**Quartz Valley Indian Reservation**

**Water Quality Control Plan**



Prepared by:

**Tribal Environmental Protection Department**

**Quartz Valley Indian Reservation**

13601 Quartz Valley Road

Fort Jones, CA 96032

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**Table of Contents**

[**Table of Contents** 1](#_Toc134620395)

[**List of Tables** 2](#_Toc134620396)

[**Introduction** 3](#_Toc134620397)

[Purpose of Water Quality Control Plan 3](#_Toc134620398)

[Location and Geographic Context of the Quartz Valley Indian Reservation 4](#_Toc134620399)

[Authority 5](#_Toc134620400)

[Triennial Review and Public Participation 5](#_Toc134620401)

[Definitions 9](#_Toc134620402)

[**Water Quality Standards** 13](#_Toc134620403)

[(a) *Applicability* 13](#_Toc134620404)

[(b) *Designated Uses* 13](#_Toc134620405)

[(c) *Narrative water quality criteria* 16](#_Toc134620406)

[(d) *Numeric water quality criteria* 17](#_Toc134620407)

[(e) *Antidegradation policy* 20](#_Toc134620408)

[(f) *Antidegradation implementation methods* 21](#_Toc134620409)

[(g) *Wetlands designated uses, narrative and numeric water quality criteria, and antidegradation requirements* 24](#_Toc134620410)

[(h) *Mixing Zone Policy* 25](#_Toc134620411)

[(i) *Compliance Schedule Authorization Provision* 27](#_Toc134620412)

[(j) *WQS Variances* 27](#_Toc134620413)

[(k) *Water Body-Specific Criteria, and WQS Variances* 28](#_Toc134620414)

[**References Cited** 44](#_Toc134620415)

**List of Tables**

[Table 1. Designated uses for waterbodies within the boundaries of the Reservation 14](#_Toc134620577)

[Table 2. Dissolved Oxygen Aquatic Life Criteria for Fresh Waters 19](#_Toc134620578)

[Table 3. Nutrient and Organic Matter Objectives 20](#_Toc134620579)

[Table 4. Specific Water Quality Objectives for Reservation Waterbodies 28](#_Toc134620580)

[Table 5. Aquatic life criteria 29](#_Toc134620581)

[Table 6. Copper Aquatic Life Criteria for Fresh Waters (Season-Specific) 31](#_Toc134620582)

[Table 7. Selenium Aquatic Life Criteria for Fresh Waters 32](#_Toc134620583)

[Table 8. Ammonia Aquatic Life Criteria for Fresh Waters 33](#_Toc134620584)

[Table 9. Human Health Criteria based on a Fish Consumption Rate of 175 grams/day and Cancer Risk Level of 1 in 10,000,000 people (10-7). 34](#_Toc134620585)

[Table 10. Maximum Contaminant Levels for Inorganic Chemicals 37](#_Toc134620586)

[Table 11. Maximum Contaminant Levels for Volatile Organic Chemicals (VOCs) 38](#_Toc134620587)

[Table 12. Maximum Contaminant Levels for Non-Volatile Synthetic Organic Chemicals (SOCs) 39](#_Toc134620588)

[Table 13. Secondary Maximum Contaminant Levels “Consumer Acceptance Contaminant Levels” 40](#_Toc134620589)

[Table 14. Secondary Maximum Contaminant Levels “Consumer Acceptance Contaminant Levels” 40](#_Toc134620590)

[Table 15. Radionuclide Maximum Contaminant Levels (MCLs) 41](#_Toc134620591)

[Table 16. Cyanobacterial toxin and cell density criteria, associated public health posting levels, and drinking water health advisories. Frequency and duration CUL-1 and REC-1 water quality criteria: concentrations shall not be exceeded in more than two 10-day periods per recreational season, for more than one recreational season, over a rolling 10-year period. 42](#_Toc134620592)

[Table 17. Design Flows 43](#_Toc134620593)

**Introduction**

## Purpose of Water Quality Control Plan

The primary responsibility for the protection and enhancement of water quality on the Quartz Valley Indian Reservation (QVIR, Reservation) is assigned to the Tribal Environmental Protection Department. The Tribal Environmental Protection Department proposes water quality standards which recognize the unique characteristics of cultural uses, natural water quality conditions, and both actual and potential beneficial uses of tribal waters.

The purposes of the water quality standards for the Reservation are outlined below:

• To designate uses for Reservation waterbodies

• To prescribe water quality criteria imposed to sustain designated uses of Reservation waterbodies

• To assure that degradation of existing water quality does not occur

• To promote the social welfare, cultural, and economic well-being of QVIR

These purposes will be accomplished by incorporating the water quality standards established herein into the permitting and management process for point source dischargers and nonpoint source generators, by using these water quality standards to assess attainment of beneficial uses, and by using (1) current treatment technologies to control point sources and (2) best management practices to control nonpoint sources of pollution.

Water quality standards for the Reservation are designed to meet the federal provisions of the Clean Water Act (CWA) as they relate to surface waterbodies. The water quality standards are consistent with Section 101(a)(2) of the CWA, which declares that “it is the national goal that, wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water to be achieved by July 1, 1983....”

The CWA requires tribes and states to develop water quality standards that include designated uses and criteria to support those uses for navigable waters. CWA Section 502(7) defines navigable waters as waters of the U.S. Waters of the U.S. are defined in federal regulations developed for the National Pollutant Discharge Elimination System (NPDES) (40 CFR § 122.2) and permits for the discharge of dredged or fill material (40 CFR §§ 230.3, 232.2). Waters of the U.S. include waters subject to the ebb and flow of the tide; intertribal waters (including intertribal wetlands) and intratribal waters (including wetlands), the use, destruction, or degradation of which could affect intertribal commerce; tributaries of the above; and wetlands adjacent to the above waters.

The technical basis for the water quality standards is provided in a companion document titled Justification for Water Quality Standards in the Quartz Valley Indian Reservation’s 2023 Water Quality Control Plan (Asarian et al. 2023).

## Location and Geographic Context of the Quartz Valley Indian Reservation

The Quartz Valley Indian Reservation lies in a rural, sparsely populated area of Siskiyou County, California, west of the Town of Fort Jones at latitude 41.601° north, longitude 122.976° west (Figure 1a). The Reservation is located within the Scott River watershed in the Klamath Mountains Province. The Scott River is one of four major tributaries of the Klamath River (Figure 1a), contributing about 5% of the entire Klamath’s runoff (yearly average of 615,000 acre-feet). The Scott River watershed is a large area with substantial variation in geology, geomorphology, and climatology. The watershed drains approximately 520,617 acres (812.2 mi2 or 2,107 km2). Major tributaries to the 58 mile long Scott River in the Scott Valley include: Shackleford, Kidder, Etna, French, and Moffett Creeks, and also the South and East Forks (SRWC SAP 2005) (Figure 1a). Surface waterbodies within the Reservation boundaries are Shackleford Creek (tributary to Scott River), Fretis Ditch, and wetlands (Figures 2 & 3). The only wetland mapping currently available for the Reservation is the National Wetland Inventory based on aerial imagery (Figure 3). QVIR hopes to conduct detailed local wetland mapping of the Reservation in the future. Surface waterbodies located near (but outside) the Reservation include Mill Creek (tributary to Shackleford Creek), Sniktaw Creek (tributary to Shackleford Creek), and Alder Creek (tributary to Sniktaw Creek) (Figure 1b). The reach of Shackleford Creek downstream of its confluence with Mill Creek is sometimes locally referred to as Shackleford/Mill Creek.

The headwaters of Shackleford Creek are upstream of the Reservation in the Marble Mountain Wilderness Area of Klamath National Forest and include Campbell, Cliff, and Summit lakes. The Tribe has interest in the health of these aquatic ecosystems because of their role in producing cold water fish and other culturally significant flora and fauna. Chinook and coho salmon as well as steelhead trout return to Shackleford Creek (and its off-Reservation tributary Mill Creek) to spawn and rely on a healthy Scott River for juvenile rearing and adult migration.

The Scott River watershed, including the Reservation, was listed as sediment and temperature impaired under Section 303(d) of the Clean Water Act by the North Coast Regional Water Quality Control Board (NCRWQCB) and the U.S. Environmental Protection Agency (EPA) in 1997. Additional impairment listings were added in 2015 for Shackleford Creek above Campbell Lake (pH) and for the mainstem Scott River from Young’s Dam to Boulder Creek (aluminum, biostimulatory conditions, dissolved oxygen, and pH). NCRWQCB recommended that USEPA list Sniktaw Creek as impaired for dissolved oxygen, but did not propose that listing due to perceived lack of jurisdiction[[1]](#footnote-2). Total Maximum Daily Loads (TMDLs) for sediment and temperature were approved by the NCRWQCB (December 2005), the State Water Board (June 2006) and the US EPA (September 2006). Water quality conditions (low flow, high temperatures, altered sediment supplies, and highly fluctuating water chemistry during summer months) are considered to have adversely affected the habitat of anadromous salmonid populations in the Scott River watershed. Southern Oregon/Northern California Coast (SONCC) Coho salmon, including those occurring in Shackleford Creek within the Reservation, were listed as threatened under the Federal Endangered Species Act (ESA) in 1997 by the National Marine Fisheries Service (NMFS) and under the California Endangered Species Act (CESA) in 2002 by the California Fish and Game Commission. Additionally, the Klamath River in the reach downstream of the confluence with the Scott is also listed for nutrients and organic enrichment/low dissolved oxygen; the Klamath River TMDLs were approved by the EPA in 2010.

## Authority

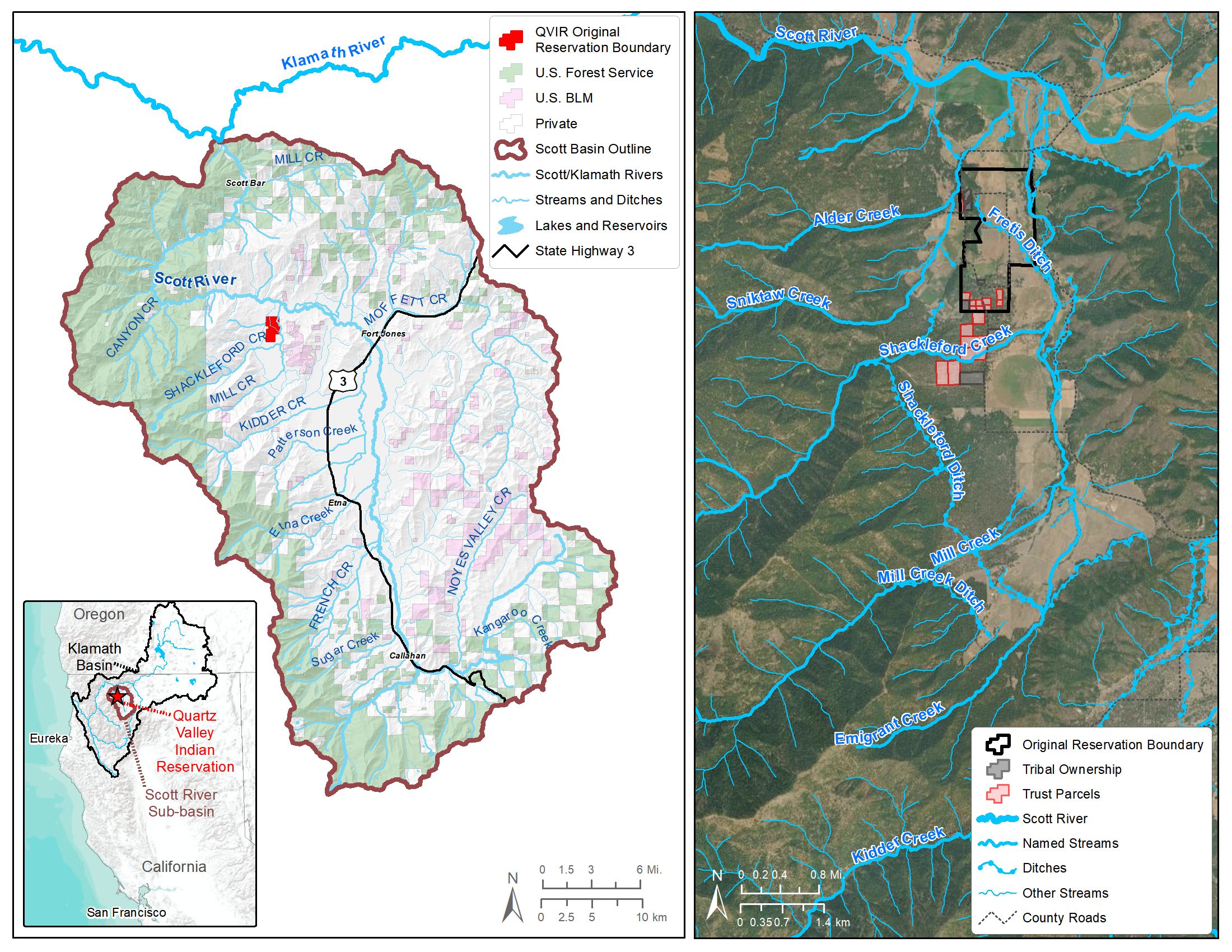
QVIR was granted treatment in a manner similar to a state (TAS) by U.S. EPA on February 13, 2020 (U.S. EPA 2020). Key points from U.S. EPA’s approval letter are summarized briefly here. QVIR is a federally recognized Indian Tribe, with a constitution adopted in 1939. The Reservation was originally established in 1940 with a size of 604 acres. Federal recognition was terminated in 1967 but later re-established in 1983. The Reservation was restored by court order in 1989 but during the period of termination much of the land had passed into non-Indian ownership. QVIR has been purchasing lands within and nearby the original reservation boundaries and placing those lands into trust. U.S. EPA approved QVIR’s jurisdiction for CWA regulatory purposes over an area of 694 acres, comprised of the 604-acre original reservation and 90 acres of trust lands outside the original reservation boundaries (Figure 2).

## Triennial Review and Public Participation

Pursuant to Section 303(c)(1) of the CWA 33 U.S.C. Section 1313[c]), the Tribe will hold public hearings at least once every three years to review and, as appropriate, amend the water quality standards. Revisions to the water quality standards will incorporate cultural concerns, updated U.S. EPA quality criteria for water, and relevant scientific and engineering advances.

The Tribal Environmental Protection Department is responsible for this triennial review, and is required to: 1) identify those portions of the trust lands which are in need of modification or new additions; 2) adopt standards as appropriate; and 3) recognize the portions of the water quality standards which are appropriate as written. The review includes a public hearing process, thus providing a forum for the public to raise issues for the Tribal Environmental Protection Department to consider for incorporation into the water quality standards for the trust lands.

Public participation is a key element in both tribal and federal planning requirements. Federal public participation requirements of 40 CFR Part 25 apply. The public participation requirements are intended to foster public awareness and the open processes of tribal governmental decision-making. The Tribal Environmental Protection Department seeks to implement public participation requirements by requesting the public's input, assimilating its viewpoints and preferences, and demonstrating that those viewpoints have been considered. A notice of proposed actions relating to water quality standards for the trust lands will be published in area newspapers and distributed to a list of interested persons or organizations.



**A**

**B**

Figure 1. Location of the Quartz Valley Indian Reservation within (A) the Scott River sub-basin and Klamath Basin, and (B) Quartz Valley and surrounding areas.

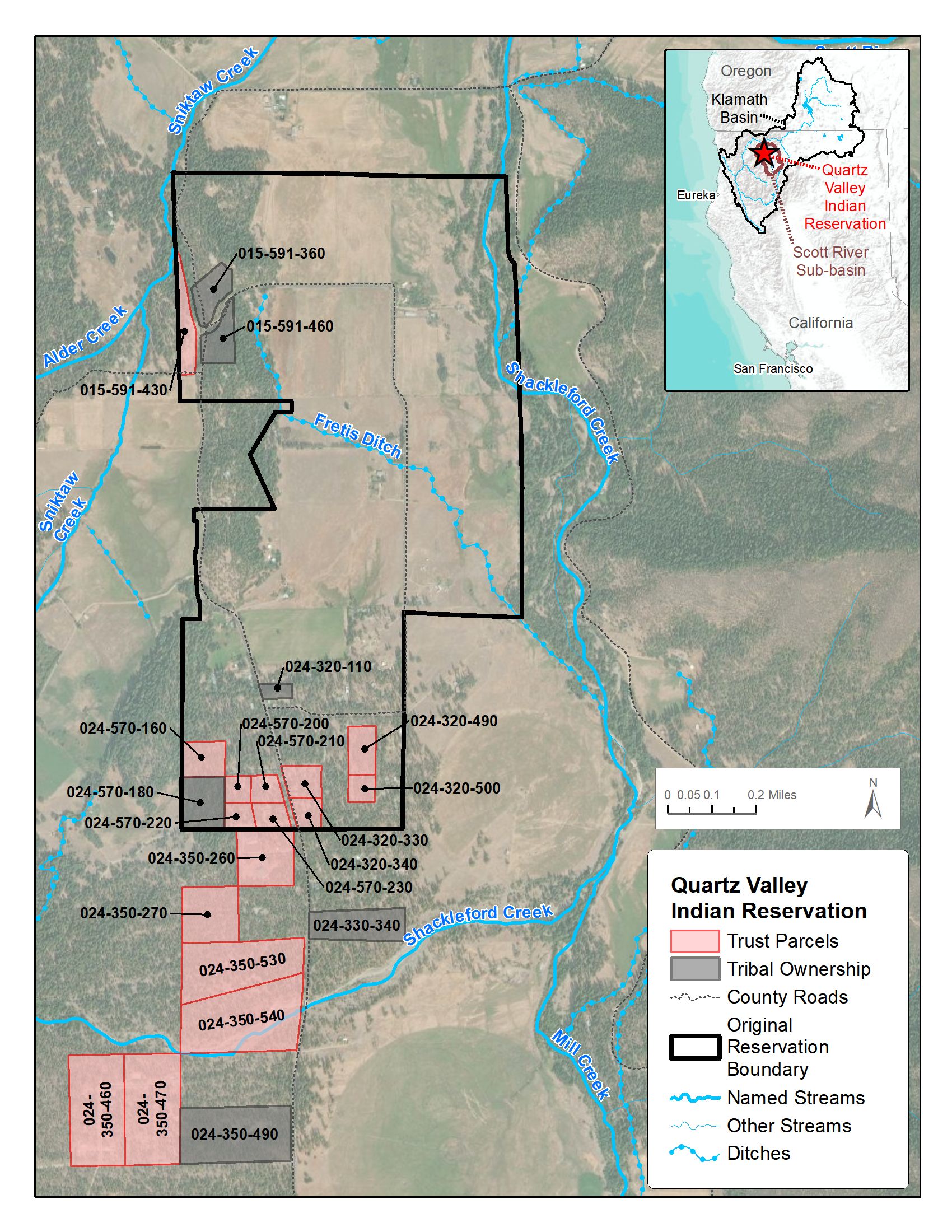
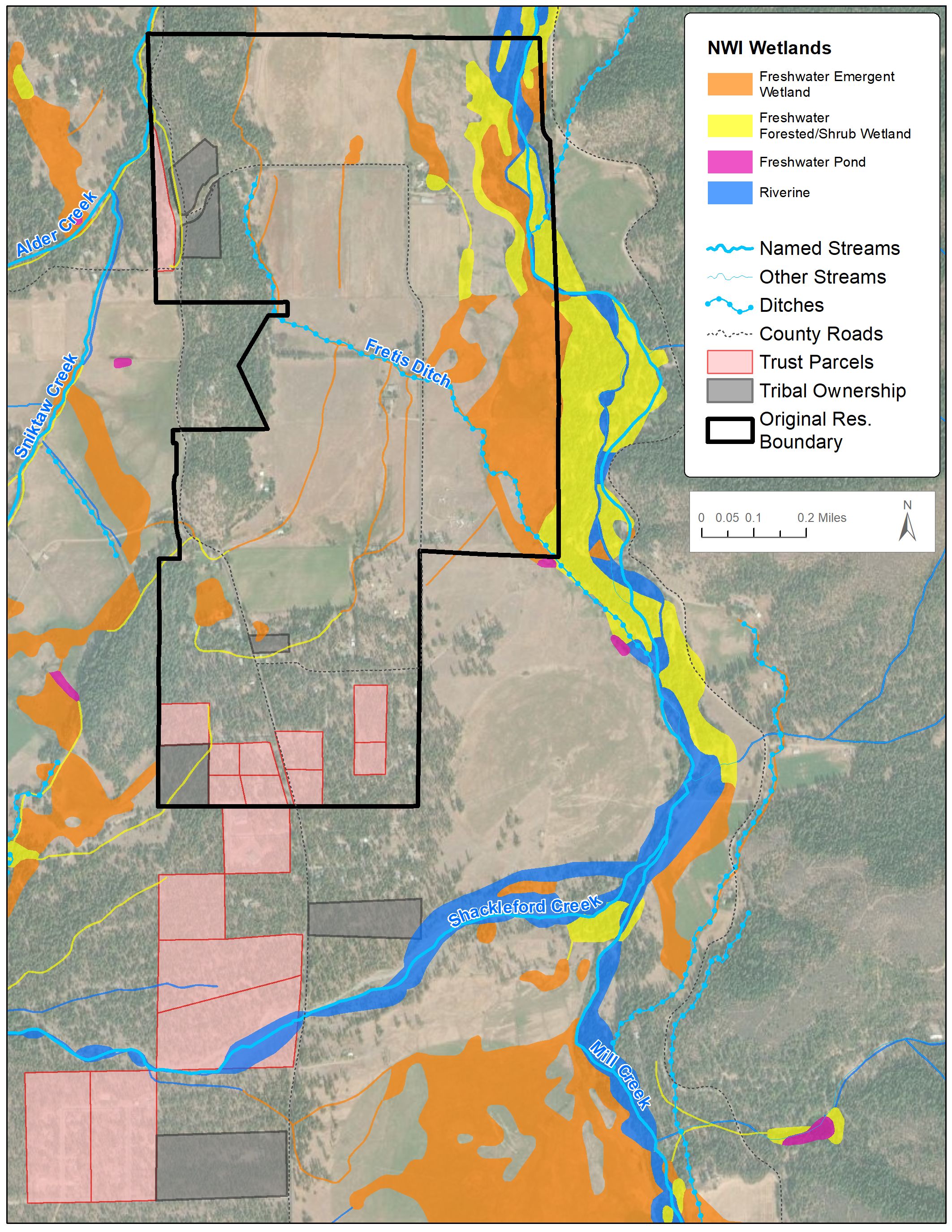


Figure 2. Map showing parcels (labeled with parcel numbers), streams, ditches, and original reservation boundary of the Quartz Valley Indian Reservation (QVIR). Inset shows QVIR’s location within the Klamath Basin.

Figure 3. Wetlands mapped by the U.S. Fish and Wildlife Service National Wetland Inventory (NWI) using 1:58,000 scale 1983 color infrared aerial imagery. Map also shows parcels, streams, ditches, original QVIR reservation boundary, and October 3, 2020 Maxar satellite image.

## Definitions

(1) “Acute” refers to a stimulus severe enough to rapidly induce an effect; in aquatic toxicity tests, an effect observed in 96- hours or less is typically considered acute. When referring to aquatic toxicology or human health, an acute affect is not always measured in terms of lethality.

(2) “Aquatic community” is an association of interacting populations of aquatic organisms in a given water body or habitat.

(3) “Averaging period” is the period of time over which the receiving water concentration is averaged for comparison with criteria concentrations. This specification limits the duration of concentrations above the criteria.

(4) “Best management practices” or “BMP” means physical, structural, and/or managerial practices that, when used singularly or in combination, prevent or reduce pollution.

(5) “Bioaccumulation” is the process by which a compound is taken up by an aquatic organism, both from water and through food.

(6) “Biological integrity” is the condition of the aquatic community inhabiting unimpaired water bodies of a specified habitat as measured by community structure and function.

(7) “Chronic” defines a stimulus that lingers or continues for a relatively long period of time, often one tenth of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. The measurement of a chronic effect can be reduced growth, reduced reproduction, etc., in addition to lethality.

(8) “Clean Water Act” or “CWA” means the federal Clean Water Act, 33 U.S.C. §§ 1251-1387, as amended.

(9) “Compliance schedule” means a schedule of remedial measures, including an enforceable sequence of actions or operations, leading to compliance with an effluent limitation or other limitation, prohibition or standard.

(10) “Criteria” are elements of the Tribe’s water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use.

(11) “Criteria continuous concentration” (CCC) is the highest instream concentration of a toxicant or an effluent to which organisms can be exposed indefinitely without causing unacceptable effect.

(12) “Criteria maximum concentration” (CMC) is the highest instream concentration of a toxicant or an effluent to which organisms can be exposed for a brief period of time without causing an acute effect.

(13) “Cyanotoxins” are toxins produced by cyanobacteria. Cyanobacteria, a type of phytoplankton also known as blue-green algae, are often the cause of algal blooms in fresh water and occasionally in marine water. Their toxins can harm people, animals, aquatic ecosystems, the economy, drinking water supplies, property values, cultural activities, and recreational activities, including swimming and fishing.

(14) “Design flow" is the flow used for steady-state waste load allocation modeling.

(15) “Designated uses” are those uses specified in water quality standards for each water body or segment whether or not they are being attained.

(16) “Diversity” is the number and abundance of biological taxa in a specified location.

(17) “*E. coli* or *Escherichia coli*” is the name of a specific bacterium used as an indicator of fecal (pathogen) pollution in fresh water environments and is expressed as colony forming units (cfu) per 100 milliliters or most probable number (mpn) per 100 milliliters. Analytic procedures include multiple-tube fermentation and membrane filter techniques. Elevated levels can be an indicator of the presence of pathogens that can cause human health problems.

(18) “Existing uses” are those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.

(19) “Frequency” is how often criteria can be exceeded without unacceptably affecting the community.

(20) “Geometric mean” (GM) refers to the Nth root of the product of N numbers. Alternatively, the geometric mean can be calculated by adding the logarithms of N numbers, dividing the sum by N, and taking the antilog of the quotient. The geometric mean of two numbers is the square root of the product of the two numbers, and the geometric mean of one number is that number. Either natural (base e) or common (base 10) logarithms can be used to calculate geometric means as long as they are used consistently within each set of data, i.e., the antilog used must match the logarithm used.

(21) “Harmonic mean flow” is the number of daily flow measurements divided by the sum of the reciprocals of the flows. That is, it is the reciprocal of the mean of reciprocals.

(22) “Magnitude” is how much of a pollutant (or pollutant parameter such as toxicity), expressed as a concentration or toxic unit is allowable.

(23) “Mixing zone” is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.

(24) "Nonpoint source" means any dispersed land-based or water-based activity rather than a point source that contributes to water quality degradation, including but not limited to, atmospheric deposition; surface water runoff from agricultural, urban, forest, construction and mining lands; subsurface or underground sources; or discharges from boats or marine vessels not otherwise regulated under the National Pollutant Discharge Elimination System program.

(25) “NPDES” means National Pollutant Discharge Elimination System, the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA § 307, 318, 402, and 405 of the CWA.

(26) “Outstanding National Resource Water” is a high quality water that constitutes an outstanding Tribal resource due to its extraordinary water quality or ecological values, or where special protection is needed to maintain critical habitat areas.

(27) “Permit” means a document issued pursuant to Tribal code or federal laws (such as CWA §§ 401, 402 and 404) specifying waste treatment and control requirements or discharge conditions.

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

(9) “Pollutant” means 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 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

(30) “Pollution” is defined as the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water.

(31) “Practicable” means technologically possible, able to be put into practice, and economically viable.

(32) “Priority pollutants” are those pollutants listed under section 307(a) of the CWA.

(33) “Reservation” is the area to which the Quartz Valley Indian Reservations water quality standards apply, comprised of the 604-acre original reservation and 90 acres of trust lands outside the original reservation boundaries (Figure 2).

(34) “Site-specific criterion” is a water quality criterion that has been derived to be specifically appropriate to the water quality characteristics and/or species composition at a particular location.

(35) “Statistical threshold value” (STV) refers to the approximation of the 90th percentile of the water quality distribution and is intended to be a value that should not be exceeded by more than 10 percent of the samples taken.

(36) “Total maximum daily load” (TMDL) is the sum of the individual waste load allocations (WLAs) and load allocations (LAS); a margin of safety is included with the two types of allocations so that any additional loading, regardless of source, would not produce a violation of water quality standards.

(37) “Toxicity test” is a procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect on exposed test organisms of a specific chemical or effluent.

(38) “Toxic pollutant” refers to those pollutants, or combination of pollutants, including disease-causing agents, 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, or on the basis of information available to the administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformations, in such organisms or their offspring.

(39) “Turbidity” means the clarity of water expressed as nephelometric turbidity units (NTU) and measured with a calibrated turbidity meter.

(40) “Use attainability analysis” (UAA) is a structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in 40 CFR section 131.10(g).

(41) “Whole effluent toxicity” means the aggregate toxic effect of an effluent measured directly by a toxicity test.

**Water Quality Standards**

# *Applicability*

These water quality standards apply to all Reservation fresh surface waters that are considered Waters of the U.S.

QVIR recognizes that groundwater is not considered Waters of the U.S. for CWA regulatory purposes. Surface water and groundwater are strongly connected in Quartz Valley (Tolley et al. 2019). QVIR will regulate groundwater quality using its own legal authorities outside the CWA.

# *Designated Uses*

* 1. Table 1 lists the designated uses for waterbodies within the Reservation.

Table 1. Designated uses for waterbodies within the boundaries of the Reservation

|  |  |  |  |
| --- | --- | --- | --- |
| **Designated Use** | **Shackleford Creek** | **Groundwaters** | **Wetlands** |
| **AGR** | x | x |  |
| **AQUA** |  |  |  |
| **ASQ** | x |  | x |
| **COLD** | x |  |  |
| **CUL-1** | x |  |  |
| **CUL-2** | x |  | x |
| **FC** | x |  |  |
| **FRSH** | x | x | x |
| **GWR** | x |  | x |
| **IND** |  |  |  |
| **MIGR** | x |  |  |
| **MUN** | x | x |  |
| **NAV** |  |  |  |
| **POW** |  |  |  |
| **PRO** |  |  |  |
| **RARE** | x |  | x |
| **REC-1** | x |  |  |
| **REC-2** | x |  | x |
| **SPWN** | x |  |  |
| **SHELL** | x |  |  |
| **T-SUB** | x |  | x |
| **WARM** |  |  | x |
| **WILD** | x |  | x |

* 1. Designated uses are defined as follows:
     1. Agricultural Supply (AGR): Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
     2. Aquaculture (AQUA): Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes
     3. Aesthetic Quality (ASQ): Use of water that supports visual quality objectives including, but not limited to, the odor, taste and appearance (which includes stagnation and the presence of oil and foam) of the water.
     4. Cold Freshwater Habitat (COLD): Uses of water that support cold water ecosystems including, but not limited to the preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
     5. Cultural Contact Water (CUL-1) Use of water by a member of QVIR during a cultural or religious practice, where the human body will come into direct contact with the water. Complete submergence into, and ingestion of the water is likely to occur. Sensitive body organs, such as eyes, ears, and nose, may be exposed to prolonged contact with the water. It includes sufficient water quantity as well as quality to carry out these acts.
     6. Cultural Non-Contact Water (CUL-2): Use of water by a member of QVIR during a cultural or religious practice, including but not limited to subsistence fishing and collecting wetland and riparian plants, that may cause the human body to come into direct contact with the water, but normally not to the point of complete submergence. The use is such that ingestion of the water is not likely to occur, nor will sensitive body organs, such as eyes, ears, or nose, normally be exposed to prolonged contact with the water. It includes sufficient water quantity as well as quality to carry out these acts.
     7. Fish Consumption (FC): Uses of water for commercial, recreational or subsistence collection of fish, shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
     8. Freshwater Replenishment (FRSH): Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).
     9. Groundwater Recharge (GWR): Uses of water for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
     10. Industrial Service Supply (IND): Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
     11. Migration of Aquatic Organisms (MIGR): Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms such as anadromous fish
     12. Municipal and Domestic Supply (MUN): Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
     13. Navigation (NAV): Uses of water for shipping, travel, or other transportation by private, military or commercial vessels.
     14. Hydropower Generation (POW): Uses of water for hydropower generation.
     15. Industrial Process Supply (PRO): Uses of water for industrial activities that depend primarily on water quality.
     16. Rare, Threatened, or Endangered Species (RARE): Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under federal law as rare, threatened or endangered.
     17. Water Contact Recreation (REC-1): Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, snorkeling, white-water activities, or fishing.
     18. Non Contact Water Recreation (REC-2): Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. The use is such that ingestion of the water is not likely to occur, nor will sensitive body organs, such as eyes, ears, or nose, normally be exposed to direct contact with the water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
     19. Spawning, Reproduction, and/or Early Development (SPWN): Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fishes.
     20. Shellfish Harvesting (SHELL): Uses of water that support habitats suitable for the collection of filter feeding shellfish (e.g., clams, oysters, and mussels) for human consumption, commercial, or sports purposes.
     21. Tribal Subsistence Fishing (T-SUB): Uses of water involving the non-commercial catching or gathering of natural aquatic resources, including fish and shellfish, for consumption by individuals, households, or communities of QVIR to meet needs for sustenance.
     22. Warm Freshwater Habitat (WARM): Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
     23. Wildlife Habitat (WILD): Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

# *Narrative water quality criteria*

* 1. *General requirements.* All waters included in paragraph (a) of this section shall be free from toxic, radioactive, conventional, non-conventional, deleterious or other polluting substances in amounts that will prevent attainment of the designated uses specified in paragraph (b) of this section.
  2. *Aesthetic qualities.* All waters included in paragraph (a) of this section shall be free from substances, attributable to wastewater discharges or any other pollutant sources, that:
     1. Settle to form objectionable deposits;
     2. Float as debris, scum, oil, or other matter forming nuisances;
     3. Produce objectionable color, odor, taste, or turbidity;
     4. Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals, or plants; and/or
     5. Produce undesirable or nuisance aquatic life.
  3. *Protection of cultural and traditional uses.* All waters designated for cultural and traditional uses (CUL-1, CUL-2, T-SUB) shall be free from contaminants at levels that cause or contribute to an impairment in water-based activities essential to maintaining the Tribe’s cultural and traditional practices.
  4. *Downstream protection.* All waters designated in paragraph (a) of this section shall maintain a level of water quality that provides for the attainment and maintenance of the water quality standards of downstream waters, including the State of California which is immediately downstream, as well as the waters of federally recognized tribes further downstream.

# *Numeric water quality criteria*

* 1. *Aquatic life criteria*. The aquatic life criteria for these water quality standards are contained in Table 2, Table 5, Table 6, Table 7, Table 8. The aquatic life criteria apply as follows:
     1. The aquatic life criteria in Table 2, Table 5, Table 6, Table 7, Table 8 apply to all waters designated for the protection and propagation of fish (COLD, MIGR, SPWN, WARM), shellfish (SHELL), and wildlife (WILD, RARE).
  2. *Human health criteria*. The human health criteria for these water quality standards are contained in Table 9.
     1. The human health criteria for carcinogens in Table 9 were calculated based on an excess lifetime cancer risk level of 1 in 10 million, or 10-7.
     2. The human health criteria in these standards were calculated using a fish consumption rate of 175 grams per day (gpd).
     3. For all waters with the designated use of Municipal and Domestic Supply (MUN), the criteria in the “Water + Organism” column of Table 9 column shall apply.
     4. For all waters with the designated use of the protection and propagation of fish (COLD, MIGR, SPWN, WARM, T-SUB), shellfish (SHELL), and wildlife (WILD, RARE), but without the designated use of Municipal and Domestic Supply (MUN), the criteria in the “Organism Only” column of Table 9 shall apply.
     5. All criteria in Table 9 were derived using the USEPA Tribal/State Human Health Criteria Calculator, except Methylmercury which is based on the California Mercury Provisions (SWRCB 2017).
  3. *Drinking Water Criteria*
     1. In no case shall waters designated for use as Municipal and Domestic Supply (MUN) contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCL) and secondary maximum contaminant levels (SMCL) in Table 10, Table 11, Table 12, Table 13, Table 14, and Table 15.
     2. In no case shall groundwaters designated for use as Municipal and Domestic Supply (MUN) contain detectable levels of *E. coli* (i.e., 0 cfu/100 mL or 0 mpn/100 mL).
  4. *Fecal Indicator Bacteria Criteria to Protect Contact* *Recreational, Cultural, and Shellfish Uses* 
     1. For all waters with the designated use of Cultural Contact Water (CUL-1) and Water Contact Recreation (REC-1),
        1. Culturable *E. coli* should not exceed a geometric mean (GM) of 25 colony forming units (cfu) per 100 milliliters (mL) or a statistical threshold value (STV) of 81 cfu/100 mL.
           1. Duration and Frequency: The waterbody GM should not be greater than the selected GM magnitude in any 30-day interval. There should not be greater than a ten percent excursion frequency of the selected STV magnitude in the same 30-day interval.
           2. *E. coli* should be measured using U.S. EPA Method 1603, or any other equivalent method that measures culturable *E. coli.*
     2. At all areas where shellfish may be harvested for human consumption (SHELL, T-SUB), the fecal coliform concentration throughout the water column shall not exceed 43/100 mL for a 5-tube decimal dilution test or 49/100 mL when a three-tube decimal dilution test is used (National Shellfish Sanitation Program, Manual of Operation).
     3. Beach Action Values are not legally part of water quality standards and are not to be used to determine whether a water body is impaired under the Clean Water Act, but rather are triggers which can be used for public health advisory postings. QVIR will use a Beach Action Value of 47 cfu *E. coli*/100 mL. When an *E. coli* sample exceeds the BAV, QVIR’s Tribal Environmental Protection Department will post a public health advisory, if deemed appropriate.
  5. *Cyanobacterial criteria to protect human health.* Concentrations of cyanobacteria (blue-green algae) cells and cyanobacterial toxins shall conform to the limits listed in Table 16. The table provides criteria that differ according to groups of designated uses:
     1. Contact Cultural (CUL-1) and Contact Recreational (REC-1) Uses
     2. Shellfish Harvesting (SHELL, Fish Consumption (FC), Tribal Subsistence (T-SUB)
     3. Drinking water (MUN)
  6. *Temperature criteria*.
     1. The natural receiving water temperatures shall not be altered unless it can be demonstrated to the satisfaction of the QVIR Tribal Environmental Protection Department that such alteration in temperature does not adversely affect beneficial uses.
     2. At no time or place shall the temperature of any cold freshwater habitat (COLD) water be increased by more than 2.8°C above natural receiving water temperature.
     3. For all waterbodies designated as cold freshwater habitat (COLD), the seven-day average of daily maximum (7DADM) ambient water temperatures shall not exceed 16°C, year-round. These objectives are for ambient water temperatures that represent the main portion of flow and therefore cannot be solely met by presence of localized cold water refugia. In waterbodies designated as spawning habitat (SPWN), daily maximum temperatures shall not exceed 12.0°C (53.6 °F) during the September 15–June 30 period of salmonid spawning and incubation, nor exceed 10°C (50.0 °F) during the October 1–April 30 period of coho salmon spawning and incubation.
  7. *Dissolved Oxygen Criteria.* Dissolved oxygen (DO) concentrations shall conform to the following aquatic life requirements:

Table 2. Dissolved Oxygen Aquatic Life Criteria for Fresh Waters

|  |  |  |
| --- | --- | --- |
| **Beneficial Use** | **Daily Minimum Objective (mg/L)** | **7-Day Moving Average**  **Objective (mg/L)[[2]](#footnote-3)** |
| Warm Freshwater Habitat (WARM) | 5.0 | 6.0 |
| Cold Freshwater Habitat (COLD) | 6.0 | 8.0 |
| Spawning, Reproduction, and/or  Early Development (SPWN)[[3]](#footnote-4) | 9.0 | 11.0 |

* 1. *Nutrients and Organic Matter criteria.*

Table 3. Nutrient and Organic Matter Objectives

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Dry season: May – Oct** | **Wet season: Nov – Apr** |
| Total Phosphorus (TP) | 0.028 mg/L | 0.019 mg/L |
| Total Nitrogen (TN) | 0.310 mg/L | 0.325 mg/L |
| 5-Day Carbonaceous Biochemical Oxygen Demand (CBOD5) | 4 mg/L | 3 mg/L |

* 1. *Design flows.* The design flows in Table 17 shall be used to implement the aquatic life and human health criteria in paragraph (d). For example, the design flows will be used to establish allowable pollution discharges for Total Maximum Daily Loads (TMDLs) and National Pollution Discharge Elimination System (NPDES) permit limits. The effects of a point source discharge such as an industrial facility depends on the quantity of water in the receiving waterbody as well as the concentration and quantity of the discharge. During low flows, there is less water available to dilute effluent loadings, resulting in higher in-stream concentration of pollutants. The design flows are designed to be protective of the designated uses.
  2. If multiple numeric water quality criteria are presented for the same parameter, then the more stringent criteria shall apply.

# *Antidegradation policy*

* 1. Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
  2. Where the quality of the waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the Tribe finds, after full satisfaction of the intergovernmental coordination and public participation provisions, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the Tribe shall assure water quality adequate to protect existing uses fully. Further, the Tribe shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.
     1. Identification of reservation waters for the protections described in paragraph (e)(2) of this section will be made on a parameter-by-parameter basis.
     2. Before allowing any lowering of high water quality, pursuant to paragraph (e)(2) of this section, the Tribe shall find, after an analysis of alternatives, that such a lowering is necessary to accommodate important economic or social development in the area in which the waters are located. The analysis of alternatives shall evaluate a range of practicable alternatives that would prevent or lessen the degradation associated with the proposed activity. When the analysis of alternatives identifies one or more practicable alternatives, the Tribe shall only find that a lowering is necessary if one such alternative is selected for implementation.
  3. Where high quality waters constitute an outstanding National resource, such as waters of National, State, and Tribal parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.
  4. In those cases where potential water quality impairment associated with a thermal discharge is involved, the decision to allow such degradation shall be consistent with section 316 of the Clean Water Act.

# *Antidegradation implementation methods*

* 1. *Scope and Applicability.* The antidegradation policy in paragraph (e) of this section and these antidegradation implementation methods shall be applied to all reservation waters of the United States included in paragraph (a) of this section.
     1. All waters receive protection for existing instream uses consistent with paragraph (e)(1) of this section.
     2. High quality water protection consistent with paragraph (e)(2) of this section will be identified on a parameter-by-parameter basis. Each parameter for which water quality would be lowered by the regulated activity shall be considered and evaluated independently consistent with paragraph (f)(3) of this section. The Tribe is not expected to maintain a list of waters receiving protection consistent with paragraph (e)(2) of this section.
     3. Waters provided protection as an Outstanding National Resource Water consistent with paragraph (e)(3) of this section will be identified following the process outlined in paragraph (f)(4) of this section and a comprehensive list shall be maintained by the Tribe.
     4. The requirements of paragraph (e)(2) of this section will be triggered by all new or expanded regulated activities. Regulated activities include, but are not limited to, any activity that requires a permit, license or water quality certification pursuant to section 402 of the Act, section 404 of the Act, and section 401 of the Act.

(1) No lowering of a high quality water shall be allowed unless the Tribe makes the finding consistent with paragraph (f)(3)(ii) of this section and the lowering is authorized in a permit.

* + 1. Antidegradation protections will be addressed in new or reissued general permits authorized, implemented, or administered by the permitting authority either at the time the permitting authority develops and issues the general permit or upon review of an applicant’s request to be covered by a general permit. The permitting authority will describe in writing in the permit fact sheet how the general permit is consistent with the antidegradation requirements of this paragraph and the antidegradation policy in paragraph (e) of this section.
  1. *Existing Instream Use Protection consistent with paragraph (e)(1) of this section.* For all waters, the Tribe shall ensure that the level of water quality necessary to protect existing uses is maintained. In order to achieve this requirement, the Tribe shall consider whether a discharge would lower the water quality to the extent that it would no longer be sufficient to protect and maintain the existing uses of that water body. Such consideration shall be based on all existing and readily available water quality-related data and information, as well as any additional water-quality related data and information submitted during the public comment period for the permit or license.
  2. *High Quality Water Protection consistent with paragraph (e)(2) of this section.* High quality waters are water bodies in which, on a parameter-by-parameter basis, the quality of the waters exceeds levels necessary to support protection and propagation of fish, shellfish, and wildlife and recreation in and on the water. The Tribe shall ensure that no action resulting in a lowering of water quality occurs unless the components outlined in paragraph (f)(3)(i) of this section are available to the Tribe and found to adequately support the lowering of water quality as necessary to accommodate important economic and social development in the area in which the water is located consistent with paragraph (f)(3)(ii) of this section.
     1. When seeking to lower water quality for one or more parameters that exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, the entity seeking to lower water quality shall prepare and submit the following components and information, which the Tribe will consider:
        1. *Identifying Information.* Name of the applicant, a description of the nature of the applicant's business and the pollutants to be discharged, location of the discharge, the name of and any water quality data for the receiving water body, daily maximum and average flow to be discharged, and effluent characterization.
        2. *Analysis of alternatives.* Identification and evaluation of a range of practicable alternatives that would prevent or lessen the degradation associated with the proposed activity to determine whether the degradation of water quality is necessary. When the analysis of alternatives identifies one or more practicable alternatives, the Tribe shall only find that a lowering is necessary, consistent with paragraph (f)(3)(ii), if one such alternative is selected for implementation.
        3. *Socio-economic analysis.* Identification and evaluation of the social and economic development benefits to the area in which the waters are located that will be foregone if the lowering of water quality is not allowed. Along with the analysis of alternatives, the socio-economic analysis is used to determine whether the lowering of water quality will accommodate important economic and social development in the area in which the water is located. The “area in which the waters are located” shall be determined on a case-by-case basis, and shall include all areas directly impacted by the proposed regulated activity. Factors that must be considered in the socio-economic analysis include, but are not limited to, the ecological and economic importance of the affected waters, identification of the least-cost method needed to prevent degradation, the importance of the development to the affected community, the identity and socio-economic health of the affected community as determined by appropriate analytical methods, and identification of a range of practicable alternatives that could prevent or lessen degradation while allowing the important development to occur.
        4. Any additional documentation requested by the Tribe which, in the judgment of the Tribe, is needed to decide whether to find that a lowering of water quality is necessary to accommodate important economic and social development in the area in which the water is located.
     2. Once the Tribe has the components and information required in paragraph (f)(3)(i) of this section, the Tribe shall use that information to make a finding as to whether the lowering of water quality is necessary to accommodate important social and economic development in the area in which the water is located.
        1. If the proposed lowering of water quality is either not necessary, or not important to accommodate social and economic development, the Tribe shall deny the request to lower water quality.
        2. If the lowering of water quality is necessary, and will accommodate important social and economic development goals, the Tribe may allow a lowering to the high quality water as long as one of the alternatives identified in paragraph (f)(3)(i)(*2*) is selected for implementation. If a non-degrading practicable alternative is selected, no lowering in the high quality water will occur, and the Tribe does not need to authorize the lowering.
        3. In no event may the decision reached under this section allow water quality to be lowered below the level required to support existing and designated uses.
        4. The Tribe’s decision to allow a lowering of water quality shall be subject to applicable public participation requirements. Any reports, documents and data relevant to the discussion at the public hearing shall be available at least thirty days before the hearing. To the extent possible, public notice regarding the finding to allow a lowering of water quality will be coordinated with other required notices for public review.
        5. In allowing any degradation of water quality, the Tribe must assure that there shall be achieved in the watershed the highest statutory and regulatory requirements for all new and existing point sources and cost-effective and reasonable best management practices for nonpoint source controls.
  3. *Outstanding National Resource Water Protection consistent with paragraph (e)(3) of this section.* Any interested party may nominate a specific reservation water to be assigned as an Outstanding National Resource Water and the Tribe will make the final decision to assign the water as an Outstanding National Resource Water. Such nomination shall include written documentation of the qualifications of the reservation water that warrant Outstanding National Resource Water protection.
     1. The Tribe’s decision to assign a water as an Outstanding National Resource Water shall be subject to applicable public participation requirements. Any data and information relevant to the decision shall be available at least thirty days before the hearing. To the extent possible, public notice regarding the decision to assign a reservation water as an Outstanding National Resource Water will be coordinated with other required notices for public review.
     2. The Tribe will maintain a comprehensive list of the reservation waters in their Regions that have been assigned as an Outstanding National Resource Water consistent with paragraph (f)(4)(i) of this section.
     3. For reservation waters assigned as Outstanding National Resource Waters consistent with paragraph (f)(4)(i) of this section, the Tribe shall ensure, through the application of appropriate controls on point and nonpoint pollutant sources, that water quality is maintained and protected. No new or expanded point source discharges will be allowed to Outstanding National Resource Waters, and no new or expanded point source discharges to tributaries to Outstanding National Resource Waters that would result in lower water quality in the Outstanding National Resource Waters will be allowed. The Tribe intends to allow short-term, temporary degradation in an Outstanding National Resource Water as long as the short-term, temporary degradation is limited to the shortest possible time in the context of weeks to months, does not impact existing uses, and does not alter the essential or special characteristics that make the reservation water an Outstanding National Resource Water.

# *Wetlands designated uses, narrative and numeric water quality criteria, and antidegradation requirements*

* 1. *Definition:* For the purposes of this section, wetlands are defined by the Cowardin classification scheme.
  2. *Designated Uses*. For waters designated in paragraph (a) of this section that constitute wetlands, as defined by the Cowardin classification scheme, the designated uses are: base flow discharge, cultural and traditional uses, flood flow attenuation, groundwater recharge, indigenous floral faunal diversity abundance, nutrient cycling, organic carbon export/cycling, protection of downstream water quality, recreation, resilience against climatic effects, sediment/shoreline stabilization, surface water storage, and water-dependent wildlife.[[4]](#footnote-5)
  3. *Narrative* *criteria*. All waters included in paragraph (a) of this section that constitute wetlands, as defined by the Cowardin classification scheme, shall maintain the biological, physical, and chemical conditions of reference wetlands[[5]](#footnote-6), specifically: base flow, flow regime, wetland hydroperiod; chemical, nutrient, dissolved oxygen regime of the wetland; conditions favorable to protection and propagation of threatened, endangered, and at-risk species; conductivity; floristic quality; integrity of species diversity, abundance, zonation; normal movement of fauna; pH of wetland waters; salinity; size shape; soil type horizon structure; water currents, erosion, or sedimentation patterns; water levels or elevations; and water temperature variations.
  4. *Numeric criteria*. For all waters included in paragraph (a) of this section that constitute wetlands, numeric criteria identified in Table 5 (excluding alkalinity, dissolved oxygen, pH, sulfide, and temperature which are addressed by narrative criteria), Table 6, Table 7, Table 8 shall apply. For all waters included in paragraph (a) of this section that constitute wetlands, “organism only” numeric criteria identified in Table 9 shall apply.
  5. *Fecal Indicator Bacteria Criteria to Protect Contact Recreational, Cultural, and Shellfish Uses.* For all waters included in paragraph (a) of this section that constitute wetlands, the numeric criteria in paragraph (d)(4)(i) shall apply. Shellfish are not expected to be harvested within wetland areas so the criteria in paragraph (d)(4)(ii) shall not apply.
  6. *Antidegradation requirements.* For waters designated in paragraph (a) of this section that constitute wetlands, as defined by the Cowardin classification scheme, the following antidegradation requirements shall apply:
     1. Maintenance and protection of existing instream water uses and the level of water quality necessary to protect the existing uses consistent with paragraphs (e) and (f) of this section;
     2. No net loss to the water quality, functions, values, area, or ecological integrity of high quality wetlands, unless, after satisfying applicable antidegradation provisions including avoidance, minimization, and mitigation/replacement requirements, the Tribe determines that allowing degradation is necessary to accommodate important social or economic development in the area in which the wetlands are located consistent with paragraphs (e) and (f) of this section; and

(iii) No loss to the water quality, functions, values, area, or ecological integrity of wetlands assigned as Outstanding National Resource Waters consistent with paragraphs (e) and (f) of this section.

# *Mixing Zone Policy*

In conjunction with the issuance of CWA section 402 and 404 permits, the Tribe authorizes the use of mixing zones in the reservation waters designated in paragraph (a) of this section on a case-by-case basis, in accordance with the following provisions.

* 1. Mixing zones, including their size, configuration, and location, shall be authorized by the Tribe’s Environmental Departmenton a case-by-case basis in accordance with the provisions of this section at the time a permit is issued, renewed, or materially modified and is in effect as long as the permit remains in effect. Such an authorization is required before the permitting authority can use the mixing zone to determine the need for, or level of, effluent limits for a particular pollutant.
  2. Mixing zones shall not be authorized for a pollutant when the receiving water does not meet water quality criteria for that pollutant, except where (a) the effluent limits established using a mixing zone are consistent with an EPA-approved or EPA-established TMDL, and (b) the mixing zone is in accordance with this section.
  3. Mixing zones shall not be authorized where they may cause unreasonable interference with, or danger to designated uses, including, but not limited to, any of the following:
     1. Impairment to the integrity of the aquatic community, including interference with successful spawning, egg incubation, rearing, or passage of aquatic life.
     2. Discharges into shellfish beds.
     3. Lethality to aquatic life passing through the mixing zone.
     4. Heat in the discharge that may cause thermal shock, lethality, or loss of cold water habitat or may attract aquatic life to a toxic discharge.
     5. Bioaccumulative pollutants in the discharge.
     6. Pollutant concentrations that exceed maximum contaminant levels at drinking water intakes.
     7. Conditions that impede or prohibit recreation in or on the waterbody. Mixing zones shall not be authorized for the bacterial indicators in paragraph (d)(4).
  4. Mixing zones shall not overlap.
  5. Water quality within an authorized mixing zone is allowed to exceed chronic water quality criteria for those parameters approved by the Tribe’s Environmental Department. Acute water quality criteria may be exceeded for such parameters within the zone of initial dilution inside the mixing zone. Acute criteria shall be met as near to the point of discharge as practicably attainable. Narrative criteria in paragraph (c) of this section apply within the mixing zone. Water quality criteria shall not be exceeded outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized.
  6. Mixing zones shall be no larger than necessary, and the concentrations of pollutants present shall be minimized. Mixing zones shall meet the following restrictions:
     1. Mixing zones in flowing waters shall not:
        1. Extend in a downstream direction for a distance from the discharge port(s) greater than 300 feet plus the depth of water over the discharge port(s);
        2. Extend upstream for a distance of over 100 feet;
        3. Utilize greater than 25% of the critical low flow; nor
        4. Occupy greater than 25% of the width of the waterbody.
     2. Mixing zones in nonflowing waters shall not:
        1. Exceed 10% of the volume of the waterbody;
        2. Exceed 10% of the surface area of the waterbody (maximum radial extent of the plume regardless of whether it reaches the surface); nor
        3. Extend beyond 15% of the width of the waterbody.
  7. The following elements shall be considered when designing an outfall:
     1. Promote rapid mixing to the extent practicable through careful location and outfall design;
     2. Diffusers shall be used; and
     3. Mixing zones that result in shore-hugging plumes shall not be authorized.

# *Compliance Schedule Authorization Provision*

The Tribe authorizes the use of compliance schedules, on a case-by-case basis, for water quality-based effluent limits in National Pollutant Discharge Elimination System (NPDES) permits, when appropriate, and consistent with 40 CFR 122.47, for new, recommencing, or existing dischargers to require compliance as soon as possible with water quality-based effluent limitations calculated to meet water quality standards issued or revised after July 1, 1977.

# *WQS Variances*

Any WQS variances adopted will be consistent with the regulation at 40 CFR 131.14 and included in paragraph (k) of this section.

# *Water Body-Specific Criteria, and WQS Variances*

The water quality objectives for surface water streams and groundwater for specific conductance, pH, hardness, and boron in Table 4 shall apply.

Table 4. Specific Water Quality Objectives for Reservation Waterbodies

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Specific Conductance (micromhos) @ 25 °C** | | **Hydrogen Ion**  **(pH units)** | | **Hardness (mg/L as CaCO3)** | **Boron**  **(mg/L as B)** | |
| **Waterbody** | **90% Upper Limit1** | **50% Upper Limit2** | **Max** | **Min** | **50% Upper Limit2** | **90% Upper Limit1** | **50% Upper Limit2** |
| All Streams | 400 | 275 | 8.5 | 7 | 120 | 0.2 | 0.1 |
| Groundwaters3 | 500 | 250 | 8.0 | 7 | 120 | 0.1 | 0.1 |

190% upper and lower limits represent the 90 percentile values for a calendar year. 90% or more of the values must be less than or equal to an upper limit and greater than or equal to a lower limit.

250% upper and lower limits represent the 50 percentile values of the monthly means for a calendar year. 50% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit.

3Value may vary depending on the aquifer being sampled. This value is the result of sampling over time, and as pumped, from more than one aquifer.

Table 5. Aquatic life criteria

|  | **CAS Number** | **Freshwater** | |
| --- | --- | --- | --- |
| **Compound** | **Criterion Maximum Concentrationn (CMC) (µg/L)** | **Criterion Continuous Concentrationo (CCC) (µg/L)** |
| Acrolein | 107028 | 3 | 3 |
| Aldrina | 309002 | 3 | - |
| Alkalinityb |  | - | 20000 |
| alpha-Endosulfana,c | 959988 | 0.22 | 0.056 |
| Aluminum | 7429905 | Acute (CMC) and chronic (CCC) freshwater aluminum criteria values for a site shall be calculated using the 2018 Aluminum Criteria Calculator (*Aluminum Criteria Calculator V.2.0.xlsx*, or a calculator in R or other software package using the same 1985 Guidelines calculation approach and underlying model equations as in the *Aluminum Criteria Calculator V.2.0.xlsx*) as established in EPA’s Final Aquatic Life Ambient Water Quality Criteria for Aluminum 2018 (EPA 822–R–18–001). *To apply the aluminum criteria for Clean Water Act purposes, criteria values based on ambient water chemistry conditions must protect the water body over the full range of variability, including during conditions when aluminum is most toxic*. | |
| Ammonia | 7664417 | See Table 8 | |
| Arsenice,f | 7440382 | 340 | 150 |
| beta-Endosulfana,c | 33213659 | 0.22 | 0.056 |
| Cadmiumf | 7440439 | 1.8 | 0.72 |
| Carbaryl | 63252 | 2.1 | 2.1 |
| Chlordanea | 57749 | 2.4 | 0.0043 |
| Chloride | 16887006 | 860000 | 230000 |
| Chlorine | 7782505 | 19 | 11 |
| Chlorpyrifos | 2921882 | 0.083 | 0.041 |
| Chromium (III)f | 16065831 | See Table 5b | |
| Chromium (VI)f | 18540299 | 16 | 11 |
| Copperf | 7440508 | See Table 6 | |
| Cyanideh | 57125 | 22 | 5.2 |
| Demeton | 8065483 | - | 0.1 |
| Diazinon | 333415 | 0.17 | 0.17 |
| Dieldrin | 60571 | 0.24 | 0.056a |
| Endrin | 72208 | 0.086 | 0.036i |
| gamma-BHC (Lindane) | 58899 | 0.95 | - |
| Guthion | 86500 | - | 0.01 |
| Heptachlora | 76448 | 0.52 | 0.0038 |
| Heptachlor Epoxidea,j | 1024573 | 0.52 | 0.0038 |
| Iron | 7439896 | - | 1000 |
| Leadf | 7439921 | See Table 5b | |
| Malathion | 121755 | - | 0.1 |
| Mercury | 7439976 | Mercury criteria are set based on the more stringent Human Health Criteria (Table 9) rather than Aquatic Life Criteria | |
| Methoxychlor | 72435 | - | 0.03 |
| Mirex | 2385855 | - | 0.001 |
| Nickelf | 7440020 | See Table 5b | |
| Nonylphenol | 84852153 | 28 | 6.6 |
| Oxygen, Dissolvedl | 7782447 | See Table 2 | |
| Parathion | 56382 | 0.065 | 0.013 |
| Pentachlorophenol | 87865 | 19m | 15m |
| pH |  | See Table 4 | |
| Selenium | 7782492 | See Table 7 | |
| Silvera,f | 7440224 | See Table 5b | |
| Sulfide-Hydrogen Sulfide | 7783064 | - | 2 |
| Temperature |  | See section (d)(6) | |
| Toxaphene | 8001352 | 0.73 | 0.0002 |
| Tributyltin (TBT) |  | 0.46 | 0.072 |
| Zincf | 7440666 | See Table 5b | |
| 4,4'-DDTa | 50293 | 1.1 | 0.001 |

**Footnotes to Table 5:**

a. These criteria are based on the [1980 criteria](https://www.epa.gov/wqc/guidelines-and-methodology-used-preparation-health-effect-assessment-chapters-consent-decree), which used different Minimum Data Requirements and derivation procedures from the [1985 Guidelines](http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20003KJK.txt). For example, the CMC 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.

b. The CCC of 20mg/L is a minimum value except where alkalinity is naturally lower, in which case alkalinity cannot be lower than 25% of the natural level.

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

d. Reserved.

e. This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic.

f. Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. See [Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria](http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=60001CLZ.txt). See Table 5a for conversion factors.

g. Reserved.

h. These recommended water quality criteria are expressed as µg free cyanide per liter.

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

j. This value was derived from data for heptachlor and there was insufficient data to determine relative toxicities of heptachlor and heptachlor epoxide.

k. Reserved.

l. For fresh waters, see [Quality Criteria for Water, 1986 ("Gold Book")](http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=00001MGA.txt). For marine waters, see [Ambient Aquatic Life Water Quality Criteria for Dissolved Oxygen (Saltwater): Cape Cod to Cape Hatteras (EPA-822-R-00-012).](https://usepa-my.sharepoint.com/personal/aguirre_janita_epa_gov/_layouts/15/WopiFrame.aspx?sourcedoc=%7B35483045-8e1b-4190-a974-0a353150883b%7D&action=default)

m. Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH and values displayed in table correspond to a pH of 7.8. CCC = e 1.005(pH) – 5.134, CMC = e 1.005 (pH) – 4.869

n. CMC (Criteria Maximum Concentration) is the water quality criterion to protect against acute effects in aquatic life and is the highest instream concentration of a priority toxic pollutant consisting of a short term average not to be exceeded more than once every three years on the average.

o. CCC (Continuous Criteria Concentration) is the water quality criterion to protect against chronic effects in aquatic life and is the highest in stream concentration of a priority toxic pollutant consisting of a 4 day average not to be exceeded more than once every three years on the average.

**Notes to Table 5**

1. Freshwater aquatic life criteria apply as specified in paragraphs (d)(1) of this section.

2. Because of variations in chemical nomenclature systems, this listing of toxic pollutants does not duplicate the listing in Appendix A to 40 CFR Part 423 - 126 Priority Pollutants. The Chemical Abstracts Services (CAS) registry numbers provide a unique identification for each chemical.

Table 5a: Conversion Factors for Dissolved Metals Criteria

| **Metal** | **Freshwater CMC** | **Freshwater CCC** |
| --- | --- | --- |
| Arsenic | 1.000 | 1.000 |
| Cadmium | 1.136672-[(ln hardness)(0.041838)] | 1.101672-[(ln hardness)(0.041838)] |
| Chromium III | 0.316 | 0.860 |
| Chromium VI | 0.982 | 0.962 |
| Copper | 0.960 | 0.960 |
| Lead | 1.46203-[(ln hardness)(0.145712)] | 1.46203-[(ln hardness)(0.145712)] |
| Mercury | 0.85 | 0.85 |
| Nickel | 0.998 | 0.997 |
| Selenium | — | — |
| Silver | 0.85 | — |
| Zinc | 0.978 | 0.986 |

Table 5b: Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent

| **Chemical** | **mA** | **bA** | **mC** | **bC** | **Freshwater Conversion Factors (CF)** | |
| --- | --- | --- | --- | --- | --- | --- |
| **CMC** | **CCC** |
| Cadmium | 0.9789 | -3.866 | 0.7977 | -3.909 | 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 |
| 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-dependent metals criteria are calculated using the following equations:

CMC (dissolved) = exp{mA [ln(hardness)]+ bA} (CF)

CCC (dissolved) = exp{mC [ln(hardness)]+ bC} (CF)

Table 6. Copper Aquatic Life Criteria for Fresh Waters (Season-Specific)

| Metal | CAS No. | Criterion Maximum Concentration (CMC) a (µg/L) | Criterion Continuous Concentration (CCC) b (µg/L) |
| --- | --- | --- | --- |
| Copper | 7440508 | Acute (CMC) and chronic (CCC) freshwater copper criteria shall be developed using EPA’s 2007 *Aquatic Life Ambient Freshwater Quality Criteria—Copper* (EPA–822–R–07–001), which incorporates use of the copper biotic ligand model (BLM). Where sufficiently representative ambient data for DOC, calcium, magnesium, sodium, potassium, sulfate, chloride, or alkalinity are not available, the Tribe shall use the 10th percentile values from publicly available peer-reviewed datasets such as the US Geological Survey National Waters Information System (NWIS) and EPA’s Storage and Retrieval Data Warehouse. | |

a The CMC is the highest allowable one-hour average instream concentration of copper. The CMC is not to be exceeded more than once every three years.

b The CCC is the highest allowable four-day average instream concentration of copper. The CCC is not to be exceeded more than once every three years.

Table 7. Selenium Aquatic Life Criteria for Fresh Waters

| **Criterion Element** | **Magnitude** | **Duration** | **Frequency** |
| --- | --- | --- | --- |
| Fish Tissuea (Egg-Ovary)b | 15.1 mg/kg dw | Instantaneous measurementc | Not to be exceeded |
| Fish Tissuea  (Whole Body or Muscle)d | 8.5 mg/kg dw  or  11.3 mg/kg dw muscle (skinless, boneless filet) | Instantaneous measurementc | Not to be exceeded |
| Water Columne  (Monthly Average Exposure) | 1.5 µg/L in lentic aquatic systems  3.1 µg/L in lotic aquatic systems | 30 days | Not more than once in three years on average |
| Water Columne  (Intermittent Exposure)f | WQCint =  WQC30-day – Cbkgrnd(1 – fint)  fint | Number of days/month with an elevated concentration | Not more than once in three years on average |
| a Fish tissue elements are expressed as steady-state.  b Egg/ovary supersedes any whole-body, muscle, or water column element when fish egg/ovary concentrations are measured.  c Fish tissue data provide point measurements that reflect integrative accumulation of selenium over time and space in fish population(s) at a given site.  d Fish whole-body or muscle tissue supersedes water column element when both fish tissue and water concentrations are measured.  e Water column values are based on dissolved total selenium in water and are derived from fish tissue values via bioaccumulation modeling. Water column values are the applicable criterion element in the absence of steady-state condition fish tissue data.  f Where *WQC30*-*day* is the water column monthly element, for either a lentic or lotic waters; *Cbkgrnd* is the average background selenium concentration, and *fint* is the fraction of any 30-day period during which elevated selenium concentrations occur, with fint assigned a value ≥0.033 (corresponding to 1 day). | | | |

Table 8. Ammonia Aquatic Life Criteria for Fresh Waters

| mg Total Ammonia Nitrogen (TAN)/L | |
| --- | --- |
| Acute (CMC) equation  (1 hour average) | This image is the equation for deriving the acute criterion for ammonia in fresh water. |
| Chronic (CCC) equation (30-day rolling average)\* | This image is the equation for deriving the chronic criterion for ammonia in fresh water. |
| Note: Ammonia criteria are a function of pH and temperature. At the standard normalized pH of 7.0 and temperature of 20 ˚C, the acute criterion would be 17 mg TAN/L and the chronic criterion would be 1.9 mg TAN/L. Criteria duration: the acute criterion is a one-hour average and the chronic criterion is a thirty-day rolling average. Criteria frequency: Not to be exceeded more than once in 3 years.  \* Not to exceed 2.5 times the CCC as a 4-day average within the 30-days, *i.e.* 4.8 mg TAN/L at pH 7 and 20 oC more than once in 3 years on average. | |

**Note to Table 8:** Acute (CMC) and chronic (CCC) freshwater ammonia criteria were developed using EPA’s 2013 *Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater* (EPA–822–R–13–001), which is hereby incorporated by reference. Illustrations, tables, and formulae used in the development of these equations can be found on pages 40-52 of the criteria document. Alternative equations for the presence or absence of *Oncorhynchus sp.* (rainbow trout) can be found on pages 41-42 of the document.

Table 9. Human Health Criteria based on a Fish Consumption Rate of 175 grams/day and Cancer Risk Level of 1 in 10,000,000 people (10-7).

| **Pollutant** | **CAS Number** | **Water + Organismk (µg/L)** | **Organism Onlyk (µg/L)** |
| --- | --- | --- | --- |
| 1,1,1-Trichloroethane a | 71556 | 8000 | 20000 |
| 1,1,2,2-Tetrachloroethane | 79345 | 0.01 | 0.03 |
| 1,1,2-Trichloroethane a | 79005 | 0.038 | 0.11 |
| 1,1-Dichloroethylene a | 75354 | 300 | 2000 |
| 1,2,4,5-Tetrachlorobenzene | 95943 | 0.004 | 0.004 |
| 1,2,4-Trichlorobenzene a | 120821 | 0.00092 | 0.00092 |
| 1,2-Dichlorobenzene a | 95501 | 300 | 400 |
| 1,2-Dichloroethane a | 107062 | 0.9 | 7.9 |
| 1,2-Dichloropropane | 78875 | 0.074 | 0.38 |
| 1,2-Diphenylhydrazine | 122667 | 0.002 | 0.003 |
| 1,2-Trans-Dichloroethylene a | 156605 | 100 | 500 |
| 1,3-Dichlorobenzene | 541731 | 2 | 2 |
| 1,3-Dichloropropene | 542756 | 0.023 | 0.14 |
| 1,4-Dichlorobenzene a | 106467 | 90 | 100 |
| 2,4,5-Trichlorophenol b | 95954 | 60 | 70 |
| 2,4,6-Trichlorophenol b | 88062 | 0.031 | 0.034 |
| 2,4-Dichlorophenol b | 120832 | 5 | 7 |
| 2,4-Dimethylphenol b | 105679 | 90 | 300 |
| 2,4-Dinitrophenol | 51285 | 10 | 40 |
| 2,4-Dinitrotoluene | 121142 | 0.004 | 0.02 |
| 2-Chloronaphthalene | 91587 | 100 | 100 |
| 2-Chlorophenol b | 95578 | 20 | 100 |
| 2-Methyl-4,6-Dinitrophenol | 534521 | 1 | 3 |
| 3,3'-Dichlorobenzidine | 91941 | 0.0014 | 0.0018 |
| 3-Methyl-4-Chlorophenol b | 59507 | 200 | 300 |
| 4,4'-DDD | 72548 | 0.0000015 | 0.0000015 |
| 4,4'-DDE | 72559 | 2.1e-7 | 2.1e-7 |
| 4,4'-DDT | 50293 | 4e-7 | 4e-7 |
| Acenaphthene b | 83329 | 10 | 10 |
| Acrolein | 107028 | 3 | 50 |
| Acrylonitrile | 107131 | 0.0058 | 0.085 |
| Aldrin | 309002 | 9.4e-9 | 9.4e-9 |
| alpha-BHC | 319846 | 0.0000047 | 0.0000047 |
| alpha-Endosulfan | 959988 | 3 | 3 |
| Anthracene | 120127 | 40 | 40 |
| Antimony a,c,d | 7440360 | 5 | 73 |
| Arsenic c, j | 7440382 | 0.00045 | 0.00059 |
| Asbestos a,c,e | 1332214 | 7 million fibers/L | -- |
| Barium a,c,e,f | 7440393 | 1000 | -- |
| Benzene a | 71432 | 0.046 | 0.19 |
| Benzidine | 92875 | 0.000013 | 0.00013 |
| Benzo(a) Anthracene | 56553 | 0.000016 | 0.000016 |
| Benzo(a) Pyrene a | 50328 | 0.0000016 | 0.0000016 |
| Benzo(b) Fluoranthene | 205992 | 0.000016 | 0.000016 |
| Benzo(k) Fluoranthene | 207089 | 0.00016 | 0.00016 |
| beta-BHC (beta-HCH) | 319857 | 0.00016 | 0.00017 |
| beta-Endosulfan | 33213659 | 5 | 5 |
| Bis(2-Chloro-1-Methylethyl) Ether | 108601 | 200 | 400 |
| Bis(2-Chloroethyl) Ether | 111444 | 0.0027 | 0.027 |
| Bis(2-Ethylhexyl) Phthalate a | 117817 | 0.0045 | 0.0046 |
| Bis(Chlormethyl) Ether | 542881 | 0.000014 | 0.00021 |
| Bromoform a | 75252 | 0.49 | 1.4 |
| Butylbenzyl Phthalate | 85687 | 0.001 | 0.001 |
| Carbon Tetrachloride a | 56235 | 0.03 | 0.06 |
| Chlordane a | 57749 | 0.0000038 | 0.0000038 |
| Chlorobenzene a,b | 108907 | 60 | 100 |
| Chlorodibromomethane a | 124481 | 0.063 | 0.25 |
| Chloroform a | 67663 | 50 | 300 |
| Chlorophenoxy Herbicide (2,4,5-TP) [Silvex] a | 93721 | 40 | 50 |
| Chlorophenoxy Herbicide (2,4-D) a | 94757 | 720 | 1500 |
| Chrysene a | 218019 | 0.0016 | 0.0016 |
| Copper a,b,c,e | 7440508 | 1300 | -- |
| Cyanide a | 57125 | 4 | 50 |
| Di-n-Butyl Phthalate | 84742 | 3 | 3 |
| Dibenzo(a,h) Anthracene | 53703 | 0.0000016 | 0.0000016 |
| Dichlorobromomethane a | 75274 | 0.075 | 0.33 |
| Dieldrin | 60571 | 1.5e-8 | 1.5e-8 |
| Diethyl Phthalate | 84662 | 80 | 80 |
| Dimethyl Phthalate | 131113 | 200 | 200 |
| Dinitrophenols | 25550587 | 10 | 100 |
| Dioxin c | 1746016 | 5.8e-11 | 5.9e-11 |
| Endosulfan Sulfate | 1031078 | 4 | 5 |
| Endrin | 72208 | 0.004 | 0.004 |
| Endrin Aldehyde a | 7421934 | 0.1 | 0.1 |
| Ethylbenzene a | 100414 | 14 | 15 |
| Fluoranthene | 206440 | 2 | 2 |
| Fluorene | 86737 | 8 | 8 |
| Gamma-BHC (HCH); Lindane a | 58899 | 0.53 | 0.54 |
| Heptachlor a | 76448 | 7.1e-8 | 7.1e-8 |
| Heptachlor Epoxide a | 1024573 | 3.9e-7 | 3.9e-7 |
| Hexachlorobenzene a | 118741 | 9.6e-7 | 9.6e-7 |
| Hexachlorobutadiene a | 87683 | 0.0001 | 0.0001 |
| Hexachlorocyclohexane (HCH) - Technical | 608731 | 0.00012 | 0.00012 |
| Hexachlorocyclopentadiene a,b | 77474 | 0.5 | 0.5 |
| Hexachloroethane | 67721 | 0.002 | 0.002 |
| Indeno(1,2,3-cd) Pyrene | 193395 | 0.000016 | 0.000016 |
| Isophorone | 78591 | 3 | 22 |
| Manganese b,c,e,g | 7439965 | 50 | 100 |
| Methoxychlor a | 72435 | 0.002 | 0.002 |
| Methyl Bromide | 74839 | 100 | 1000 |
| Methylene Chloride a | 75092 | 2 | 20 |
| Methylmercury h | 22967926 | N/A | 0.04 mg/kg |
| N-Nitrosodi-n-Propylamine c | 621647 | 0.00044 | 0.0058 |
| N-Nitrosodimethylamine c | 62759 | 0.000065 | 0.034 |
| N-Nitrosodiphenylamine c | 86306 | 0.062 | 0.069 |
| Nickel c,d | 7440020 | 30 | 39 |
| Nitrates a,c,e | 14797558 | 10000 | -- |
| Nitrobenzene b | 98953 | 10 | 70 |
| Nitrosamines c | -- | 0.0000756 | 0.00526 |
| Nitrosodibutylamine c | 924163 | 0.00049 | 0.0025 |
| Nitrosodiethylamine c | 55185 | 0.0000756 | 0.00526 |
| Nitrosopyrrolidine c | 930552 | 0.0016 | 0.39 |
| Pentachlorobenzene | 608935 | 0.01 | 0.01 |
| Pentachlorophenol (PCP) a,b | 87865 | 0.0004 | 0.0004 |
| pH c,e | -- | 5-9 | -- |
| Phenol b | 108952 | 4000 | 30000 |
| Polychlorinated Biphenyls (PCBs) a,c,i | 1336363 | 7.3e-7 | 7.3e-7 |
| Pyrene | 129000 | 3 | 3 |
| Selenium a,c | 7782492 | 25 | 95 |
| Solids Dissolved and Salinity c,e | -- | 250000 | -- |
| Tetrachloroethylene a | 127184 | 0.29 | 0.35 |
| Thallium c | 7440280 | 0.048 | 0.054 |
| Toluene a | 108883 | 32 | 63 |
| Toxaphene a | 8001352 | 0.0000087 | 0.0000087 |
| Trichloroethylene a | 79016 | 0.04 | 0.08 |
| Vinyl Chloride a | 75014 | 0.002 | 0.02 |
| Zinc b,c | 7440666 | 450 | 580 |

**Footnotes to Table 5**

1. EPA has issued a Maximum Contaminant Level (MCL) for this chemical which may be more stringent. Refer to [EPA's National Primary Drinking Water Regulations](https://www.epa.gov/dwreginfo).
2. The criterion for organoleptic (taste and odor) effects may be more stringent. Refer to [National Recommended Water Quality Criteria - Organoleptic Effects](https://www.epa.gov/wqc/national-recommended-water-quality-criteria-organoleptic-effects).
3. EPA did not update its National Recommended Human Health Water Quality Criteria for this pollutant in 2015. This table's criteria values are calculated using the 2015 revised inputs for body weight, drinking water intake rate, and a fish consumption rate of 175 g/day (refer to [2015 EPA Updated Ambient Water Quality Criteria for the Protection of Human Health](https://www.epa.gov/wqc/human-health-water-quality-criteria-and-methods-toxics)). The criteria values in this table therefore may not match the values in (cite to EPA's 304a) which are based on pre-2015 inputs.
4. This criterion was revised to reflect EPA's q1\* or RfD as contained in the [Integrated Risk Information System (IRIS)](https://www.epa.gov/iris) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) is from the 1980 Ambient Water Quality Criteria document.
5. Criteria for these pollutants are from the [National Recommended Water Quality Criteria - Human Health Criteria Table](https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table). They are not calculated based on this table's inputs for fish consumption rate and cancer risk level.
6. This human health criterion is the same as originally published in the [Quality Criteria for Water, 1976 ("Red Book")](https://www.epa.gov/sites/production/files/2018-10/documents/quality-criteria-water-1976.pdf) which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is published in the [Quality Criteria for Water, 1986 ("Gold Book")](https://www.epa.gov/sites/production/files/2018-10/documents/quality-criteria-water-1986.pdf).
7. The Human Health for the consumption of Water + Organism 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.
8. Methylmercury “Organism Only” criteria are in units of mg/kg (µg/g) fish tissue and are based on the Tribal Subsistence (T-SUB) beneficial use from California Mercury Provisions (SWRCB 2017), not the USEPA Tribal/State Human Health Criteria Calculator. The average methylmercury concentrations shall not exceed 0.04 mg/kg fish tissue within a CALENDAR YEAR. The objective applies to the WET WEIGHT concentration in skinless fillet from a mixture of 70 percent TROPHIC LEVEL 3 fish and 30 percent TROPHIC LEVEL 4 fish as detailed in Attachment C of the California Mercury Provisions. The California Mercury Provisions also provide a table (Table 1 on page A-9 of SWRCB [2017]) with translated fish tissue-to-water column numbers meant to be used for reasonable potential analysis and development of effluent limitations for waterbodies with designated use of Tribal Subsistence Fishing (T-SUB), which QVIR adopts: 0.004 µg/L total mercury for flowing waterbodies (i.e., Shackleford Creek) and 0.001 µg/L total mercury for slow moving water bodies (i.e., wetlands).
9. This criterion applies to total PCBs (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses).
10. This criterion for arsenic refers to the inorganic form only.
11. The “Water + Organism” and “Organism Only” criteria are concentrations in water (units = µg/L), except for methylmercury which is concentration in fish/shellfish tissues (units = mg/kg). “Water + Organism” applies to waters designated for public drinking water supply, whereas “Organism Only” is for other waters designated as protection and propagation of fish, shellfish, and wildlife but not public drinking water supply.

Table 10. Maximum Contaminant Levels for Inorganic Chemicals

1

|  |  |
| --- | --- |
| **Chemical** | **Maximum Contaminant Level (mg/L)** |
| Aluminum | 1.0 |
| Antimony | 0.006 |
| Arsenic | 0.010 |
| Asbestos | 7 MFL\* |
| Barium | 1.0 |
| Beryllium | 0.004 |
| Cadmium | 0.005 |
| Chromium | 0.05 |
| Cyanide | 0.15 |
| Fluoride | 2.0 |
| Mercury | 0.002 |
| Nickel | 0.1 |
| Nitrate (as nitrogen) | 10.0 |
| Nitrate+Nitrite (sum as nitrogen) | 10.0 |
| Nitrite (as nitrogen) | 1.0 |
| Perchlorate | 0.006 |
| Selenium | 0.05 |
| Thallium | 0.002 |

\* MFL=million fibers per liter; MCL for fibers exceeding 10 µm in length

1Table is derived from title 22 of the California Code of Regulations, Section 64431, accessed July 1, 2022 from: https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/I2810C4E12DCC4B40A165E23D1B6C6F0D?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Table 11. Maximum Contaminant Levels for Volatile Organic Chemicals (VOCs)

1

| **Chemical** | **Maximum Contaminant Level (mg/L)** |
| --- | --- |
| Benzene | 0.001 |
| Carbon Tetrachloride | 0.0005 |
| 1,2-Dichlorobenzene | 0.6 |
| 1,4-Dichlorobenzene | 0.005 |
| 1,1-Dichloroethane | 0.005 |
| 1,2-Dichloroethane | 0.0005 |
| 1,1-Dichloroethylene | 0.006 |
| cis-1,2-Dichloroethylene | 0.006 |
| trans-1,2-Dichloroethylene | 0.01 |
| Dichloromethane | 0.005 |
| 1,2-Dichloropropane | 0.005 |
| 1,3-Dichloropropene | 0.0005 |
| Ethylbenzene | 0.3 |
| Methyl-tert-butyl ether | 0.013 |
| Monochlorobenzene | 0.07 |
| Styrene | 0.1 |
| 1,1,2,2-Tetrachloroethane | 0.001 |
| Tetrachloroethylene | 0.005 |
| Toluene | 0.15 |
| 1,2,4-Trichlorobenzene | 0.005 |
| 1,1,1-Trichloroethane | 0.200 |
| 1,1,2-Trichloroethane | 0.005 |
| Trichloroethylene | 0.005 |
| Trichlorofluoromethane | 0.15 |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 1.2 |
| Vinyl Chloride | 0.0005 |
| Xylenes | 1.750\* |

\*MCL is for either a single isomer or the sum of the isomers.

1Table is derived from Title 22 of the California Code of Regulations, Section 64444, accessed July 1, 2022 from: https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/IA7B3800D18654ABD9E2D24A445A66CB9?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Table 12. Maximum Contaminant Levels for Non-Volatile Synthetic Organic Chemicals (SOCs)

1

| **Chemical** | **Maximum Contaminant Level (mg/L)** |
| --- | --- |
| Alachlor | 0.002 |
| Atrazine | 0.001 |
| Bentazon | 0.018 |
| Benzo(a)pyrene | 0.0002 |
| Carbofuran | 0.018 |
| Chlordane | 0.0001 |
| 2,4-D | 0.07 |
| Dalapon | 0.2 |
| Dibromochloropropane | 0.0002 |
| Di(2-ethylhexyl)adipate | 0.4 |
| Di(2-ethylhexyl)phthalate | 0.004 |
| Dinoseb | 0.007 |
| Diquat | 0.02 |
| Endothall | 0.1 |
| Endrin | 0.002 |
| Ethylene Dibromide | 0.00005 |
| Glyphosate | 0.7 |
| Heptachlor | 0.00001 |
| Heptachlor Epoxide | 0.00001 |
| Hexachlorobenzene | 0.001 |
| Hexachlorocyclopentadiene | 0.05 |
| Lindane | 0.0002 |
| Methoxychlor | 0.03 |
| Molinate | 0.02 |
| Oxamyl | 0.05 |
| Pentachlorophenol | 0.001 |
| Picloram | 0.5 |
| Polychlorinated Biphenyls | 0.0005 |
| Simazine | 0.004 |
| Thiobencarb | 0.07 |
| Toxaphene | 0.003 |
| 1,2,3-Trichloropropane | 0.000005 |
| 2,3,7,8-TCDD (Dioxin) | 3x10-8 |
| 2,4,5-TP (Silvex) | 0.05 |

1Table is derived from Title 22 of the California Code of Regulations, Section 64431, accessed July 1, 2022 from: https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/IA7B3800D18654ABD9E2D24A445A66CB9?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Table 13. Secondary Maximum Contaminant Levels “Consumer Acceptance Contaminant Levels”

1

| **Constituents** | **Maximum Contaminant Levels/Units** |
| --- | --- |
| Aluminum | 0.2 mg/L |
| Color | 15 Units |
| Copper | 1.0 mg/L |
| Foaming Agents (MBAS) | 0.5 mg/L |
| Iron | 0.3 mg/L |
| Manganese | 0.05 mg/L |
| Methyl-*tert*-butyl ether (MTBE) | 0.005 mg/L |
| Odor—Threshold | 3 Units |
| Silver | 0.1 mg/L |
| Thiobencarb | 0.001 mg/L |
| Turbidity | 5 Units |
| Zinc | 5.0 mg/L |

1Table is derived from Title 22 of the California Code of Regulations, Section 64449, accessed July 1, 2022 from: https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/I2260318DFFF045529B9496276F3A8573?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Table 14. Secondary Maximum Contaminant Levels “Consumer Acceptance Contaminant Levels”

1

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Maximum Contaminant Level Ranges** | | |
| **Constituent, Units** | **Recommended** | **Upper** | **Short Term** |
| Total Dissolved Solids, mg/L | 500 | 1,000 | 1,500 |
| or |  |  |  |
| Specific Conductance, µS/cm | 900 | 1,600 | 2,200 |
| Chloride, mg/L | 250 | 500 | 600 |
| Sulfate, mg/L | 250 | 500 | 600 |

1Table is derived from Title 22 of the California Code of Regulations, Section 64449, accessed July 1, 2022 from: https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/I2260318DFFF045529B9496276F3A8573?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Table 15. Radionuclide Maximum Contaminant Levels (MCLs)

1

|  |  |
| --- | --- |
| Radionuclide | MCL |
| Radium-226 | 5 pCi/L (combined radium-226 & -228) |
| Radium–228 |
| Gross Alpha particle activity (excluding radon and uranium) | 15 pCi/L |
| Uranium | 20 pCi/L |
| Beta/photon emitters | 4 millirem/year annual dose equivalent to the total body or any internal organ |
| Strontium-90 | 8 pCi/L  (= 4 millirem/yr dose to bone marrow) |
| Tritium | 20,000 pCi/L  (= 4 millirem/yr dose to total body) |

1Table is derived from Title 22 of the California Code of Regulations, Sections 64442 and 64443, accessed July 1, 2022 from: https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/IB93A33F77D104879A1E78D4A415DBBF6?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default) and https://web.archive.org/web/\*/https://govt.westlaw.com/calregs/Document/I29898BC27579472F89C1ABEB9C3E842A?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Table 16. Cyanobacterial toxin and cell density criteria, associated public health posting levels, and drinking water health advisories. Frequency and duration CUL-1 and REC-1 water quality criteria: concentrations shall not be exceeded in more than two 10-day periods per recreational season, for more than one recreational season, over a rolling 10-year period.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | **Designated Uses** | **Proposed Water Quality Criterion, Public Health Posting Level, or Health Advisory** | | **Rationale** |
| ***Microcystis aeruginosa* cell density** | Drinking water (MUN) | Health advisory1 | Below detection | The Minnesota (2015a, 2015b) Heinze-based short-term non-cancer “Health Based Value” of 0.1 µg/L essentially does not allow for the detection of any cells |
| Contact Cultural (CUL-1)  Contact Recreational (REC-1) | Level 1 Public Health Posting2 | 1,000 cells/mL | Cell density corresponding to toxin levels associated with OEHHA (2012) “Action Level” |
| Water Quality Criterion and Level 2 Public Health Posting3 | 5,000 cells/mL | Cell density corresponding to toxin levels associated with 5x OEHHA (2012) “Action Level” |
| ***Total microcystin toxin concentration4*** | Drinking water (MUN) | Health advisory1 | 0.1 µg/L total microcystins4 | Minnesota (2015a, 2015b) Heinze-based short-term non-cancer “Health Based Value” of 0.1 µg/L. |
| Contact Cultural (CUL-1)  Contact Recreational (REC-1) | Level 1 Public Health Posting2 | 0.8 µg/L total microcystin. | OEHHA (2012) “Action Level” |
| Water Quality Criterion and Level 2 Public Health Posting3 | 4.0 µg/L total microcystin | 5x OEHHA (2012) “Action Level” |
| **Total potentially toxigenic blue-green algal species5** | Contact Cultural (CUL-1)  Contact Recreational (REC-1) | Water Quality Criterion | 100,000 cells/mL or Cyanobacterial scums | WHO/SWRCB guidelines |
| **Cylindrospermopsin** | Drinking water (MUN) | Health advisory1 | 0.7 µg/L | U.S. EPA (2015a) |
| Contact Cultural (CUL-1)  Contact Recreational (REC-1) | Level 1 Public Health Posting7 | 1 ug/L | CCHAB (2016) Caution Action Trigger |
| Water Quality Criterion and Level 2 Public Health Posting8 | 15 µg/L | U.S EPA (2019, 2021). CCHAB (2016) Danger Tier II is similar but higher (17 µg/L). |
| **Anatoxin-a** | Contact Cultural (CUL-1)  Contact Recreational (REC-1) | Level 1 Public Health Posting7 | Detection9 | CCHAB (2016) |
| Water Quality Criterion and Level 2 Public Health Posting8 | 90 µg/L | OEHHA (2012) “Action Level” |
| **Cyanotoxins in Fish & Shellfish** | Shellfish Harvesting,  Fish Consumption  (SHELL, FC, T-SUB) | Water Quality Criterion | 10 ng/g microcystins, <5000 ng/g anatoxin, <4 ng/g cylindrospermopsin (wet weight) | OEHHA (2012) “Action Level” |

Footnotes to Table 16

1 For treated water, testing for drinking water health advisories should be conducted at entry point into water distribution system. For water that is directly used for drinking water without treatment, including groundwater wells used for water supply, then testing for drinking water health advisories should be conducted on raw water.

2 The water quality criteria are set at the Level 2 Health Advisory Danger, but the Level 1 Health Advisory Warning are also included in this table for informational and management purposes. The Level 1 Health Advisory Warning posting will include: Avoid contact with or use of river water because public health advisory thresholds for blue-green algae (*Microcystis aeruginosa*) cell counts or associated toxins were exceeded during recent public health monitoring.

3 The Level 2 Health Advisory Danger posting will include: Water is unsafe for contact or use and poses a high risk of potential health impacts due to levels of *Microcystis aeruginosa* cell counts or associated toxins recently detected at 5x the Public Health advisory thresholds.

4 Value based on the older WHO studies, and although OEHHA (2012) did not evaluate drinking water “action levels”, the Minnesota Department of Health (2015a, 2015b) utilized the Heinze-based lowest-observed-adverse-effect level (LOAEL) of 0.05 mg/kg/day, converted that to a human equivalent dose of 0.012 mg/kg/day, and utilized an uncertainty factor of 300 to arrive at a short-term non-cancer “Health Based Value” of 0.1 µg/L.

5 While there are numerous congeners of microcystin (e.g., microcystin-LA, RR, and YR) the most extensive toxicological information is available for the microcystin-LR congener. However, the literature indicates that most of these congeners appear to have similar toxicological effects (OEHHA 2012). Therefore, the toxicity criteria apply to the total of all microcystin congeners (if measured separately the concentration of the various congeners is summed), or if ELISA methodology is used then the reported value is already assumed to represent the total.

6 Includes: *Dolichospermum (formerly known as Anabaena), Microcystis*, *Planktothrix, Gloeotrichia* and *Oscillatoria*

7 The water quality criteria are set at the Level 2 Health Advisory Danger, but the Level 1 Health Advisory Warning are also included in this table for informational and management purposes. The Level 1 Health Advisory Warning posting will include: Avoid contact with or use of river water because public health advisory thresholds for toxins associated with blue-green algae were exceeded during recent public health monitoring.

8 The Level 2 Health Advisory Danger posting will include: Water is unsafe for contact or use and poses a high risk of potential health impacts due to high levels of toxins associated with blue-green algae being exceeded during recent public health monitoring.

9 Must use an analytical method that detects ≤ 1μg/L Anatoxin-a.

Table 17. Design Flows

| **Criteria** | **Design Flow** |
| --- | --- |
| Aquatic Life Acute Criteria (CMC) | 1 Q 10 or 1 B 3 |
| Aquatic Life Chronic Criteria (CCC) | 7 Q 10 or 4 B 3 |
| Human Health Criteria | Harmonic Mean Flow |

**Notes to Table 17:**

1. CMC (Criteria Maximum Concentration) is the water quality criterion to protect against acute effects in aquatic life and is the highest instream concentration of a priority toxic pollutant consisting of a short term‑ average not to be exceeded more than once every three years on the average;
2. CCC (Continuous Criteria Concentration) is the water quality criterion to protect against chronic effects in aquatic life and is the highest in stream concentration of a priority toxic pollutant consisting of a 4‑day average not to be exceeded more than once every three years on the average;
3. 1 Q 10 is the lowest one day flow with an average recurrence frequency of once in 10 years determined hydrologically;
4. 1 B 3 is biologically based and indicates an allowable exceedance of once every 3 years. It is determined by EPA's computerized method (DFLOW model);
5. 7 Q 10 is the lowest average 7 consecutive day low flow with an average recurrence frequency of once in 10 years determined hydrologically;
6. 4 B 3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years. It is determined by EPA's computerized method (DFLOW model).
7. The harmonic mean flow is typically smaller than the arithmetic mean discharge because it is adjusted for days with zero flow and gives greater weight to low daily mean discharges than high daily mean discharges.

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1. At the time of the NCRWQCB’s 2015 assessment, QVIR and NCRWQCB thought that Sniktaw Creek intersected QVIR, but a 2019 survey determined that Sniktaw Creek is not within the boundaries of the Reservation. [↑](#footnote-ref-2)
2. A 7-day moving average is calculated by taking the average of each set of seven consecutive daily averages. [↑](#footnote-ref-3)
3. Water quality objectives designed to protect SPWN-designated waters apply to all fresh waters designated in Table 1 as SPWN in those reaches and during those periods of time when spawning, egg incubation, and larval development are occurring or have historically occurred. The period of spawning, egg incubation, and emergence generally occur between the dates of September 15 and June 4. [↑](#footnote-ref-4)
4. These wetlands-specific designated uses represent the uses specified in 101(a)(2) of the Clean Water Act. [↑](#footnote-ref-5)
5. Note: A “reference wetland” is a specific locality on a water body which is unimpaired or minimally impaired and is representative of the expected biological integrity of other localities on the same water body or nearby water bodies. [↑](#footnote-ref-6)