitate the use of the natural background conditions of a neighboring or similar watershed as a reference condition. The scientifically-defensible methods will utilize the best available data, and may include the use of:

- Reference streams,

- Pollutant transport models,
- DNA testing,
- Historical data (where available), and/or
- Other sampling methods and studies.

Specifically for temperature, the natural condition is a condition that would exist in the absence of human activities that alter stream temperatures. Methods to estimate natural background temperatures include:

- Demonstrating that current temperature reflects the natural conditions,
- Using statistical or computer simulation models,
- Using a non-degraded reference stream for comparison,
- Using historical temperature data, and
- Assessing the historical distribution of salmonids.

***Demonstrating that Current Temperatures Reflect Natural Conditions***

Under this approach, the past and present human activities that could impact the river temperatures are documented and a technical demonstration is made that the human activities do no currently impact temperatures. This approach is most applicable to non-degraded watersheds (i.e. national parks, wilderness areas, and protected lands). These watersheds can be used as "reference" streams for estimating the natural background temperatures of degraded streams. If there is a small human impact on temperature, it may also be possible to estimate the human impact and subtract it from current temperatures to calculate the natural temperatures.

***Comparison to a Reference Stream***

It is often reasonable to assume that the natural temperatures of a thermally degraded stream are similar to those of non-degraded stream, so long as the location, landscape context, and physical structure of the stream are sufficiently similar. The challenge to this approach is finding a reference stream with similar features that may affect the parameter of interest, such as location, landscape context, and physical structure.

***Metals***

Dissolved metal concentrations away from the immediate influence of discharges are typically lower than surface water criteria. However, ambient metals concentrations in water resulting from natural weathering and leaching of mineralized areas may be above criteria levels. The natural background concentrations in mineralized areas may be obscured by the overprint of mining activities. The Department will utilize as appropriate the following three methods for estimating natural background geochemistry of water in mineralized areas that have been mined:

- Examination of historical documents
- Comparison to natural concentration in undisturbed, similarly mineralized areas
- Predictive theoretical geochemical modeling (Runnells et al., 1992, Maest et al., 1999)

## 3. Public process

The public will have specific notice of these natural conditions whenever they are relevant to one of the Clean Water Act regulatory programs. The public notices and documentation accompanying the 303(d) listing process, draft TMDLs, draft NPDES permits, and 401 water quality certifications will indicate that the otherwise applicable numeric criteria have been superseded by a natural conditions finding. When the Department notices these actions for public comment, supporting documentation relating to the natural condition determination will be made available for public review.

## 4. Commitment to work with EPA on methodology

The Department is committed to work with the EPA as natural condition methodologies are refined in the TMDL, NPDES, and 303(d) listing contexts. The Department expects that natural conditions will most commonly be identified through the TMDL process. In that circumstance, EPA will have an opportunity to review and evaluate any natural condition determination as part of its TMDL approval action.

## 5. Central tracking

The Department will list the water bodies where "natural conditions" findings have been made on our standards web page to ensure that the public is aware and notified of natural conditions that have been determined. The Department will include information on natural conditions determinations in the Integrated Report and tracking reports of TMDLs.

## 6. Potential need for reevaluation of designated uses

It is possible at some locations that the natural conditions will not support, and never has supported, a designated beneficial use. In such circumstances, the Department will modify the

designated use to properly adjust the beneficial use to better reflect the existing use of the water segment. This will be done using the process for a Use Attainability Analysis, in accordance with the federal water quality regulations at 40 CFR 131.10(g). Where a human health use will not be supported by the natural condition, that human health use will need to be removed or sub-categorized.

## 7. Documentation provided to the EPA by the Tribe

As previously noted, once the Site Specific Criteria is authorized by the Tribe, EPA will be officially notified of any final decision in order to carry out approval/disapproval duties under CWA section 303(c)(3). The Tribe will also provide the following information as it occurs: 1) the natural condition of a waterbody has been demonstrated to be of lower quality than a water quality criterion for the designated use(s); (2) the natural condition will fully protect the designated use(s); 3) exceedences of the water quality standards can be attributed to natural conditions; 4) how the natural condition based criterion was established; and 5) that the public