1011-SC-A-1

# WATER QUALITY CODE

of the

PUEBLO OF SANTA CLARA

(Enacted; February 13 , 1995; amended March 24, 1995)



EXHIBIT E

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## SECTION I. INTRODUCTION, AUTHORITY AND APPLICABILITY

A. **Purposes.** Pursuant to the inherent sovereign authority of the Pueblo of Santa Clara ("Pueblo"), as recognized in Section 518 of the Clean Water Act, enacted February 4, 1987 (33 U.S.C. Section 1377), the Tribal Council, ("Tribal Council"), of the Pueblo of Santa Clara, a federally-recognized Indian tribe, hereby enacts this Water Quality Code ("Code") for the Pueblo.

The purposes of this Code and the standards contained herein are as follows:

1. to designate the existing and attainable uses for which the surface water of the Pueblo shall be protected;

2. to prescribe water quality standards (narrative and numeric) to sustain the designated uses;

3. to assure that degradation of existing water quality does not occur; and

4. to promote the health, social welfare, and economic well-being of the Pueblo, its people, and all the residents of the Pueblo of Santa Clara Indian Reservation ("Reservation").

The standards contained herein are intended and shall be construed to be consistent with Section 101(a)(2) of the Clean Water Act (33 U.S.C. Section 1251(a)(2)), 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 be achieved by July 1, 1983." Agricultural, primary contact (recreational and ceremonial use), recharge of domestic water supply (or municipal and industrial uses) and fish culture are other beneficial uses of the Tribal waters intended to be protected by this Code, provided that contamination that may result from such uses shall not lower the quality of the water below what is required for recreation and protection and propagation of fish, shellfish, and wildlife.

B. **Applicability.** The Code applies to all waters within the exterior boundaries of the Reservation, including water situated wholly or partly within, or bordering upon, the Reservation, except for waters, if any, that do not combine with other surface or subsurface water. Waters which do not combine with other surface or subsurface waters, such as stock tanks, treatment lagoons or reservoirs are private waters and are excluded from this Code. The standards apply to the receiving bodies of water impacted by the effluent from such reservoirs and treatment lagoons. The specified criteria apply to substances

attributable to discharges, nonpoint sources, or instream activities. The criteria shall not apply to acts of God or to natural phenomena not brought about by human activity.

C. **General Standards**. The general standards in Section III of this code shall be maintained at all times and apply to all perennial, ephemeral, and intermittent streams, to all ponds, lakes, standing waters, wetlands, canals, drains, and springs. The most stringent numerical criteria applicable to any perennial stream shall be maintained any time the flow equals or exceeds the four-day three-year low flow value (4Q3). Human Health Criteria shall be implemented through the harmonic mean flow. When ephemeral and intermittent streams have a low flow value of zero, all discharges shall meet standards for the designated uses. The criteria assigned to a water body are the ones required to sustain all designated uses of the waterbody. When a Tribal Water has more than a single existing attainable or designated use, the applicable numeric standards shall be the most stringent of those established for such waterbody. The Tribal Council of shall issue and approve surface water designations for Tribal waters and shall determine the suitability of bodies of water for primary contact purposes. The numeric and narrative criteria contained in this Code will be part of the permitting and management process for all dischargers who are subject to federal, state, or Pueblo regulations. The standards shall be used in existing permitting and management processes, or new processes as may be created, in order to determine when a designated use is threatened. If standards are exceeded, and if it is determined that such exceedance would impair a designated use, then the permitting or management processes will be expected to require advanced treatment technologies for regulated point sources and to implement such best management practices as are applicable for regulated nonpoint sources.

D. **Antidegradation and Implementation Plan**. The antidegradation plan for Tribal Waters and the procedures for implementing it are set forth in Section II of this Code.

E. **Tribal Water Quality Control Officer**. This Code hereby creates the position of Tribal Water Quality Control Officer of the Pueblo ("TWQC Officer" or "Officer"). The TWQC Officer shall serve under the direction of the Governor of the Pueblo and shall be appointed by the Governor, which appointment shall be confirmed by the Tribal Council. The TWQC Officer shall work in cooperation with the U.S. Environmental Protection Agency ("EPA") and other federal, tribal or state agencies. The duties of the Officer are detailed in the Implementation Plan of section II in this Code.

F. **Adoption and Revisions.** The Tribal Council has exclusive authority to adopt and modify this Code. The Tribal Council also may revise the standards from time to time if deemed necessary by use-attainability analyses and as the need arises or as a result of updated scientific information.

G. **Public Hearing.** Pursuant to Section 303(1) of the Clean Water Act (33 U.S.C. Section 1313(c)), the Pueblo shall hold public hearings at least once each three-year period for the purpose of reviewing and, as appropriate, modifying and adopting water quality standards. Revisions shall incorporate relevant scientific and engineering advances with respect to water quality and waste water treatment. The Pueblo shall hold public hearings before modifying or amending this Code or incorporating, by reference, any regulations into this Code. Errors resulting from inadequate erroneous data, human or clerical oversight will be subject to correction by the Tribal Council. The discovery of such errors does not render the remaining and unaffected standards invalid. Public hearings will be held in accordance with Santa Clara Pueblo law, 40 C.F.R. Part 130 (EPA's Water Quality Management Regulation), and 40 C.F.R. Part 25 (EPA's Public Participation Regulation). In the event that monitoring of water quality identifies reaches where attainable quality is less than existing water quality standards, the said standards may be modified to reflect attainability. Modification thereof shall be carried out in accordance with applicable procedures (such as use-attainability analysis procedures (40 C.F.R. 131.10 (j)(k)) or other appropriate methods.)

H. **Separability.** If any provision of this Code or the application of any provision of this Code to any person or circumstances should be held to be invalid, the application of such provision to other persons and circumstances and the remainder of this Code shall not be affected thereby.

I. **Compliance Schedules.** It shall be the policy of the Pueblo of Santa Clara to allow on a case-by-case basis the inclusion of a compliance schedule in a National Pollutant Discharge Elimination System ("NPDES") permit issued to an existing facility. Such a schedule of compliance will be for the purpose of providing a permittee with adequate time to make treatment facility modifications necessary to comply with water-quality based permit limitations determined to be necessary to achieve stream standards. Compliance schedules may be included in NPDES permits at the time of permit reissuance or modification and shall require compliance at the earliest practicable time, not to exceed three years. Compliance schedules also shall specify milestone dates so as to measure progress towards final project completion.

J. **Variances.** The Tribal Council may allow variances from this Code and the standards herein on a case-by-case basis. A variance from the Pueblo's criteria may be allowed in certain cases where the appropriateness of the specific criteria is questionable. The variance provides a period of time during which issues concerning the appropriateness of the criteria may be resolved. A variance shall be valid for no more than three years. Variances are not renewable but may be reissued again upon adequate justification. A variance shall be granted only after appropriate public participation and review and approval from the Environmental Protection Agency. Variances from criteria will be allowed for

anticipated non-attainment of water quality standards due to one or more of the reasons listed in 40 C.F.R. 131.10 (g) [Use-attainability reasons]. Variances from criteria shall be for specific pollutants, time-limited, and shall not forego the current designated use. Variances are to be issued instead of removing a designated use for a waterbody where such use is not now attainable but can be expected with reasonable progress towards water quality.

K. **Short Term Exceedances**. The TWQC Officer, with consent from the Tribal Council, may authorize short-term activities that may cause temporary violations of the water quality standards if the Pueblo determines said activities are necessary to accommodate legitimate uses or emergencies or to protect the public health and welfare. A short term exceedance will only be allowed for activities that are not likely to cause permanent or long-term impairment of beneficial uses. They will be allowed for activities such as, but not limited to, bank stabilization, mosquito abatement, algae and weed control, tracers used in hydrological studies or activities which result in overall enhancement or maintenance of beneficial uses. Such authorization shall not be granted for activities which could result in the adverse impact on any federally endangered or threatened species or on the critical habitat of such species. The TWCQ shall specify the degree of variance, the time limit and restoration procedures where applicable. Nothing herein shall be intended to supersede existing Pueblo and federal permitting processes or requirements.

L. **Dispute Resolution Mechanism**. Should a dispute due to differing water quality standards arise between the Pueblo and the state or an Indian tribe approved by EPA to administer the Water Quality Standards program and have approved water quality standards the Pueblo shall follow the Dispute Resolution Mechanism promulgated by the EPA in 40 C.F.R. Section 131.7.

## SECTION II. ANTIDEGRADATION POLICY AND IMPLEMENTATION PLAN

A. **Antidegradation Policy.** The antidegradation policy of the Pueblo is as follows:

1. Existing water uses and the level of water quality necessary to protect existing uses shall be maintained and protected.

2. Where water quality exceeds levels necessary to support propagation of fish and wildlife and recreation in and on the water, the said water quality shall be maintained and protected unless it is found, after full satisfaction of governmental and public participation requirements, that a lower level of water quality is required in order to accommodate important economic or social development in the area in which the waters are located. In permitting such degradation of water quality, the Pueblo shall require 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.

3. Where high quality water constitutes an outstanding national or tribal resource, or waters of exceptional recreational or ecological significance exist, the water quality and uses shall be maintained and protected by water quality controls, maintenance of natural flow regimes, protection of instream habitats, and land use practices protective of the watershed.

4. In those cases where potential water quality impairments associated with thermal discharge are involved, the antidegradation policy and implementing methods shall be consistent with Section 316 of the Clean Water Act, as amended (33 U.S.C. Section 1326 (1987)).

B. **Implementation.** Implementation procedures are as follows:

1. The TWQC Officer shall implement this Code, including but not limited to the water quality standards and antidegradation policy, by establishing and maintaining controls on the discharge of pollutants to surface waters. The Pueblo may adopt additional regulations and ordinances for enforcement of the Water Quality Standards. Unless and until the EPA delegates to the Pueblo primary responsibility for NPDES permitting, the EPA will develop and issue the permits for dischargers within the Reservation, and these permits shall comply with this Code. Enforcement of the standards set forth in this Code shall be through the implementation of the National Pollutant Discharge Elimination System (NPDES). In addition, the Tribal Council may adopt additional regulations for enforcement of its water quality standards.

2. To the extent required to ensure compliance with this Code, and working in conjunction with federal and state agencies as appropriate, the TWQC Officer shall:

a. monitor water quality (chemical, physical, and biological) to assess the effectiveness of pollution controls and to determine whether water quality standards are being attained;

b. obtain and assess information pertinent to the actual environmental impact of any effluent, using data that accurately represent the quality and quantity of the effluent and receiving water, with due consideration of the numeric and narrative criteria, partitioning coefficients, speciation within the dissolved phase, indigenous species, actual water uses, total pollutant loadings, and other factors that bear on the actual or attainable use of a receiving water;

c. advise any prospective discharger of requirements for obtaining a permit to discharge, including any permit requirements that the Pueblo itself may enact;

d. review the adequacy of the existing data base and obtain additional data when required;

e. assess the probable impact of effluents on receiving waters in light of designated uses and numeric and narrative standards;

f. require the highest and best degree of wastewater treatment practicable commensurate with protecting and maintaining the designated uses and existing water quality of the receiving water and with long-term environmental protection objectives;

g. follow-EPA approved procedures to develop water quality based effluent limitations and comments on technology-based effluent limitations, as appropriate, for inclusion in any federal permit issued to a discharger pursuant to Section 402 of the Clean Water Act (33 U.S.C. Section 1342);

h. require that effluent limitations developed by the Pueblo be included in any such permit as a condition for tribal certification pursuant to Section 401 of the Clean Water Act, (33 U.S.C. Section 1341), provided that a reasonable time, not to exceed three years, for compliance shall be duly considered in determining whether certification is proper, and provided further that effluent limitations more stringent than those contained in existing NPDES permits shall not be imposed without providing an applicant an opportunity to demonstrate that existing permit limitations are adequate to protect existing and designated uses of receiving waters;

i. coordinate water pollution control activities with other constituent agencies and other local, state, and federal agencies, as appropriate;

j. develop and pursue inspection and enforcement programs to ensure that dischargers comply with requirements of this Code, satisfy the requirements of any regulations the Pueblo may enact subsequent to the adoption of this Code, and complement EPA's enforcement of federal permits;

k. provide continuing technical training for wastewater treatment facility operators through training and certification programs;

l. provide funds, subject to their availability and the prior approval and authorization of the Tribal Council, to assist in the construction of publicly owned wastewater treatment facilities through the construction grants and revolving funds program authorized by the Clean Water Act (33 U.S.C. Section 1281) and other federal funds available for this purpose;

m. encourage, in conjunction with other agencies, voluntary implementation of best management practices to control nonpoint sources of pollutants to achieve compliance with this Code;

n. ensure that the provisions for public participation required by this Code and the Clean Water Act are followed;

o. if necessary the TWQC Officer, subject to the approval of the Tribal Council, shall designate streams as perennial, intermittent, or ephemeral in accordance with this Code and determine low flow numeric values; and

p. provide such other technical support as is required to accomplish the objectives of this Code, including recommendations to the Tribal Council of any permitting or management regulations which would be consistent with the purposes of this Code.

## SECTION III. GENERAL STANDARDS

Watercourses shall be free of any water contaminant in such quantity and of such duration as may with reasonable probability injure human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property. In addition, the following narrative standards apply to all Tribal Waters, unless stricter standards are imposed in Sections IV and/or V.

A. **Stream Bottom Deposits.** All streams shall be free from water contaminants from other than natural causes that will settle and cause deleterious effects to the aquatic biota or significantly alter the physical or chemical properties of the bottom.

B. **Floating Solids, Oil, and Grease.** All waters shall be free from objectionable oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature resulting from other than natural causes including but not limited to visible films of oil, globules of oil, grease, or solids in or on the water, or coatings on stream banks.

C. **Color.** Materials producing true color resulting from other than natural causes shall not create an aesthetically undesirable condition; nor shall color impair the attainable uses of the water or harm aquatic life.

D. **Odor and Taste.** Water contaminants from other than natural causes shall be limited to concentrations that will not impart unpalatable flavor to fish, result in offensive odor or taste arising from the water, or otherwise interfere with the existing and attainable uses of the water, nor shall taste and odor-producing substances of other than natural origin interfere with the production of a potable water supply by modern treatment methods.

E. **Nuisance Conditions.** Plant nutrients or other substances stimulating algal growth from other than natural causes shall not be present in concentrations that will produce objectionable algal densities, or nuisance aquatic vegetation, result in a dominance of nuisance species instream, or otherwise cause nuisance conditions. When stricter requirements are not established elsewhere in this Code, the dissolved oxygen shall be maintained at 2 mg/liter in order to prevent nuisance conditions from other than natural causes. The phosphorus and nitrogen concentrations shall not be increased to levels that result in man-induced eutrophication problems. The Tribal Council may establish nutrient limitation for lakes, reservoirs, and streams and shall incorporate such limitations into appropriate water quality management plans.

F. **Pathogens.** The stream shall be virtually free from pathogens which includes bacteria, viruses or parasites. In particular waters used for irrigation of table crops such as lettuce shall be virtually free of Salmonella and Shigella species.

G. **Turbidity.** Turbidity attributable to other than natural causes shall not reduce light transmission to the point that the aquatic biota is inhibited or that will cause an unaesthetic and substantial visible contrast with the natural appearance of the water. Specifically, turbidity shall not exceed 5 NTU over background when background turbidity is 50 NTU or less; there shall not be more than a 10% increase in turbidity when background turbidity is more than 50 NTU.

H. **Mixing Zones.** In any perennial waters receiving a waste discharge, a continuous zone must be maintained where the water is of adequate quality to allow the migration of aquatic life with no significant effect on their population. The cross-sectional area of mixing zones shall generally be less than 1/3 of the cross-sectional area at or above 4Q3 conditions of the receiving stream. In intermittent or ephemeral streams, discharges shall meet all applicable numeric and narrative criteria at the point of discharge. There shall be no acute toxicity in the mixing zone. Numeric acute criteria shall be attained at the point of discharge. There shall be no chronic toxicity at the edge of the mixing zone. Mixing zones are not allowed for discharges to publicly owned lakes or reservoirs; these effluents shall meet all applicable numeric narrative criteria at the point of discharge. Mixing zones shall not overlap sites of primary contact. Requirements for mixing zones shall be consistent with those established in the water quality management plans and implementation plans developed by the Pueblo or regulations issued by the EPA.

I. **Radioactive Materials.** The radioactivity of surface water shall not exceed the maximum natural background concentrations in Tribal Waters.

J. **Temperature.** The introduction of heat by other than natural causes shall not increase the temperature outside the mixing zone by more than 2.7° C (5° F) in a stream, based upon the monthly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) outside the mixing zone. In lakes, the temperature of the water column or epilimnion (if thermal stratification exists) shall not be raised more than 1.7° C (3° F) above that which existed before the addition of heat of artificial origin, based upon the average of temperatures taken from the surface to the bottom, or the surface to the bottom of the epilimnion (if stratified). The normal daily and seasonal variations that were present before the addition of heat from other than natural sources shall be maintained. In no case shall heat of artificial origin be permitted when the maximum temperature specified for the reach (20° C/68° F for coldwater fisheries and 32.2° C/90° F for warmwater fisheries)

would thereby be exceeded. High water temperatures caused by unusually high ambient air temperatures are not violations of these standards.

K. **Salinity/Mineral Quality. (total dissolved solids, chlorides, and sulfates).** Existing mineral quality shall not be altered by municipal, industrial, or instream activities, or other wastes discharges so as to interfere with the designated uses. No increase exceeding 1/3 over naturally-occurring levels shall be permitted. Numeric criteria for chlorides at 230 mg/L, for sulfates at 250 mg/L and for total dissolved solids at 500 mg/L shall not be exceeded

L. **pH.** The pH of a stream or a lake shall not fluctuate in excess of 1.0 pH unit over a period of 24 hours for other than natural causes.

M. **Dissolved oxygen.** If the stream is capable of supporting aquatic life, the dissolved oxygen standard will be a minimum of 5 mg/L.

N. **Dissolved Gases.** Surface water shall be free of nitrogen and other dissolved gases at levels above 110% saturation when this supersaturation is attributable to municipal, industrial, or other discharges.

O. **Toxic Substances.**

1. Toxic substances, including but not limited to pesticides, herbicides, heavy metals, and organic chemicals, shall not be present in receiving waters in such quantities as to be toxic to human, animal, plant, or aquatic life, or to interfere with the normal propagation, growth, and survival of the indigenous aquatic biota. There shall be no acute toxicity. At the edge of the mixing zone there shall be no chronic toxicity.

2. Biomonitoring testing following current EPA test methods shall be used to determine compliance with the narrative criteria. These protocols can be found in EPA's Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-89/001: February 1989, or the most current revision thereof. Other references are Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms: EPA/600/4-90/027F: August 1993, or the most current revision thereof; Post Third Round NPDES Permit Implementation Strategy: adopted October 1, 1992, or the most current revision thereof; and Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001; March 1991 or the most current revision thereof. Should the Pueblo need to derive numeric criteria, without actually conducting toxicity tests, it shall use the AQUIRE (Aquatic Toxicity Information Retrieval) database and EPA's guidance, Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and their Uses, to calculate any criteria. In the event that sufficient data is not available to derive a numeric criterion following the above guidance, the Pueblo may use the results of toxicological studies to calculate a criterion based on the following methods:

a. concentrations of non-persistent toxic materials shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 10% of $LC_{50}$ values) to representative, sensitive, aquatic organisms;

b. concentrations of persistent toxic materials that do not bioaccumulate shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity date or calculated as 5% of $LC_{50}$ values) to representative, sensitive aquatic organisms; and

c. concentrations of toxic materials that bioaccumulate shall not exceed concentrations which are chronically toxic (as determined from appropriate chronic toxicity data or calculated as 1% of $LC_{50}$ values) to representative, sensitive, aquatic organisms.

Toxicants in the receiving water known to be persistent, bioaccumulative, carcinogenic, and/or synergistic with other waste stream components may be addressed on a case-by-case basis.

3. The following numeric criteria shall apply to all Tribal Waters.

| | | FRESH WATER AQUATIC LIFE CRITERIA | | HUMAN HEALTH CRITERIA[G] |
|---|---|---|---|---|
| | CAS # | Chronic toxicity | Acute toxicity | |
| Substance | | (ug/L) | (ug/L) | (units/liter) |
| Acenaphthene | 83-32-9 | -- | -- | 2700 ug |
| Acrolein | 107-02-8 | -- | -- | 780 ug |
| Acrylonitrile [c] | 107-13-1 | -- | -- | 0.65 ug |
| Aluminum[a] | 7429-90-5 | 87 | 750 | -- |
| Aldrin[c] | 309-00-2 | -- | 3.0 | 0.14 ng |
| Anthracene | 120-12-7 | -- | -- | 110000 ug |
| Arsenic [a] | 22569-72-8 | 190 | 360 | -- |
| Benzidine [c] | 92-87-5 | -- | -- | 0.54 ng |
| Benzo(a)Anthracene [c] | 56-55-3 | -- | -- | 49 ng |
| Benzo(a)Pyrene [c] | 50-32-8 | -- | -- | 49 ng |
| Benzo(b)Fluoranthene [c] | 205-99-2 | -- | -- | 49 ng |
| Benzo(k)Fluoranthene | 207-08-9 | -- | -- | 49 ng |
| Beryllium [a] | 7440-41-7 | 5.3 | 130 | -- |
| Bromoform [c] | 75-25-2 | -- | -- | 360 ug |
| Butyl benzyl phthalate | 85-68-7 | | | 5200 ug |
| Cadmium[a] | 7440-43-9 | $e^{(0.7852*H-3.490)}$ | $e^{(1.128*H-3.828)}$ | -- |
| Carbon Tetrachloride [c] | 56-23-5 | -- | -- | 4.4 ug |
| Chlordane[c] | 57-74-9 | 0.0043 | 2.4 | 0.59 ng |
| Chloride | 16887-00-6 | 230 mg | 860 mg | -- |
| Chlorine, total residual | 7782-50-5 | 3 | 19 | -- |
| Chlorobenzene | 108-90-7 | -- | -- | 21 mg |
| Chlorodibromomethane [c] | 124-48-1 | -- | -- | 34 ug |
| Bis (chloromethyl) Ether [c] | 542-88-1 | -- | -- | 0.078 ug |
| 2-Chloronapthalene | 91-58-7 | -- | -- | 4300 ug |
| 2-Chlorophenol | 95-57--8 | -- | -- | 400 ug |
| Chlorpyrifos | 2921-88-2 | 0.083 | 0.041 | -- |
| Chromium (III) [a] | 16065-83-1 | $e^{(0.819*H+1.1645)}$ | $e^{(0.8460*H+3.688)}$ | -- |
| Chromium (VI) [a] | 18540-29-9 | 11 | 16 | -- |

| | | FRESH WATER AQUATIC LIFE CRITERIA | | HUMAN HEALTH CRITERIA[G] |
|---|---|---|---|---|
| | CAS # | Chronic toxicity | Acute toxicity | |
| Substance | | (ug/L) | (ug/L) | (units/liter) |
| Copper [a] | 7440-50-8 | $e^{(0.8545*H-1.465)}$ | $e^{(0.9422*H-1.464)}$ | -- |
| Cyanide [b] | 57-12-5 | 5.2 | 22 | 220 mg |
| Dibenzo(a,h)Anthracene [c] | 53-70-3 | -- | -- | 49 ng |
| 1,2 dichlorobenzene | 95-50-1 | -- | -- | 17 mg |
| 1,3 dichlorobenzene | 541-73-1 | -- | -- | 2600 ug |
| 1,4,dichlorobenzene | 106-46-7 | -- | -- | 2600 ug |
| Dichlorobenzidine (3,3') [c] | 91-94-1 | -- | -- | 77 ng |
| Dichlorobromomethane [c] | 75-27-4 | -- | -- | 46 ug |
| Dichlorodifluoromethane | 75-71-8 | -- | -- | 570 mg |
| Dichloroethane 1,2 [c] | 107-06-2 | -- | -- | 99 ug |
| Dichloroethylene 1,1 [c] | 75-35-4 | -- | -- | 3.2 ug |
| 1,2-trans-Dichloroethylene [c] | 156-60-5 | -- | -- | 140 mg |
| Dichlorophenol 2,4 | 120-83-2 | -- | -- | 790 ug |
| Dichloropropylene (1,3-cis & trans isomers) | 542-75-6 | -- | -- | 1700 ug |
| Dieldrin [c] | 60-57-1 | 0.0019 | 2.5 | 0.14 ng |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 2300 ug |
| Diethylphthalate | 84-66-2 | -- | -- | 120 mg |
| Dimethylphthalate | 131-11-3 | -- | -- | 2900 mg |
| Di-n-Butyl Phthalate | 84-74-2 | -- | -- | 12 mg |
| 4,6-Dinitro-o-cresol [e] | 534-52-1 | -- | -- | 765 ug |
| 2,4-Dinitrotoluene [c] | 121-14-2 | -- | -- | 9.1 ug |
| Dinitro Phenols (2,4) | 51-28-5 | -- | -- | 14 mg |
| Dioxin (2,3,7,8-TCDD) [c] | 1746-01-6 | -- | -- | 0.000014 ng |
| Diphenylhydrazine 1,2 [c] | 122-66-7 | -- | -- | 540 ng |
| 2-Ethylhexylphthalate (bis) [c] | 117-81-7 | -- | -- | 5.9 ug |
| Endosulfan (alpha, beta) | 115-29-7 | 0.056 | 0.22 | 240 ug |
| Heptachlor [c] | 76-44-8 | 0.0038 | 0.52 | 0.21 ng |
| Heptachlor epoxide [c] | 1024-57-3 | 0.0038 | 0.52 | 0.11 ng |
| Hexachlorobenzene [c] | 118-74-1 | -- | -- | 0.77 ng |
| Hexachlorobutadiene | 87-68-3 | -- | -- | 50 ug |

| | | FRESH WATER AQUATIC LIFE CRITERIA | | HUMAN HEALTH CRITERIA[G] |
|---|---|---|---|---|
| | CAS # | Chronic toxicity | Acute toxicity | |
| Substance | | (ug/L) | (ug/L) | (units/liter) |
| Hexachlorocyclohexane-alpha [c] | 319-84-6 | -- | -- | 13 ng |
| Hexachlorocyclohexane-beta [c] | 319-85-7 | -- | -- | 46 ng |
| Hexachlorocyclohexane-gamma [c] | 58-89-9 | 0.08 | 2 | 63 ng |
| Hexachlorocyclo-pentadiene | 77-47-4 | -- | -- | 17 mg |
| Hexachloroethane [c] | 67-72-1 | -- | -- | 8.9 ug |
| Indeno (1,2,3,cd)Pyrene [c] | 193-39-5 | -- | -- | 49 ng |
| Isophorone [c] | 78-59-1 | -- | -- | 2600 ug |
| Lead [a] | 7439-92-1 | $e^{(1.273*H-4.705)}$ | $e^{(1.273*H-1.460)}$ | -- |
| Mercury, total | 7439-97-6 | 0.012 | 2.4 | 150 ng |
| Methyl bromide | 74-83-9 | -- | -- | 4000 ug |
| Methylene chloride [c] | 75-09-2 | -- | -- | 1600 ug |
| Nickle [a] | 7440-02-0 | $e^{(0.846*H+1.1645)}$ | $e^{(0.846*H+3.3612)}$ | 4600 ug |
| Nitrobenzene | 98-95-3 | -- | -- | 1900 ug |
| N-Nitrosodimethlyamine [c] | 62-75-9 | -- | -- | 8.1 ug |
| N-Nitrosodiphenylamine [c] | 86-30-6 | -- | -- | 16 ug |
| N-Nitrosodi-n-proplyamine [c] | 621-64-7 | -- | -- | 1.4 ug |
| N-Nitrosopyrrolidene [c] | 930-55-2 | -- | -- | 93 ug |
| Parthion | 56-38-2 | 0.013 | 0.065 | -- |
| Pentachlorobenzene | 608-93-5 | -- | -- | 4.1 ug |
| Pentachlorophenol [c] | 87-86-5 | $e^{(1.005(pH)-5.290)}$ | $e^{(1.005(pH)-4.830)}$ | 8.2 ug |
| Phenol [b] | 1.08-95-2 | -- | -- | 4.6 g |
| Polychlorinated Biphenlyls [c] | 1336-36-3 [d] | 0.014 | -- | 0.045 ng |
| Selenium [b] | 7782-49-2 | 2.0 | 20.0 | -- |
| Silver [a] | 7440--22-4 | -- | $e^{(1.72*H-6.52)}$ | -- |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | -- | -- | 2.9 ug |
| Tetrachoroethane 1,1,2,2 [c] | 79-34-5 | -- | -- | 11 ug |
| Tetrachloroethylene [c] | 127-18-4 | -- | -- | 8.9 ug |
| Thallium | 7440-28-0 | -- | -- | 6.2 ug |
| Toluene | 108-88-3 | -- | -- | 200 mg |
| Toxaphene | 8001-35-2 | 0.0002 | 0.73 | 0.75 ng |

| | | FRESH WATER AQUATIC LIFE CRITERIA | | HUMAN HEALTH CRITERIA[G] |
|---|---|---|---|---|
| | CAS # | Chronic toxicity | Acute toxicity | |
| Substance | | (ug/L) | (ug/L) | (units/liter) |
| 1,2,4-Trichlorobenzene | 120-82-1 | -- | -- | 940 ug |
| 1,1,2-Trichloroethane[c] | 79-00-5 | -- | -- | 42 ug |
| Trichloroethylene[c] | 79-01-6 | -- | -- | 81 ug |
| Trichlorofluoromethane | 75-69-4 | -- | -- | 860 mg |
| 2,4,5-Trichlorophenol | 95-95-4 | -- | -- | 9800 ug |
| 2,4,6-Trichlorophenol[c] | 88-06-2 | -- | -- | 6.5 ug |
| Vinyl Chloride[c] | 75-01-4 | -- | -- | 530 ug |
| Zinc[a] | 7440-66-6 | $e^{(0.8473*H+0.7614)}$ | $e^{(0.8473*H+0.8604)}$ | -- |

**Notes:** Abbreviations for units. H = hardness. g = grams. mg = milligrams. ug = micrograms. ng = nanograms. ug/l = micrograms/liter.

a = value based on using a dissolved method

b = total recoverable

c = carcinogen

d = CAS #'s for specific PCB's are as follows. PCB-1016: 1274-11-2; PCB-1221: 11104-28-2; PCB-1232: 11141-16-5; PCB-1242: 5346-92-19; PCB-1248: 12672-29-6; PCB-1254: 11097-69-1; PCB-1260: 11096-82-5.

e = Also 2,4 Dinitro-o-cresol: 2-Methyl-4-6-Dinitrophenol.

f = CAS #'s for specific endosulfans are as follows. Endosulfan-alpha: 956-98-8: endosulfan-beta 33213-65-9.

g = The values stated as Human Health Criteria for these substances are based on the assumption that fish from the surface waters covered by this Code are consumed, but water from these surface waters is not regularly ingested. A risk of $10^{-6}$ is assumed for carcinogens.

H = Natural logarithm of value of hardness observed during low flow conditions (mg/L). Hardness will be measured as mg of $CaCO_3$ /L.

* = Insufficient data to develop criteria. Value presented is the lowest observed effect level ("L.O.E.L"). Site-specific information may be used to modify these L.O.E.L.'s.

## SECTION IV. STANDARDS APPLICABLE TO EXISTING, ATTAINABLE OR DESIGNATED USES

A. **Fish Culture and High-Quality Coldwater Fisheries.** The following standards are applicable to protection of fish culture and high-quality coldwater fisheries.

1. The dissolved oxygen shall not be less than 6 mg/L.
2. The temperature shall not exceed 20°C (68°F).
3. pH shall be within the range of 6.6 to 8.8.
4. Total phosphorus (as P) shall be less than 0.1 mg/L.
5. Total organic carbon shall be less than 7 mg/L.
6. Turbidity shall be less than 10 NTU, except in certain reaches where natural background conditions prevent attainment of lower turbidity. In that instance turbidity shall be less than 25 NTU.
7. Conductivity (at 25°C) shall be between 300 umhos/cm and 1,500 umhos/cm depending on the natural background in particular stream reaches.
8. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A to this code.
9. Toxic substances shall not be present in amounts exceeding the levels set forth in Section III. (O.) of this Code.
10. Total chlorine residual is less than or equal to 2 ug/L at the point of discharge for high quality coldwater fisheries

B. **Marginal Coldwater Fisheries.** All standards set forth in Subsection A of this section apply to the protection of marginal coldwater fisheries, with the following exceptions.

1. The temperature shall not exceed 25°C (71.6°F).
2. Dissolved oxygen shall be greater than 6 mg/L.
3. pH may range from 6.6 - 9.0
4. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A to this code.
5. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A to this code.
6. Total chlorine residual is less than or equal to 3 ug/L at the point of discharge for marginal coldwater fisheries.

C. **Warmwater Fisheries.** All standards set forth in Subsection A of this section apply to the protection of warmwater fisheries, with the following exceptions.

1. The temperature shall not exceed 32.2 C (90 F).
2. Dissolved oxygen shall not be less than 5 mg/L.
3. pH shall be within the range of 6.5 - 9.0.
4. Total ammonia standards shall be calculated as a function of pH and temperature, in accordance with Appendix A to this code.
5. Standards for phosphorous and total organic carbon do not apply.
6. Total chlorine residual is less than or equal to 3 ug/L at the point of discharge for warmwater fisheries.

C. **Irrigation.** The following standards are applicable in order to protect irrigation water use.

1. The monthly geometric mean of fecal coliform bacteria shall be less than 1,000 colonies/100 mL; no single sample shall exceed 2,000 colonies/100 mL.
2. The following numeric standards shall not be exceeded:

| | |
|---|---|
| Dissolved aluminum | 5.0 mg/L |
| Dissolved arsenic | 0.10 mg/L |
| Dissolved boron | 0.75 mg/L |
| Dissolved cadmium | 0.01 mg/L |
| Dissolved chromium * | 0.10 mg/L |
| Dissolved cobalt | 0.05 mg/L |
| Dissolved copper | 0.20 mg/L |
| Dissolved lead | 5.0 mg/L |
| Dissolved molybdenum | 0.01 mg/L |
| Dissolved selenium | 0.13 mg/L |
| Dissolved vanadium | 0.1 mg/L |
| Dissolved zinc | 2.0 mg/L |

* The standards for chromium shall be applied to an analysis which measures both the trivalent and hexavalent ions.

D. **Ground-water Recharge** or **Domestic, Municipal, and Industrial Water Supply**. The following standards are applicable in order to protect ground-water recharge, domestic, municipal and industrial water supply uses:

1. The following numeric standards shall not be exceeded:

| | |
|---|---|
| Dissolved arsenic | 0.05 mg/L |
| Dissolved barium | 1.0 mg/L |
| Dissolved cadmium | 0.01 mg/L |
| Dissolved chromium* | 0.05 mg/L |
| Dissolved lead | 0.05 mg/L |
| Total mercury | 0.002 mg/L |
| Total nitrate | 10.0 mg/L |
| Dissolved selenium | 0.05 mg/L |
| Dissolved silver | 0.05 mg/L |
| Dissolved cyanide | 0.2 mg/L |
| Dissolved uranium | 5.0 mg/L |
| Radium-226 + radium-228 | 30.0 pCi/L |
| Tritium | 20,000 pCi/L |
| Gross alpha | 15 pCi/L |

* The standards for chromium shall be applied to an analysis which measures both the trivalent and hexavalent ions.

E. **Livestock and Wildlife**. The following standards are applicable to all perennial, intermittent and ephemeral streams, including associated standing waters and wetlands, in order to protect livestock and wildlife uses:

| | |
|---|---|
| Dissolved aluminum | 5.0 mg/L |
| Dissolved arsenic | 0.02 mg/L |
| Dissolved boron | 5.0 mg/L |
| Dissolved cadmium | 0.05 mg/L |
| Dissolved chromium * | 1.0 mg/L |
| Dissolved cobalt | 1.0 mg/L |
| Dissolved copper | 0.5 mg/L |
| Dissolved lead | 0.1 mg/L |

| | |
|---|---|
| Total mercury | 0.0012 ug/L |
| Total selenium | 0.002 mg/L |
| Dissolved vanadium | 0.1 mg/L |
| Dissolved zinc | 25.0 mg/L |
| Radium-226 + radium-228 | 30.0 pCi/L |

* The standards for chromium shall be applied to an analysis which measures both the trivalent and hexavalent ions.

F. **Primary Contact**.. The following standards are applicable in order to protect primary contact uses:

1. The geometric mean maximum for fecal coliform bacteria shall be less than 200 colonies per 100 mL. The single sample maximum for fecal coliform bacteria shall be less than 400 colonies per 100 mL. Compliance with this standard shall be determined based on a minimum of five samples taken over maximum of thirty days. *
2. In any single sample, pH shall be within the range of 6.6 to 8.8.
3. The total dissolved solids of mineral constituents shall be less than 500 mg/L.
4. Turbidity shall not exceed 25 NTU' s.
5. The open water shall be free of algae in concentrations causing a nuisance condition or causing gastrointestinal or skin disorders.

* As an alternative to fecal coliform, the Pueblo may adopt and apply standards for E. Coli at a monthly geometric mean maximum of 126 colonies/100 mL and a single sample maximum of 235 colonies/100 mL in, accordance with an illness rate of 8/1000 exposures.

## SECTION V. STREAM USE DESIGNATIONS

A. **Stream Use Designations.** The following designations apply:

1. The following water body uses and the standards pertaining thereto shall apply to Santa Clara Creek (from its western boundary, east until the water is diverted for irrigation), perennial tributaries to Santa Clara Creek, wetlands along Santa Clara Creek and its perennial tributaries, and any perennial standing waters along Santa Clara Creek and its perennial tributaries (including but not limited to Pin Dee or Turkey Pond, Wen Povi or Pine Cone Pond, Nana Ka or Aspen Pond, Tsichomo Pond, and all beaver ponds): fish culture, high quality coldwater fishery, irrigation, livestock and wildlife, domestic municipal and industrial water supply, and primary contact.

2. The following water body uses and the standards pertaining thereto shall apply to the Santa Clara Creek (below the irrigation diversion, east until it meets the Rio Grande), the Rio Grande, the Rio Santa Cruz, and any other stream segment which is determined to be perennial, including any standing waters and wetlands associated with said streams: marginal coldwater fishery, warmwater fishery, irrigation, livestock and wildlife, and primary contact.

3. The following water body uses and the standards pertaining thereto shall apply to all intermittent or ephemeral streams, including any associated standing water and wetlands: livestock and wildlife, groundwater recharge, primary contact.

## SECTION VI. SAMPLING AND ANALYSES

A. **Methodology.** All methods of sample collection, preservation, and analysis used in determining water quality and maintenance of these standards shall be in accordance with procedures prescribed by the latest edition of EPA's "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (40 C.F.R. Part 136).

B. **Bacteriological Surveys.** In conducting such surveys, the monthly geometric mean shall be used in assessing attainment of standards when a minimum of five samples is collected in a thirty day period. No single sample shall exceed the upper limit for bacterial density, as set forth in Section IV, when less than five samples are collected in a thirty day period.

C. **Sampling Procedures.** The following sampling procedures shall be used:

1. Stream monitoring stations below waste discharges shall be located outside the mixing zone.

2. Sampling in lakes, including artificial lakes, shall be located where the attainment of a water quality standard is to be assessed. Water quality measurements shall be taken at intervals in the water column at a sampling station. For toxic substances and nutrients, the entire water column shall be monitored. For dissolved oxygen in stratified lakes, measurements shall be made in the epilimnion. In nonstratified lakes, measurements will be made at intervals throughout the entire water column.

D. **Biological Surveys.** Any biological assessment program shall be established in accordance with EPA's "Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish." As needed, artificial collection sites shall be installed in lowland stream beds to determine potential species diversity under improved stream conditions.

## SECTION VII. DEFINITIONS

The following terms shall have the following definitions when used in this Code:

A. **"Acute toxicity"**: Toxicity that exerts short term lethal impacts on representative organisms with a duration of exposure generally less than or equal to 48 hours. Acute toxicity shall be determined in accordance with procedures specified in EPA/600/4-90/027, "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms." Other methods may be used as appropriate to determine acute effects other than lethality such as, but not limited to, behavioral changes, immobilization.

B. **"Agricultural water supply use"**: The use of water for irrigation.

C. **"Algae"**: Simple rootless plants that grow in sunlit waters in relative proportion to the amounts of nutrients available. They can affect adversely water quality by lowering the dissolved oxygen in the water and are food for fish and small aquatic animals.

D. **"Antidegradation"**: The policy set forth in the Pueblo of Santa Clara Water Quality Standards as required by federal regulations (i.e., EPA's regulations under the Clean Water Act) whereby existing uses and the level of water quality necessary to protect those uses is maintained and protected (See 40 C.F.R. Section 131.12 (1987)).

E. **"Aquatic biota"**: Animal and plant life in the water.

F. **"Attainable use"**: "Attainable use" means a use of surface water having water quality and all other characteristics necessary to support and maintain the use, as specified in Section IV of this Code, or which would support and maintain the use after the implementation of water quality standards as set forth in this Code.

G. **"Aquatic Life Criteria"**: Constituent concentrations, level, or narrative statements, representing a quality of water that is protective of aquatic life.

H. **"Best management practices"**: Practices undertaken to control, restrict, and diminish nonpoint sources of pollution, that are consistent with the purposes of this Code and with the narrative and numeric standards contained herein; and measures, sometimes structural, that are determined to be the most effective practical means of preventing or reducing pollution of water bodies from nonpoint sources.

I. **"Bioaccumulation"**: The process of a chemical accumulating in a biological food chain by being

passed from one organism to another as the contaminated organism is preyed upon by another organism.

J. **"Bioconcentration"**: Uptake and retention of a substance by an aquatic organism from the surrounding water only, through gill membranes or other external body surfaces.

K. **"CAS Number"**: chemical abstract service number; each chemical has a specific identification number.

L. **"Carcinogenic"**: Cancer producing.

M. **"Ceremonial use"**: See "Primary Contact."

N. **"cfs"**: cubic feet per second.

O. **"Chronic toxicity"**: Toxicity which exerts sublethal effects, such as impairment of growth or reproduction, or which becomes lethal after long term exposure, generally measured in a 7-day test on representative organisms. Chronic toxicity shall be determined in accordance with procedures specified in EPA/600/4-89/001, "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms."

P. **"Coldwater fishery"**: A stream reach, lake, or impoundment where the water temperature and other characteristics are suitable for the support of coldwater fish such as brown, cutthroat, brook, rainbow trout and native fish species such as but not limited to the longnose dace, Rio Grande chub, Rio Grande sucker, brown cutthroat (including the native Rio Grande cutthroat), brook or rainbow trout. .

Q. **"Color"**: Color as used herein means true color as well as apparent color. True color is the color of the water from which turbidity has been removed. Apparent color includes not only the color due to substances in solution (true color), but also that color due to suspended matter.

R. **"Cumulative"**: Increasing by successive additions.

S. **"Designated uses"**: Those uses set forth in this Code.

T. **"Dissolved oxygen (DO)"**: The amount of oxygen dissolved in water or the amount of oxygen available for biochemical activity in water, commonly expressed as a concentration in milligrams per liter.

U. "Domestic water supply": Water that only requires disinfection in order to be usable for drinking or cooking.

V. **"e"**: a transcendental constant equal to 2.7182818 which is used as the base of natural logarithms; it is the limit of the expression $[(1+1/n)^n]$, as n approaches infinity.

W. **"Effluent"**: Discharge into surface waters from other than natural sources.

X. **"Ephemeral stream"**: A reach of a stream that flows temporarily in direct response to precipitation or snowmelt, the channel bed of which is above the water table.

Y. **"Epilimnion"**: The layer of water that overlies the thermocline of a lake and that is subject to the action of wind.

Z. **"Eutrophication"**: The slow aging process during which a lake, estuary, or bay evolves into a bog or marsh and eventually disappears. During the later stages of eutrophication the waterbody is choked by abundant plant life as the result of increased amounts of nutritive compounds such as nitrogen and phosphorus. Human activities can accelerate the process.

AA. **"Existing uses"**: Those uses actually attained in a surface water body on or after November 28, 1975, whether or not they are referred to this Code.

BB. **"FDA Alert Limits"**: Levels promulgated by the U.S. Food and Drug Administration concerning concentrations of substances in food.

CC. **"Fecal coliform bacteria"**: The portion of the coliform group which is present in the gut or the feces of warmblooded animals. Fecal coliform bacteria generally include organisms that are capable of producing gas from lactose broth in a suitable culture medium within 24 hours at 44.5+/-0.2°C.

DD. **"Fish culture"**: Production of coldwater or warmwater fish in a hatchery or rearing station.

EE. **"Fishery"**: A balanced, diverse community of fishes controlled by the water quality, quantity, and habitat of a waterbody.

FF. **"Flow"**: Atmospheric precipitation resulting in surface and/or ground water runoff.

GG. **"Geometric Mean"**: a mean calculated by converting all values to logarithms; averaging the

logarithms; and determining the antilogarithm of that average.

HH. **"Harmonic Mean Flow"**: is the number of daily flow measurements divided by the sum of the reciprocals of the flow. That is, it is the reciprocal of the mean of reciprocals.

II. **"Human Health Criteria"**: Criteria guidance published under section 304 (a) of the Clean Water Act based on the latest scientific information on the effect a constituent concentration has on human health from consumption of fish and/or ingestion of water. This information is issued periodically to the states as guidance for use in developing criteria.

JJ. **"Indigenous"**: Produced, growing, or living naturally in a particular region or environment.

KK. **"Industrial"**: Production of goods or services for profit.

LL. **"Industrial water supply use"**: The use of water with reference to the production of goods or services for profit.

MM. **"Intermittent stream"**: A stream or reach of a stream that flows only at certain times of the year, when receiving flow from springs, melting snow, or localized precipitation.

NN. **"Irrigation use"**: The use of water, after diversion, to promote the growth of crops.

OO. **"Livestock and wildlife use"**: The use of water, by ingestion, by domestic livestock and vertebrate animals.

PP. **"Marginal coldwater fishery"**: A stream reach, lake, or impoundment where water temperature and other characteristics are suitable for support of coldwater fish (such as brown, trout, cutthroat trout, book trout, or rainbow trout), but where temperature and other characteristics may not always be suitable for propagation of coldwater fish.

QQ. **"LC-50"**: The concentration of a substance that is lethal to 50% of the test organisms within a defined time period.

RR. **"Milligrams per Liter (mg/l)"**: The concentration at which one milligram is contained in a volume of one liter; one milligram per liter is equivalent to one part per million (ppm) at unit density.

SS. **"Mixing zone"**: A three-dimensional zone in which discharged effluent mixes with the receiving water and within which there is a gradation of water quality.

TT. **"Narrative standards"**: A standard or criterion expressed in words rather than numerically.

UU. **"Natural background"**: Characteristics that are not man-induced that are related to water quality; the levels of pollutants present in ambient water that are from natural, as opposed to man-induced, sources.

VV. **"Nonpoint source"**: A source of pollution that is not a discernible, confined, and discrete conveyance (e.g., run-off from land).

WW. **"NTU"**: Nephelometric Turbidity Units; a measure of turbidity in water; see Turbidity.

XX. **"Nuisance condition"**: A condition involving uncontrolled growth of aquatic plants, usually caused by excessive nutrients in the water.

YY. **"Nutrient"**: A chemical element or inorganic compound taken in by green plants and used in organic synthesis.

ZZ. **"Pathogens"**: Microorganisms that can cause disease in other organisms or in humans, animals, and plants. They may be bacteria, viruses, or parasites and are found in sewage, in runoff from animal farms or rural areas populated with domestic and/or wild animals, and in water used for swimming. Fish and shellfish contaminated by pathogens, or the contaminated water itself, can cause serious illnesses.

AAA. **"Perennial stream"**: A stream or reach of a stream that flows continuously throughout the year, the upper surface of which is generally lower than the water table of the region adjoining the stream.

BBB. **"Persistent"**: Existing for a long or longer than usual time or continuously.

CCC. **"pH"**: The negative logarithm of the effective hydrogen-ion concentration in gram equivalents per liter.

DDD. **"Picocurie (pCi)"**: That quantity of radioactive material producing 2.22 nuclear transformations per minute.

EEE. **"Point source"**: Any discernible, confined, and discrete conveyance from which pollutants are or may be discharged into a water body, but not including return flows from irrigated agriculture.

FFF. **"Primary Contact"**: Any recreational or other water use in which there is prolonged and intimate contact with the waterbody, such as swimming and waterskiing, involving considerable risk of ingesting water in quantities sufficient to pose a significant health hazard. Primary contact also means any use of waterbodies for American Indian traditional, cultural, religious, or ceremonial purposes in which there is intimate contact with the waterbody that may pose a significant health risk. This contact may include but is not limited to ingestion or immersion.

GGG. **"Secondary contact recreational use"**: Any recreational use of the water in which contact with the water need not occur and in which the probability of ingesting water is minimal, such as fishing and boating.

HHH. **"Segment"**: A surface water body that has common hydrologic characteristics or flow regulation regimes, possesses common natural physical, chemical, and biological characteristics, and exhibits common reactions to external stresses such as the discharge of pollutants.

III. **"Synergism"**: Cooperative action of discrete agents such that the total effect is greater than the sum of the effects taken independently.

JJJ. **"TDS"**: Total dissolved solids.

KKK. **"Technology-based controls"**: The application of technology-based effluent limitations as required under Section 301(b) of the Clean Water Act.

LLL. **"Thermal Stratification"**: Temperature-caused horizontal layers of different densities produced in a lake.

MMM. **"Threatened and Endangered Species Habitat"**: means a stream reach, lake, spring, and/or pool where water quality, lack of interspecies competition, temperature and instream or benthic habitat provide for the support and propagation of a threatened or endangered species.

NNN. **"Toxic pollutant"**: Those pollutants or combinations of pollutants, including but not limited to 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 on the basis of information available to the EPA Administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including but not limited to malfunctions in reproduction), or physical deformations in such organisms or their offspring.

OOO. **"Toxicity":** The degree of danger posed by a substance to animal or plant life; see "Acute Toxicity" and "Chronic Toxicity."

PPP. **"Turbidity":** the degree to which water is cloudy or muddy in physical appearance due to suspended silt or organic mater.

QQQ. **"Use-attainability analysis":** A structured scientific assessment of the factors affecting attainment of a use for a body of water, which assessment may include physical, chemical biological, and economic factors, such as those referred to in 40 C.F.R. Section 131.10(g).

RRR. **"Warmwater fishery":** A stream reach, lake, or impoundment where the water temperature and other characteristics are suitable for the support of warmwater fish such as but not limited to the large-mouth black bass, white bass, channel catfish and native fish species such as, but not limited to the flathead chub and other native cyprinids, like the white sucker, large-mouth and small mouth bass, crappie, bluegill, channel catfish or fathead minnow.

SSS. **"Water Contaminant":** Any substance that alters the physical, chemical, or biological qualities of water.

TTT. **"Water quality-based controls":** Effluent limitations, as provided under Section 301(b)(1)(C) of the Clean Water Act, that are developed and imposed on point-source dischargers in order to protect and maintain applicable water quality standards.

UUU. **"Zone of passage":** The portion of the receiving water outside the mixing zone where water quality is the same as that of the receiving water.

## Total Ammonia (mg/l as N), Warmwater Fisheries:

### 1. Acute Standards

pH

| TEMPERATURE °C | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 | 8.75 | 9.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 29 | 26 | 23 | 19 | 14 | 10 | 6.6 | 3.7 | 2.1 | 1.2 | 0.70 |
| 1 | 28 | 26 | 23 | 19 | 14 | 9.9 | 6.5 | 3.7 | 2.1 | 1.2 | 0.70 |
| 2 | 28 | 26 | 22 | 18 | 14 | 9.7 | 6.4 | 3.6 | 2.1 | 1.2 | 0.69 |
| 3 | 28 | 25 | 22 | 18 | 14 | 9.6 | 6.3 | 3.6 | 2.0 | 1.2 | 0.69 |
| 4 | 27 | 25 | 22 | 18 | 14 | 9.5 | 6.2 | 3.5 | 2.0 | 1.2 | 0.69 |
| 5 | 27 | 25 | 22 | 18 | 13 | 9.4 | 6.1 | 3.5 | 2.0 | 1.2 | 0.68 |
| 6 | 27 | 24 | 21 | 18 | 13 | 9.3 | 6.1 | 3.5 | 2.0 | 1.1 | 0.68 |
| 7 | 26 | 24 | 21 | 17 | 13 | 9.2 | 6.0 | 3.4 | 2.0 | 1.1 | 0.68 |
| 8 | 26 | 24 | 21 | 17 | 13 | 9.1 | 6.0 | 3.4 | 1.9 | 1.1 | 0.68 |
| 9 | 26 | 24 | 21 | 17 | 13 | 9.0 | 5.9 | 3.4 | 1.9 | 1.1 | 0.68 |
| 10 | 25 | 23 | 21 | 17 | 13 | 8.9 | 5.9 | 3.3 | 1.9 | 1.1 | 0.68 |
| 11 | 25 | 23 | 20 | 17 | 13 | 8.9 | 5.8 | 3.3 | 1.9 | 1.1 | 0.68 |
| 12 | 25 | 23 | 20 | 17 | 13 | 8.8 | 5.8 | 3.3 | 1.9 | 1.1 | 0.69 |
| 13 | 25 | 23 | 20 | 16 | 12 | 8.7 | 5.7 | 3.3 | 1.9 | 1.1 | 0.69 |
| 14 | 25 | 23 | 20 | 16 | 12 | 8.7 | 5.7 | 3.3 | 1.9 | 1.1 | 0.70 |
| 15 | 24 | 23 | 20 | 16 | 12 | 8.6 | 5.7 | 3.3 | 1.9 | 1.1 | 0.70 |
| 16 | 24 | 22 | 20 | 16 | 12 | 8.6 | 5.7 | 3.3 | 1.9 | 1.1 | 0.71 |
| 17 | 24 | 22 | 20 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.1 | 0.72 |
| 18 | 24 | 22 | 19 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.2 | 0.73 |
| 19 | 24 | 22 | 19 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.2 | 0.74 |
| 20 | 24 | 22 | 19 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.2 | 0.75 |
| 21 | 24 | 22 | 19 | 16 | 12 | 8.4 | 5.6 | 3.2 | 1.9 | 1.2 | 0.77 |
| 22 | 24 | 22 | 19 | 16 | 12 | 8.4 | 5.6 | 3.3 | 1.9 | 1.2 | 0.78 |
| 23 | 24 | 22 | 19 | 16 | 12 | 8.4 | 5.6 | 3.3 | 1.9 | 1.2 | 0.80 |
| 24 | 24 | 22 | 19 | 16 | 12 | 8.4 | 5.6 | 3.3 | 2.0 | 1.2 | 0.81 |
| 25 | 24 | 22 | 19 | 16 | 12 | 8.4 | 5.6 | 3.3 | 2.0 | 1.2 | 0.83 |
| 26 | 22 | 20 | 18 | 15 | 11 | 7.9 | 5.2 | 3.1 | 1.9 | 1.2 | 0.80 |
| 27 | 20 | 19 | 17 | 14 | 10 | 7.3 | 4.9 | 2.9 | 1.8 | 1.1 | 0.76 |
| 28 | 19 | 18 | 15 | 13 | 9.7 | 6.9 | 4.6 | 2.7 | 1.7 | 1.1 | 0.73 |
| 29 | 18 | 16 | 14 | 12 | 9.1 | 6.4 | 4.3 | 2.6 | 1.6 | 1.0 | 0.70 |
| 30 | 17 | 15 | 13 | 11 | 8.5 | 6.0 | 4.1 | 2.4 | 1.5 | 0.97 | 0.68 |

### 2. Chronic Standard

pH

| TEMPERATURE °C | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 | 8.75 | 9.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 1.5 | 0.84 | 0.48 | 0.28 | 0.16 |
| 1 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 1.5 | 0.83 | 0.47 | 0.27 | 0.16 |
| 2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 1.5 | 0.82 | 0.47 | 0.27 | 0.16 |
| 3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 1.4 | 0.81 | 0.46 | 0.27 | 0.16 |
| 4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 1.4 | 0.80 | 0.46 | 0.27 | 0.16 |
| 5 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.80 | 0.45 | 0.26 | 0.16 |
| 6 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.79 | 0.45 | 0.26 | 0.16 |
| 7 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.78 | 0.45 | 0.26 | 0.16 |
| 8 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.77 | 0.44 | 0.26 | 0.15 |
| 9 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 1.3 | 0.77 | 0.44 | 0.26 | 0.16 |
| 10 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.76 | 0.44 | 0.26 | 0.16 |
| 11 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.76 | 0.44 | 0.26 | 0.16 |
| 12 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.75 | 0.44 | 0.26 | 0.16 |
| 13 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.75 | 0.43 | 0.26 | 0.16 |
| 14 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.0 | 1.3 | 0.75 | 0.43 | 0.26 | 0.16 |
| 15 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 1.3 | 0.74 | 0.43 | 0.26 | 0.16 |
| 16 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 1.3 | 0.74 | 0.43 | 0.26 | 0.16 |
| 17 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1.9 | 1.3 | 0.74 | 0.43 | 0.26 | 0.16 |
| 18 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1.9 | 1.3 | 0.74 | 0.43 | 0.26 | 0.17 |
| 19 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1.9 | 1.3 | 0.74 | 0.44 | 0.26 | 0.17 |
| 20 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 1.9 | 1.3 | 0.74 | 0.44 | 0.27 | 0.17 |
| 21 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.2 | 0.69 | 0.41 | 0.25 | 0.16 |
| 22 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.1 | 0.65 | 0.38 | 0.24 | 0.15 |
| 23 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.0 | 0.60 | 0.36 | 0.22 | 0.15 |
| 24 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.5 | 0.97 | 0.57 | 0.34 | 0.21 | 0.14 |
| 25 | 1.4 | 1.4 | 1.5 | 1.5 | 1.5 | 1.4 | 0.91 | 0.53 | 0.32 | 0.20 | 0.13 |
| 26 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 | 1.3 | 0.85 | 0.50 | 0.30 | 0.19 | 0.13 |
| 27 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 0.79 | 0.47 | 0.28 | 0.18 | 0.12 |
| 28 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 0.74 | 0.44 | 0.27 | 0.17 | 0.12 |
| 29 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 0.70 | 0.41 | 0.25 | 0.16 | 0.11 |
| 30 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.97 | 0.65 | 0.39 | 0.24 | 0.16 | 0.11 |

## Total Ammonia (mg/l as N), Coldwater Fisheries:

### 1. Acute Standards

pH

| TEMPERATURE °C | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 | 8.75 | 9.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 29 | 26 | 23 | 19 | 14 | 10 | 6.6 | 3.7 | 2.1 | 1.2 | 0.70 |
| 1 | 28 | 26 | 23 | 19 | 14 | 9.9 | 6.5 | 3.7 | 2.1 | 1.2 | 0.70 |
| 2 | 28 | 26 | 22 | 18 | 14 | 9.7 | 6.4 | 3.6 | 2.1 | 1.2 | 0.69 |
| 3 | 28 | 25 | 22 | 18 | 14 | 9.6 | 6.3 | 3.6 | 2.0 | 1.2 | 0.69 |
| 4 | 27 | 25 | 22 | 18 | 14 | 9.5 | 6.2 | 3.5 | 2.0 | 1.2 | 0.69 |
| 5 | 27 | 25 | 22 | 18 | 13 | 9.4 | 6.1 | 3.5 | 2.0 | 1.2 | 0.68 |
| 6 | 27 | 24 | 21 | 18 | 13 | 9.3 | 6.1 | 3.5 | 2.0 | 1.1 | 0.68 |
| 7 | 26 | 24 | 21 | 17 | 13 | 9.2 | 6.0 | 3.4 | 2.0 | 1.1 | 0.68 |
| 8 | 26 | 24 | 21 | 17 | 13 | 9.1 | 6.0 | 3.4 | 1.9 | 1.1 | 0.68 |
| 9 | 26 | 24 | 21 | 17 | 13 | 9.0 | 5.9 | 3.4 | 1.9 | 1.1 | 0.68 |
| 10 | 25 | 23 | 21 | 17 | 13 | 8.9 | 5.9 | 3.3 | 1.9 | 1.1 | 0.68 |
| 11 | 25 | 23 | 20 | 17 | 13 | 8.9 | 5.8 | 3.3 | 1.9 | 1.1 | 0.68 |
| 12 | 25 | 23 | 20 | 17 | 13 | 8.8 | 5.8 | 3.3 | 1.9 | 1.1 | 0.69 |
| 13 | 25 | 23 | 20 | 16 | 12 | 8.7 | 5.7 | 3.3 | 1.9 | 1.1 | 0.69 |
| 14 | 25 | 23 | 20 | 16 | 12 | 8.7 | 5.7 | 3.3 | 1.9 | 1.1 | 0.70 |
| 15 | 24 | 23 | 20 | 16 | 12 | 8.6 | 5.7 | 3.3 | 1.9 | 1.1 | 0.70 |
| 16 | 24 | 22 | 20 | 16 | 12 | 8.6 | 5.7 | 3.3 | 1.9 | 1.1 | 0.71 |
| 17 | 24 | 22 | 20 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.1 | 0.72 |
| 18 | 24 | 22 | 19 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.2 | 0.73 |
| 19 | 24 | 22 | 19 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.2 | 0.74 |
| 20 | 24 | 22 | 19 | 16 | 12 | 8.5 | 5.6 | 3.2 | 1.9 | 1.2 | 0.75 |
| 21 | 22 | 20 | 18 | 15 | 11 | 7.9 | 5.2 | 3.0 | 1.8 | 1.1 | 0.71 |
| 22 | 21 | 19 | 17 | 14 | 10 | 7.3 | 4.9 | 2.8 | 1.7 | 1.0 | 0.68 |
| 23 | 19 | 18 | 15 | 13 | 9.7 | 6.8 | 4.5 | 2.7 | 1.6 | 0.98 | 0.65 |
| 24 | 18 | 16 | 14 | 12 | 9.0 | 6.4 | 4.2 | 2.5 | 1.5 | 0.93 | 0.62 |
| 25 | 17 | 15 | 13 | 11 | 8.4 | 6.0 | 4.0 | 2.3 | 1.4 | 0.88 | 0.59 |
| 26 | 16 | 14 | 13 | 10 | 7.9 | 5.6 | 3.7 | 2.2 | 1.3 | 0.84 | 0.56 |
| 27 | 14 | 13 | 12 | 9.6 | 7.3 | 5.2 | 3.5 | 2.1 | 1.2 | 0.79 | 0.54 |
| 28 | 13 | 12 | 11 | 9.0 | 6.9 | 4.9 | 3.3 | 1.9 | 1.2 | 0.76 | 0.52 |
| 29 | 13 | 12 | 10 | 8.4 | 6.4 | 4.6 | 3.1 | 1.8 | 1.1 | 0.72 | 0.50 |
| 30 | 12 | 11 | 10 | 7.8 | 6.0 | 4.3 | 2.9 | 1.7 | 1.1 | 0.69 | 0.48 |

### 2. Chronic Standard

pH

| TEMPERATURE °C | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 | 8.75 | 9.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 1.5 | 0.84 | 0.48 | 0.28 | 0.16 |
| 1 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 1.5 | 0.83 | 0.47 | 0.27 | 0.16 |
| 2 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 1.5 | 0.82 | 0.47 | 0.27 | 0.16 |
| 3 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 1.4 | 0.81 | 0.46 | 0.27 | 0.16 |
| 4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.2 | 1.4 | 0.80 | 0.46 | 0.27 | 0.16 |
| 5 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.80 | 0.45 | 0.26 | 0.16 |
| 6 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.79 | 0.45 | 0.26 | 0.16 |
| 7 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.78 | 0.45 | 0.26 | 0.16 |
| 8 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 1.4 | 0.77 | 0.44 | 0.26 | 0.15 |
| 9 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 1.3 | 0.77 | 0.44 | 0.26 | 0.16 |
| 10 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.76 | 0.44 | 0.26 | 0.16 |
| 11 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.76 | 0.44 | 0.26 | 0.16 |
| 12 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.75 | 0.44 | 0.26 | 0.16 |
| 13 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 1.3 | 0.75 | 0.43 | 0.26 | 0.16 |
| 14 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.0 | 1.3 | 0.75 | 0.43 | 0.26 | 0.16 |
| 15 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 1.3 | 0.74 | 0.43 | 0.26 | 0.16 |
| 16 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.8 | 1.2 | 0.69 | 0.40 | 0.24 | 0.15 |
| 17 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.1 | 0.64 | 0.38 | 0.23 | 0.14 |
| 18 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.0 | 0.60 | 0.35 | 0.21 | 0.14 |
| 19 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.5 | 0.97 | 0.56 | 0.33 | 0.20 | 0.13 |
| 20 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 0.90 | 0.52 | 0.31 | 0.19 | 0.12 |
| 21 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 0.84 | 0.49 | 0.29 | 0.18 | 0.12 |
| 22 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 0.79 | 0.46 | 0.27 | 0.17 | 0.11 |
| 23 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 0.73 | 0.43 | 0.26 | 0.16 | 0.10 |
| 24 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 0.69 | 0.40 | 0.24 | 0.15 | 0.10 |
| 25 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.96 | 0.64 | 0.38 | 0.23 | 0.14 | 0.095 |
| 26 | 0.95 | 0.95 | 0.96 | 0.96 | 0.97 | 0.9 | 0.60 | 0.35 | 0.21 | 0.13 | 0.091 |
| 27 | 0.89 | 0.89 | 0.89 | 0.90 | 0.91 | 0.84 | 0.56 | 0.33 | 0.20 | 0.13 | 0.087 |
| 28 | 0.83 | 0.83 | 0.83 | 0.84 | 0.85 | 0.79 | 0.53 | 0.31 | 0.19 | 0.12 | 0.084 |
| 29 | 0.77 | 0.78 | 0.78 | 0.78 | 0.79 | 0.73 | 0.49 | 0.29 | 0.18 | 0.12 | 0.080 |
| 30 | 0.72 | 0.72 | 0.73 | 0.73 | 0.74 | 0.69 | 0.46 | 0.28 | 0.17 | 0.11 | 0.077 |