NOTICES OF PROPOSED RULEMAKING

Unless exempted by A.R.S. § 41-1005, each agency shall begin the rulemaking process by first submitting to the Secretary of State's Office a Notice of Rulemaking Docket Opening followed by a Notice of Proposed Rulemaking that contains the preamble and the full text of the rules. The Secretary of State's Office publishes each Notice in the next available issue of the *Register* according to the schedule of deadlines for *Register* publication. Under the Administrative Procedure Act (A.R.S. § 41-1001 et seq.), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the *Register* before beginning any proceedings for making, amending, or repealing any rule. (A.R.S. §§ 41-1013 and 41-1022)

NOTICE OF PROPOSED RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 11. DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY STANDARDS

PREAMBLE

1. Sections Affected — **Rulemaking Action**

R18-11-101	Amend
Appendix A	Amend

2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):

Authorizing statutes: A.R.S. §§ 49-202(A), 49-203(A)(1), and 49-221

Implementing statute: A.R.S. § 49-222

3. A list of all previous notices appearing in the Register addressing the final rule:

Notice of Rulemaking Docket Opening: 8 A.A.R. 4696, November 8, 2002 *(in this issue)*

4. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: Shirley J. Conard

Address: Arizona Department of Environmental Quality
1110 W. Washington, 5420E
Phoenix, AZ 85007

Telephone: (602) 771-4632 (Metro-Phoenix area) or (800) 234-5677, ext. 4632 (other areas)

Fax: (602) 771-4674

E-mail: conard.shirley@ev.state.az.us

5. An explanation of the rule, including the agency's reasons for initiating the rule:

This rulemaking makes technical corrections required by the U.S. Environmental Protection Agency (EPA), and other minor technical and clerical corrections, to rules for Water Quality Standards for Surface Waters. The corrections are required by EPA before EPA will complete its review and approval of the Water Quality Standards for Surface Waters (which were approved at the February 7, 2002 Governor's Regulatory Review Council).

R18-11-101. Definitions

EPA believes that the current definition for "existing use" is inconsistent with the federal definition at 40 CFR 131.3(e).

The Department revised the definition using the language in 40 CFR 131.3(e).

EPA expressed concern over the definitions for "ephemeral water" and "intermittent surface water." EPA indicated that the definition of "intermittent surface water" implies that a surface water may flow for up to 30 days and still be considered an ephemeral water. This raised a concern as to how this bright line definition would affect the Depart-

ment's proposed repeal of chronic aquatic life criteria for ephemeral waters. EPA is concerned that some surface waters that flow for periods of up to 30 days should be protected by both acute and chronic aquatic life standards.

The Department agrees that this is an arbitrary restriction and removed the 30-day time period from the definition and amended the term for clarity. The Department will retain the current definition of "ephemeral water," which is defined by a surface water that 1) has a channel that is at all times above the water table, and 2) flows only in direct response to precipitation.

The Department believes that these two definitions, as amended, are mutually supportive. An ephemeral water is a normally dry watercourse that flows only in direct response to precipitation. An intermittent stream flow is a stream that flows seasonally.

Appendix A. Numeric Water Quality Criteria

Table 1. Human Health and Agricultural Designated Uses

Dioxin

The Department revised the human health criteria for 2,3,7,8-tetrachlorodibenzo-p-dioxin in the February 2002 rulemaking (effective March 8, 2002). Because oral cancer potency slopes (q l *) for dioxin were not available in the Integrated Risk Information System (IRIS) database at the time the Department proposed criteria for dioxin, the Department derived criteria for dioxin using a minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry. However, EPA has pointed out in their review that the resulting criteria for dioxin are significantly less than the dioxin criteria adopted in 1996:

1996	2002
DWS: 0.0000003 µg/L	DWS: 0.00003 µg/L
FC:0.000000004 µg/L	FC: 0.002 µg/L
FBC: 0.00009 µg/L	FBC: 1.4 µg/L
PBC: NNS	PBC: 1.4 µg/L

After discussion with EPA, the Department agreed, that due to the ongoing reassessment of human health risks from exposure to dioxin, it is appropriate to retain the 1996 criteria for dioxin for DWS, FC, and the FBC designated uses that were based on a previously available q l *. While the Department believes that it is proper to use minimum risk levels to derive human health criteria for pollutants when data is not available in IRIS, the Department also recognizes that dioxin is a special case because of the national dialogue and ongoing reassessment. For this reason, the Department is re-adopting the 1996 criteria for DWS, FC, and FBC designated uses.

The Department did not use the carcinogen procedure to derive human health criteria for the partial body contact (PBC) designated use for any priority pollutant. The Department believes it is appropriate to use minimum risk levels to derive a criterion for dioxin for the PBC designated use. As EPA is aware, the Department did not have a numeric criterion for dioxin for PBC designated use in 1996. Thus, the Department will retain the criterion of 1.4 µg/L for dioxin for the PBC designated use.

Polycyclic Aromatic Hydrocarbons

In the February 2002 rulemaking, the Department revised the numeric criteria for a number of parameters belonging to the family of pollutants called polycyclic aromatic hydrocarbons (PAHs) including benz(a)anthracene, 3-4 benzfluoranthene, benzo(k)fluoranthese, chrysene, dibenz(ah)anthracene, and indeno (1,2,3-cd) pyrene. For each of these pollutants, the Department repealed the previously adopted human health criteria and replaced the numeric criteria with "NNS" (meaning "No Numeric Standard") because of the unavailability of oral slope factors (q l *) in IRIS to derive new criteria. Each of the listed PAHs is considered a "probable" human carcinogen based on sufficient evidence of carcinogenicity in animals and inadequate or no evidence of carcinogenicity in humans (i.e., a Class B2 carcinogen).

The Department agreed to revised the criteria for the PAHs listed in Appendix A, Table 1. To address the problem of absent oral slope factors for the listed pollutants, the Department derived human health criteria based on the oral slope factor for benzo(a)pyrene. The Department used this approach to derive both the 1992 and 1996 criteria for the listed PAHs. However, the criteria was adjusted for the listed PAHs using a "potency equivalency factor." This approach uses different factors to extrapolate the relative potency of one chemical from the data of a "chemical relative" and is an accepted standard/criteria derivation method in the absence of specific data. EPA proposed such an approach as a provisional guide in 1993, but never finalized the document.

The use of potency equivalency factors to adjust criteria for PAHs has already been accepted by EPA for the California Water Resources Board in deriving criteria.

Table 2. Aquatic & Wildlife Designated Uses

No changes have been made to the Table. The footnote section, however, has been amended to include the (p) footnote, which was inadvertently left out of the previous rulemaking, and additional parentheses, which were left out of the equations.

Acute Water Quality Standards for dissolved Zinc, Aquatic and Wildlife coldwater, warmwater and edw; and Chronic Water Quality Standards for dissolved Zinc, Aquatic and Wildlife coldwater, warmwater and edw

The equations used by EPA to derive the zinc acute and chronic criteria resulted in acute standards that were more stringent than chronic standards. Given that the chronic averaging period is longer than the acute averaging period and should result in more stringent standards, this rulemaking corrects this deficiency by defaulting to the more stringent standards to protect the chronic aquatic and wildlife life use.

Other than Tables 1 and 2, the subsequent tables within Appendix A were not labeled. These subsequent tables have been labeled in this rulemaking to provide stakeholders with easy access to specific information on numeric water quality.

6. A reference to any study relevant to the rule that the agency reviewed and either proposes to rely on in its evaluation of or justification for the rule or proposes not to rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

None

7. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

Not applicable

8. The preliminary summary of the economic, small business, and consumer impact:

This rulemaking promulgates changes requested by EPA and other minor technical and clerical corrections. These technical changes will not have an impact on the Department, political subdivisions, consumers or small businesses, private and public employment, or state revenues.

9. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Name: Shirley J. Conard

Address: Arizona Department of Environmental Quality
1110 W. Washington, 5420E
Phoenix, AZ 85007

Telephone: (602) 771-4632

Fax: (602) 771-4674

10. The time, place, and nature of the proceedings for the adoption, amendment, or repeal of the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

Date: December 10, 2002

Time: 10:00 a.m.

Location: Arizona Department of Environmental Quality
1110 W. Washington, 5th Floor Conference Room – 5100B
Phoenix, AZ 85007

Nature: Oral Proceeding

Written comments on the proposed rules or preliminary economic, small business, and consumer impact statement must be received by 5:00 p.m., December 11, 2002.

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Department's coordinator, Katie Hubner, at (602) 771-4794 (voice) or 1-800-367-3839 (TDD Relay). Requests should be made as early as possible to allow time to arrange the accommodation.

11. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:

None

12. Incorporations by reference and their location in the rules:

None

13. The full text of the rules follows:

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 11. DEPARTMENT OF ENVIRONMENTAL QUALITY WATER QUALITY STANDARDS

ARTICLE 1. WATER QUALITY STANDARDS FOR SURFACE WATERS

Section
R18-11-101. Definitions
Appendix A. Numeric Water Quality Criteria

ARTICLE 1. WATER QUALITY STANDARDS FOR SURFACE WATERS

R18-11-101. Definitions

The terms of this Article have the following meanings:

1. "Acute toxicity" means toxicity involving a stimulus severe enough to induce a response rapidly. In aquatic toxicity tests, an effect observed in 96 hours or less is considered acute.
2. "AgI" means agricultural irrigation.
3. "AgL" means agricultural livestock watering.
4. "Agricultural irrigation" means the use of a surface water for the irrigation of crops.
5. "Agricultural livestock watering" means the use of a surface water as a supply of water for consumption by livestock.
6. "Annual mean" means the arithmetic mean of monthly values determined over a consecutive 12-month period, provided that monthly values are determined for at least three months. The monthly value is the arithmetic mean of all values determined in a calendar month.
7. "Aquatic and wildlife (cold water)" means the use of a surface water by animals, plants, or other cold-water organisms, generally occurring at elevations greater than 5000 feet, for habitation, growth, or propagation.
8. "Aquatic and wildlife (effluent-dependent water)" means the use of an effluent-dependent water by animals, plants, or other organisms for habitation, growth, or propagation.
9. "Aquatic and wildlife (ephemeral)" means the use of an ephemeral water by animals, plants, or other organisms, excluding fish, for habitation, growth, or propagation.
10. "Aquatic and wildlife (warm water)" means the use of a surface water by animals, plants, or other warm-water organisms, generally occurring at elevations less than 5000 feet, for habitation, growth, or propagation.
11. "A&Wc" means aquatic and wildlife (cold water).
12. "A&We" means aquatic and wildlife (ephemeral).
13. "A&Wedw" means aquatic and wildlife (effluent-dependent water).
14. "A&Ww" means aquatic and wildlife (warm water).
15. "Clean Water Act" means the Federal Water Pollution Control Act [33 U.S.C. ~~§§~~ 1251 to 1387].
16. "Criteria" means elements of water quality standards that are expressed as pollutant concentrations, levels, or narrative statements representing a water quality that supports a designated use.
17. "Designated use" means a use specified in Appendix B of this Article for a surface water.
18. "Domestic water source" means the use of a surface water as a potable water supply. Coagulation, sedimentation, filtration, disinfection, or other treatments may be necessary to yield a finished water suitable for human consumption.
19. "DWS" means domestic water source.
20. "EDW" means effluent-dependent water.
21. "Effluent-dependent water" means a surface water that consists of discharges of treated wastewater that is classified as an effluent-dependent water by the Director under R18-11-113. An effluent-dependent water is a surface water that, without the discharge of treated wastewater, would be an ephemeral water.
22. "Ephemeral water" means a surface water that has a channel that is at all times above the water table, and that flows only in direct response to precipitation.

23. ~~"Existing use" means a use of a surface water that occurs in a surface water or a use that the existing water quality of a surface water will allow.~~ "Existing use" means those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards.
24. "FBC" means full-body contact.
25. "FC" means fish consumption.
26. "Fish consumption" means the use of a surface water by humans for harvesting aquatic organisms for consumption. Harvestable aquatic organisms include, but are not limited to, fish, clams, turtles, crayfish, and frogs.
27. "Full-body contact" means the use of a surface water for swimming or other recreational activity that causes the human body to come into direct contact with the water to the point of complete submergence. The use is such that ingestion of the water is likely and sensitive body organs, such as the eyes, ears, or nose, may be exposed to direct contact with the water.
28. "Geometric mean" mean the nth root of the product of n items or values. The geometric mean is calculated using the following formula:

$$G.M._Y = \sqrt[n]{(Y_1)(Y_2)(Y_3)...(Y_n)}$$

29. "Hardness" means the sum of the calcium and magnesium concentrations, expressed as calcium carbonate (CaCO3) in milligrams per liter.
30. "Intermittent surface water" means a ~~surface water~~ stream or reach of a stream that flows continuously ~~for 30 days or more~~ only at certain times of the year, as when ~~the surface water~~ it receives water from a spring or from another surface source, such as melting snow.
31. "Mixing zone" means a prescribed area or volume of a surface water that is contiguous to a point source discharge where initial dilution of the discharge takes place.
32. "National Pollutant Discharge Elimination System" means the point source discharge permit program established by §§ 402 of the Clean Water Act [33 U.S.C. ~~§§~~ 1342].
33. "Ninetieth percentile" means the value which may not be exceeded by more than 10% of the observations in a consecutive 12 month period. A minimum of 10 samples, each taken at least 10 days apart, are required to determine a ninetieth percentile.
34. "NNS" means no numeric standard.
35. "Oil" means petroleum in any form, including but not limited to crude oil, gasoline, fuel oil, diesel oil, lubricating oil, or sludge.
36. "Partial-body contact" means the recreational use of a surface water that may cause the human body to come into direct contact with the water, but normally not to the point of complete submergence (for example, wading or boating). The use is such that ingestion of the water is not likely and sensitive body organs, such as the eyes, ears, or nose, will not normally be exposed to direct contact with the water.
37. "PBC" means partial-body contact.
38. "Perennial surface water" means a surface water that flows continuously throughout the year.
39. "Pollutant" means fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and mining, industrial, municipal, and agricultural wastes or any other liquid, solid, gaseous, or hazardous substance.
40. "Practical quantitation limit" means the lowest level of quantitative measurement that can be reliably achieved during routine laboratory operations.
41. "Recreational uses" means the full-body contact and partial-body contact designated uses.
42. "Regional Administrator" means the Regional Administrator of Region IX of the U.S. Environmental Protection Agency.
43. "Surface water" means a water of the United States and includes the following:
    a. A water that is currently used, was used in the past, or may be susceptible to use in interstate or foreign commerce;
    b. An interstate water, including an interstate wetland;
    c. All other waters, such as an intrastate lake, reservoir, natural pond, river, stream (including an intermittent or ephemeral stream), creek, wash, draw, mudflat, sandflat, wetland, slough, backwater, prairie pothole, wet meadow, or playa lake, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce, including any such water:
        i. That is or could be used by interstate or foreign travelers for recreational or other purposes;
        ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
        iii. That is used or could be used for industrial purposes by industries in interstate or foreign commerce;
    d. An impoundment of a surface water as defined by this definition;

e. A tributary of a surface water identified in subsections (a) through (d) of this definition; and
f. A wetland adjacent to a surface water identified in subsections (a) through (e) of this definition.

44. "Total nitrogen" means the sum of the concentrations of ammonia (NH_3), ammonium ion (NH_4^+), nitrite (NO_2), and nitrate (NO_3), and dissolved and particulate organic nitrogen expressed as elemental nitrogen.
45. "Total phosphorus" means all of the phosphorus present in a sample, regardless of form, as measured by a persulfate digestion procedure.
46. "Toxic" means a pollutant, or combination of pollutants, which after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in the organism or its offspring.
47. "Unique water" means a surface water that is classified as an outstanding state resource water by the Director under R18-11-112.
48. "Use attainability analysis" means a structured scientific assessment of the factors affecting the attainment of a designated use including physical, chemical, biological, and economic factors.
49. "Wetland" means an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland includes a swamp, marsh, bog, cienega, tinaja, and similar areas.
50. "Zone of passage" means a continuous water route of volume, cross-sectional area, and quality necessary to allow passage of free-swimming or drifting organisms with no acutely toxic effect produced on the organisms.

Appendix A: Numeric Water Quality Criteria
Table 1. Human Health and Agricultural Designated Uses

PARAMETER	CAS NUMBER	DWS (µg/L)	FC (µg/L)	FBC (µg/L)	PBC (µg/L)	AgI (µg/L)	AgL (µg/L)
Acenaphthene	83-32-9	420	2670	84,000	84,000	NNS	NNS
Acenaphthylene	208-96-8	NNS	NNS	NNS	NNS	NNS	NNS
Acrolein	107-02-8	3.5	25	700	700	NNS	NNS
Acrylonitrile	107-13-1	0.07	0.7	3	56,000	NNS	NNS
Alachlor	15972-60-8	2	NNS	14,000	14,000	NNS	NNS
Aldrin	309-00-2	0.002	0.0001	0.08	42	p	p
Ammonia	7664-41-7	NNS	NNS	NNS	NNS	NNS	NNS
Anthracene	120-12-7	2100	1000	420,000	420,000	NNS	NNS
Antimony (as Sb)	7440-36-0	6 T	4,300 T	560 T	560 T	NNS	NNS
Arsenic (as As)	7440-38-2	50 T	1450 T	50 T	420 T	2000 T	200 T
Asbestos	1332-21-4	a	NNS	NNS	NNS	NNS	NNS
Atrazine	1912-24-9	3	NNS	49,000	49,000	NNS	NNS
Barium (as Ba)	7440-39-3	2000 T	NNS	98,000	98,000	NNS	NNS
Benzene	71-43-2	5	140	93	93	NNS	NNS
Benzidine	92-87-5	0.0002	0.001	0.01	4,200	0.01	0.01
Benz (a) anthracene	56-55-3	~~NNS~~ 0.048	~~NNS~~ 0.49	~~NNS~~ 1.9	~~NNS~~ 1.9	NNS	NNS
Benzo (a) pyrene	50-32-8	0.2	0.05	0.2	0.2	NNS	NNS
Benzo (ghi) perylene	191-24-2	NNS	NNS	NNS	NNS	NNS	NNS
Benzo (k) fluoranthene	207-08-9	~~NNS~~ 0.048	~~NNS~~ 0.49	~~NNS~~ 1.9	~~NNS~~ 1.9	NNS	NNS
3,4-Benzofluoranthene	205-99-2	~~NNS~~ 0.048	~~NNS~~ 0.49	~~NNS~~ 1.9	~~NNS~~ 1.9	NNS	NNS
Beryllium (as Be)	7440-41-7	4 T	1,130 T	2,800 T	2,800 T	NNS	NNS
Bis (2-chloroethoxy) methane	111-91-1	NNS	NNS	NNS	NNS	NNS	NNS
Bis (2-chloroethyl) ether	111-44-4	0.03	1.4	1.3	1.3	NNS	NNS
Bis (2-chloroisopropyl) ether	108-60-1	280	174,400	56,000	56,000	NNS	NNS
Boron (as B)	7440-42-8	630	NNS	126,000	126,000	1000 T	NNS
Bromodichloromethane	75-27-4	TTHM	46	TTHM	28,000	NNS	NNS
p-Bromodiphenyl ether	101-55-3	NNS	NNS	NNS	NNS	NNS	NNS
Bromoform	75-25-2	TTHM	360	180	28,000	NNS	NNS
Bromomethane	74-83-9	9.8	4020	2000	2000	NNS	NNS
Butyl benzyl phthalate	85-68-7	1400	5200	280,000	280,000	NNS	NNS
Cadmium (as Cd)	7440-43-9	5 T	84 T	700 T	700 T	50 T	50 T
Carbofuran	1563-66-2	40	NNS	7,000	7,000	NNS	NNS
Carbon tetrachloride	56-23-5	5	4	11	980	NNS	NNS
Chlordane	57-74-9	2	0.002	4	700	NNS	NNS
Chlorine (total residual)	7782-50-5	700	NNS	140,000	140,000	NNS	NNS
Chlorobenzene	108-90-7	100	20,900	28,000	28,000	NNS	NNS
p-Chloro-m-cresol	59-50-7	NNS	NNS	NNS	NNS	NNS	NNS
2-Chloroethyl vinyl ether	110-75-8	NNS	NNS	NNS	NNS	NNS	NNS
Chloroform	67-66-3	TTHM	470	230	14,000	NNS	NNS
Chloromethane	74-87-3	NNS	NNS	NNS	NNS	NNS	NNS
Chloronapthalene beta	91-58-7	560	4,300	112,000	112,000	NNS	NNS
2-Chlorophenol	95-57-8	35	400	7,000	7,000	NNS	NNS
4-Chlorophenyl phenyl ether	7005-72-3	NNS	NNS	NNS	NNS	NNS	NNS

Chromium (as Cr III)	16065-83-1	10,500 T	1,010,000 T	2,100,000 T	2,100,000 T	NNS	NNS
Chromium (as Cr VI)	18540-29-9	21 T	2,000T	4,200 T	4,200 T	NNS	NNS
Chromium (Total as Cr)	7440-47-3	100 T	NNS	100 T	100 T	1000 T	1000 T
Chrysene	218-01-9	~~NNS~~ 0.479	~~NNS~~ 4.92	~~NNS~~ 19.2	~~NNS~~ 19	NNS	NNS
Copper (as Cu)	7440-50-8	1,300 T	NNS	1,300 T	1,300 T	5000 T	500 T
Cyanide	57-12-5	200 T	215,000 T	28,000 T	28,000 T	NNS	200 T
Dalapon	75-99-0	200	161,500	42,000	42,000	NNS	NNS
Dibenz (ah) anthracene	53-70-3	~~NNS~~ 0.048	~~NNS~~ 0.20	~~NNS~~ 1.9	~~NNS~~ 1.9	NNS	NNS
Dibromochloromethane	124-48-1	TTHM	34	TTHM	28,000	NNS	NNS
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	NNS	2,800	2,800	NNS	NNS
1,2-Dibromoethane (EDB)	106-93-4	0.05	NNS	0.05	0.05	NNS	NNS
Dibutyl phthalate	84-74-2	700	12,100	140,000	140,000	NNS	NNS
1,2-Dichlorobenzene	95-50-1	600	2800	126,000	126,000	NNS	NNS
1,3-Dichlorobenzene	541-73-1	NNS	NNS	NNS	NNS	NNS	NNS
1,4-Dichlorobenzene	106-46-7	75	77,500	560,000	560,000	NNS	NNS
3,3'-Dichlorobenzidine	91-94-1	0.08	0.08	3.1	3.1	NNS	NNS
p,p'-Dichlorodiphenyldichloroethane (DDD)	72-54-8	0.15	0.001	5.8	5.8	0.001	0.001
p,p'-Dichlorodiphenyldichloroethylene (DDE)	72-55-9	0.1	0.001	4.1	4.1	0.001	0.001
p,p'-Dichlorodiphenyltrichloroethane (DDT)	50-29-3	0.1	0.0006	4.1	700	0.001	0.001
1,1-Dichloroethane	75-34-3	NNS	NNS	NNS	NNS	NNS	NNS
1,2-Dichloroethane	107-06-2	5	100	15	280,000	NNS	NNS
1,1-Dichloroethylene	75-35-4	7	320	230	12,600	NNS	NNS
1,2-cis-Dichloroethylene	156-59-2	70	NNS	70	70	NNS	NNS
1,2-trans-Dichloroethylene	156-60-5	100	136,000	28,000	28,000	NNS	NNS
Dichloromethane	75-09-2	5	1600	190	84,000	NNS	NNS
2,4-Dichlorophenol	120-83-2	21	800	4,200	4,200	NNS	NNS
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70	NNS	14,000	14,000	NNS	NNS
1,2-Dichloropropane	78-87-5	5	236,000	126,000	126,000	NNS	NNS
1,3-Dichloropropene	542-75-6	2	1,700	420	420	NNS	NNS
Dieldrin	60-57-1	0.002	0.0001	0.09	70	p	p
Diethyl phthalate	84-66-2	5600	118,000	1,120,000	1,120,000	NNS	NNS
Di (2-ethylhexyl) adipate	103-23-1	400	NNS	1,200	840,000	NNS	NNS
Di (2-ethylhexyl) phthalate	117-81-7	6	7.4	100	28,000	NNS	NNS
2,4-Dimethylphenol	105-67-9	140	2300	28,000	28,000	NNS	NNS
Dimethyl phthalate	131-11-3	NNS	NNS	NNS	NNS	NNS	NNS
4,6-Dinitro-o-cresol	534-52-1	28	7,800	5,600	5,600	NNS	NNS
2,4-Dinitrophenol	51-28-5	14	14,400	2,800	2,800	NNS	NNS
2,4-Dinitrotoluene	121-14-2	14	5,700	2,800	2,800	NNS	NNS
2,6-Dinitrotoluene	606-20-2	0.05	NNS	2	5,600	NNS	NNS
Di-n-octyl phthalate	117-84-0	2800	NNS	560,000	560,000	NNS	NNS

Dinoseb	88-85-7	7	NNS	1,400	1,400	NNS	NNS
1,2-Diphenylhydrazine	122-66-7	0.04	0.5	1.8	1.8	NNS	NNS
Diquat	85-00-7	20	NNS	3,080	3,080	NNS	NNS
Endosulfan sulfate	1031-07-8	NNS	NNS	NNS	NNS	NNS	NNS
Endosulfan (Total)	115-29-7	42	240	8,400	8,400	NNS	NNS
Endothall	145-73-3	100	NNS	28,000	28,000	NNS	NNS
Endrin	72-20-8	2	0.8	420	420	0.004	0.004
Endrin aldehyde	7421-93-3	NNS	NNS	NNS	NNS	NNS	NNS
Ethylbenzene	100-41-4	700	28,700	140,000	140,000	NNS	NNS
Ethyl chloride	75-00-3	NNS	NNS	NNS	NNS	NNS	NNS
Fluoranthene	206-44-0	280	380	56,000	56,000	NNS	NNS
Fluorene	86-73-7	280	14,400	56,000	56,000	NNS	NNS
Fluoride	7782-41-4	4000	NNS	84,000	84,000	NNS	NNS
Glyphosate	1071-83-6	700	1,077,000	140,000	140,000	NNS	NNS
Heptachlor	76-44-8	0.4	0.0002	0.4	700	NNS	NNS
Heptachlor epoxide	1024-57-3	0.2	0.0001	0.2	18	NNS	NNS
Hexachlorobenzene	118-74-1	1	0.001	1	1,120	NNS	NNS
Hexachlorobutadiene	87-68-3	0.45	50	18	280	NNS	NNS
Hexachlorocyclohexane alpha	319-84-6	0.006	0.01	0.22	11,200	NNS	NNS
Hexachlorocyclohexane beta	319-85-7	0.02	0.02	0.78	840	NNS	NNS
Hexachlorocyclohexane delta	319-86-8	NNS	NNS	NNS	NNS	NNS	NNS
Hexachlorocyclohexane gamma (lindane)	58-89-9	0.2	25	420	420	NNS	NNS
Hexachlorocyclopentadiene	77-47-4	50	580	9,800	9,800	NNS	NNS
Hexachloroethane	67-72-1	2.5	9	100	1,400	NNS	NNS
Indeno (1,2,3-cd) pyrene	193-39-5	~~NNS~~ 0.048	~~NNS~~ 0.49	~~NNS~~ 1.9	~~NNS~~ 1.9	NNS	NNS
Isophorone	78-59-1	37	2,600	1,500	280,000	NNS	NNS
Lead (as Pb)	7439-97-1	15 T	NNS	15	15	10000 T	100 T
Manganese (as Mn)	7439-96-5	980 T	NNS	196,000 T	196,000 T	10000	NNS
Mercury (as Hg)	7439-97-6	2 T	0.6 T	420 T	420 T	NNS	10 T
Methoxychlor	72-43-5	40	NNS	7,000	7,000	NNS	NNS
Naphthalene	91-20-3	140	20,500	28,000	28,000	NNS	NNS
Nickel (as Ni)	7440-02-0	140 T	4,600 T	28,000 T	28,000 T	NNS	NNS
Nitrate (as N)	14797-55-8	10000	NNS	2,240,000	2,240,000	NNS	NNS
Nitrite (as N)	14797-65-0	1000	NNS	140,000	140,000	NNS	NNS
Nitrate/Nitrite (as Total N)		10000	NNS	NNS	NNS	NNS	NNS
Nitrobenzene	98-95-3	3.5	1,900	700	700	NNS	NNS
o-Nitrophenol	88-75-5	NNS	NNS	NNS	NNS	NNS	NNS
p-Nitrophenol	100-02-7	NNS	NNS	NNS	NNS	NNS	NNS
N-nitrosodimethylamine	62-75-9	0.001	8	0.03	0.03	NNS	NNS
N-nitrosodiphenylamine	86-30-6	7.1	16	290	290	NNS	NNS
N-nitrosodi-n-propylamine	621-64-7	0.005	1.4	0.2	133,000	NNS	NNS
Oxamyl	23135-22-0	200	NNS	35,000	35,000	NNS	NNS
Pentachlorophenol	87-86-5	1	1000	12	42,000	NNS	NNS
Phenanthrene	85-01-8	NNS	NNS	NNS	NNS	NNS	NNS
Phenol	108-95-2	4200	1,000	840,000	840,000	NNS	NNS

Picloram	1918-02-1	500	24,300	98,000	98,000	NNS	NNS
Polychlorinatedbiphenyls (PCBs)	1336-36-3	0.5	0.007	28	28	0.001	0.001
Pyrene	129-00-0	210	10,800	42,000	42,000	NNS	NNS
Selenium (as Se)	7782-49-2	50 T	9000 T	7,000 T	7,000 T	20 T	50 T
Silver (as Ag)	7440-22-4	35	107,700 T	7,000 T	7,000 T	NNS	NNS
Simazine	112-34-9	4	NNS	7,000	7,000	NNS	NNS
Styrene	100-42-5	100	NNS	280,000	280,000	NNS	NNS
Sulfides		NNS	NNS	NNS	NNS	NNS	NNS
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	1746-01-6	~~0.00003~~ 0.0000003	~~0.002~~ 0.000000004	~~1.4~~ 0.00009	1.4	NNS	NNS
1,1,2,2-Tetrachloroethane	79-34-5	0.17	11	7	56,000	NNS	NNS
Tetrachloroethylene	127-18-4	5	3,500	14,000	14,000	NNS	NNS
Thallium (as Tl)	7440-28-0	2 T	7.2	112	112	NNS	NNS
Toluene	108-88-3	1000	201,000	280,000	280,000	NNS	NNS
Toxaphene	8001-35-2	3	0.001	1.3	1400	0.005	0.005
1,2,4-Trichlorobenzene	120-82-1	70	950	14,000	14,000	NNS	NNS
1,1,1-Trichloroethane	71-55-6	200	NNS	200	200	1000	NNS
1,1,2-Trichloroethane	79-00-5	5	42	25	5,600	NNS	NNS
Trichloroethylene	79-01-6	5	203,200	280,000	280,000	NNS	NNS
2,4,6-Trichlorophenol	88-06-2	3.2	6.5	130	130	NNS	NNS
2-(2,4,5-Trichlorophenoxy) proprionic acid (2,4,5-TP)	93-72-1	50	NNS	11,200	11,200	NNS	NNS
Trihalomethanes, Total		100	NNS	NNS	NNS	NNS	NNS
Uranium (as Ur)	7440-61-1	35 D	NNS	NNS	NNS	NNS	NNS
Vinyl chloride	75-01-4	2	13	2	4,200	NNS	NNS
Xylenes (Total)	1330-20-7	10000	NNS	2,800,000	2,800,000	NNS	NNS
Zinc (as Zn)	7440-66-6	2100 T	69,000 T	420,000 T	420,000 T	10000 T	25000 T

Table 2. Aquatic & Wildlife Designated Uses
No change to table

Footnotes
a. The standard to protect this use is 7 million fibers (longer than 10 micrometers) per liter.
b. Values for ammonia are contained in separate tables located at the end of Appendix A.
c. Cadmium
A&Wc acute standard: $(e^{(1.128\ [\ln(\text{Hardness})]\ -\ 3.6867)})*(1.136672-\ln(\text{hardness})*(0.041838))$
A&Wc chronic standard: $(e^{(0.7852\ [\ln(\text{Hardness})]\ -\ 2.715)})*(1.101672-\ln(\text{hardness})*(0.041838))$
A&Ww acute standard: $(e^{(1.128\ [\ln(\text{Hardness})]\ -\ 3.6867)})*(1.136672-\ln(\text{hardness})*(0.041838))$
A&Ww chronic standard: $(e^{(0.7852\ [\ln(\text{Hardness})]\ -\ 2.715)})*(1.101672-\ln(\text{hardness})*(0.041838)$
A&Wedw acute standard: $(e^{(1.128\ [\ln(\text{Hardness})]\ -\ 3.6867)})*(1.136672-\ln(\text{hardness})*(0.041838))$
A&Wedw chronic standard: $(e^{(0.7852\ [\ln(\text{Hardness})]\ -\ 2.715)})*(1.101672-\ln(\text{hardness})*(0.041838))$
A&We acute standard: $(e^{(1.128\ [\ln(\text{Hardness})]\ -\ 0.9691)})*(1.136672-\ln(\text{hardness})*(0.041838$
(See Footnote k)
d. Chromium III
A&Wc acute standard: $(e^{(0.8190\ [\ln(\text{Hardness})]\ +\ 3.7256)})*(0.316)$
A&Wc chronic standard: $(e^{(0.8190\ [\ln(\text{Hardness})]\ +\ 0.6848)})*(0.86)$
A&Ww acute standard: $(e^{(0.8190\ [\ln(\text{Hardness})]\ +\ 3.7256)})*(0.316)$
A&Ww chronic standard: $(e^{(0.8190\ [\ln(\text{Hardness})]\ +\ 0.6848)})*(0.86)$

A&Wedw acute standard: (e^(0.8190 [ln(Hardness)] + 3.7256))*(0.316)
A&Wedw chronic standard: (e^(0.8190 [ln(Hardness)] + 0.6848))*(0.86)
A&We acute standard: (e^(0.8190 [ln(Hardness)] + 4.9361))*(0.316)
(See Footnote k)

e. Copper
A&Wc acute standard: (e^(0.9422 [ln(Hardness)] - 1.7))*(0.96)
A&Wc chronic standard: (e^(0.8545 [ln(Hardness)] - 1.702))*(0.96)
A&Ww acute standard: (e^(0.9422 [ln(Hardness)] - 1.7))*(0.96)
A&Ww chronic standard: (e^(0.8545 [ln(Hardness)] - 1.702))*(0.96)
A&Wedw acute standard: (e^(0.9422 [ln(Hardness)] - 1.7))*(0.96)
A&Wedw chronic standard: (e^(0.8545 [ln(Hardness)] - 1.702))*(0.96)
A&We acute standard: (e^(0.9422 [ln(Hardness)] - 1.1514))*(0.96)
(See Footnote k)

f. Lead
A&Wc acute standard: (e^(1.2730 [ln(Hardness)] - 1.460))*(1.46203-ln(hardness)*(0.145712))
A&Wc chronic standard: (e^(1.2730 [ln(Hardness)] - 4.705))*(1.46203-ln(hardness)*(0.145712))
A&Ww acute standard: (e^(1.2730 [ln(Hardness)] - 1.460))*(1.46203-ln(hardness)*(0.145712))
A&Ww chronic standard: (e^(1.2730 [ln(Hardness)] - 4.705))*(1.46203-ln(hardness)*(0.145712))
A&Wedw acute standard: (e^(1.2730 [ln(Hardness)] - 1.460))*(1.46203-ln(hardness)*(0.145712))
A&Wedw chronic standard: (e^(1.2730 [ln(Hardness)] - 4.705))*(1.46203-ln(hardness)*(0.145712))
A&We acute standard: (e^(1.2730 [ln(Hardness)] - 0.7131))*(1.46203-ln(hardness)*(0.145712))
(See Footnote k)

g. Nickel
A&Wc acute standard: (e^(0.8460 [ln(Hardness)] + 2.255))*(0.998)
A&Wc chronic standard: (e^(0.8460 [ln(Hardness)] + 0.0584))*(0.997)
A&Ww acute standard: (e^(0.8460 [ln(Hardness)] + 2.255))*(0.998)
A&Ww chronic standard: (e^(0.8460 [ln(Hardness)] + 0.0584))*(0.997)
A&Wedw acute standard: (e^(0.8460 [ln(Hardness)] + 2.255))*(0.998)
A&Wedw chronic standard: (e^(0.8460 [ln(Hardness)] + 0.0584))*(0.997)
A&We acute standard: (e^(0.8460 [ln(Hardness)] + 4.4389))*(0.998)
(See Footnote k)

h. Pentachlorophenol
No change

i. Silver
A&Wc acute standard: (e^(1.72 [ln(Hardness)] - 6.52))*(0.85)
A&Ww acute standard: (e^(1.72 [ln(Hardness)] - 6.52))*(0.85)
A&Wedw acute standard: (e^(1.72 [ln(Hardness)] - 6.52))*(0.85)
A&We acute standard: (e^(1.72 [ln(Hardness)] - 6.52))*(0.85)
(See Footnote k)

j. Zinc
A&Wc acute standard: (e^(0.8473 [ln(Hardness)] + 0.884))*(0.978)
A&Wc chronic standard: (e^(0.8473 [ln(Hardness)] + 0.884))*(~~0.986~~ 0.978)
A&Ww acute standard: (e^(0.8473 [ln(Hardness)] + ~~0.532~~ 0.884))*(~~0.978~~ 0.978)
A&Ww chronic standard: (e^(0.8473 [ln(Hardness)] + ~~0.433~~ 0.884))*(~~0.986~~ 0.978)
A&Wedw acute standard: (e^(0.8473 [ln(Hardness)] + ~~0.532~~ 0.884))*(~~0.978~~ 0.978)
A&Wedw chronic standard: (e^(0.8473 [ln(Hardness)] + ~~0.433~~ 0.884))*(~~0.986~~ 0.978)
A&We acute standard: (e^(0.8473 [ln(Hardness)] + 3.1342))*(0.978)
(See Footnote k)

k. No change

l. No change

m. No change
n. No change
o. No change
p. The standard to protect this use is 0.003 µg/L aldrin / dieldrin.

µg / L- micrograms per liter
NNS - No numeric standard
D - Dissolved
T - Total recoverable
TTHM - indicates that the chemical is a trihalomethane. See Trihalomethanes, Total for DWS standard.

Table 3. Acute Water Quality Standards for dissolved Cadmium
Aquatic and Wildlife ephemeral
No change to table

Table 4. Acute Water Quality Standards for dissolved Cadmium
Aquatic and Wildlife coldwater, warmwater, edw
No change to table

Table 5. Chronic Water Quality Standards for dissolved Cadmium
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 6. Acute Water Quality Standards for dissolved Chromium III
Aquatic and Wildlife ephemeral
No change to table

Table 7. Acute Water Quality Standards for dissolved Chromium III
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 8. Chronic Water Quality Standards for dissolvedChromium III
Aquatic and Wildlife Coldwater, warmwater and edw
No change to table

Table 9. Chronic Water Quality Standards for dissolved Copper
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 10. Acute Water Quality Standards for dissolved Copper
Aquatic and Wildlife ephemeral
No change to table

Table 11. Acute Water Quality Standards for dissolved Copper
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 12. **Acute Water Quality Standards for dissolved Nickel**
Aquatic and Wildlife ephemeral
No change to table

Table 13. **Acute Water Quality Standards for dissolved Lead**
Aquatic and Wildlife ephemeral
No change to table

Table 14. **Acute Water Quality Standards for dissolved Lead**
Aquatic and Wildlife Coldwater, warmwater and edw
No change to table

Table 15. **Chronic Water Quality Standards for dissolved Lead**
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 16. **Acute Water Quality Standards for dissolved Nickel**
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 17. **Chronic Water Quality Standards for dissolved Nickel**
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 18. **Water Quality Standards for dissolved Silver**
Aquatic and Wildlife coldwater, warmwater, edw and ephemeral
No change to table

Table 19. **Acute Water Quality Standards for dissolved Zinc**
Aquatic and Wildlife ephemeral
No change to table

Table 20. **Acute and Chronic Water Quality Standards for dissolved Zinc**
Aquatic and Wildlife coldwater, warmwater and edw
No change to table

~~Chronic Water Quality Standards for dissolved Zinc~~
~~"Aquatic and Wildlife coldwater, warmwater, and edw"~~

~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~	~~Hard. mg/L~~	~~Std. ug/L~~
~~1~~	~~NA~~	~~41~~	~~55.50~~	~~81~~	~~98.82~~	~~121~~	~~138.85~~	~~161~~	~~176.86~~	~~201~~	~~213.45~~	~~241~~	~~248.93~~	~~281~~	~~283.52~~	~~321~~	~~317.36~~	~~361~~	~~350.57~~
~~2~~	~~NA~~	~~42~~	~~56.65~~	~~82~~	~~99.85~~	~~122~~	~~139.82~~	~~162~~	~~177.79~~	~~202~~	~~214.35~~	~~242~~	~~249.80~~	~~282~~	~~284.37~~	~~322~~	~~318.20~~	~~362~~	~~351.39~~
~~3~~	~~NA~~	~~43~~	~~57.79~~	~~83~~	~~100.89~~	~~123~~	~~140.79~~	~~163~~	~~178.72~~	~~203~~	~~215.25~~	~~243~~	~~250.68~~	~~283~~	~~285.23~~	~~323~~	~~319.04~~	~~363~~	~~352.21~~
~~4~~	~~NA~~	~~44~~	~~58.92~~	~~84~~	~~101.91~~	~~124~~	~~141.76~~	~~164~~	~~179.65~~	~~204~~	~~216.14~~	~~244~~	~~251.55~~	~~284~~	~~286.08~~	~~324~~	~~319.87~~	~~364~~	~~353.03~~
~~5~~	~~NA~~	~~45~~	~~60.06~~	~~85~~	~~102.94~~	~~125~~	~~142.73~~	~~165~~	~~180.58~~	~~205~~	~~217.04~~	~~245~~	~~252.43~~	~~285~~	~~286.93~~	~~325~~	~~320.71~~	~~365~~	~~353.85~~
~~6~~	~~NA~~	~~46~~	~~61.19~~	~~86~~	~~103.97~~	~~126~~	~~143.69~~	~~166~~	~~181.51~~	~~206~~	~~217.94~~	~~246~~	~~253.30~~	~~286~~	~~287.79~~	~~326~~	~~321.55~~	~~366~~	~~354.68~~
~~7~~	~~NA~~	~~47~~	~~62.31~~	~~87~~	~~104.99~~	~~127~~	~~144.66~~	~~167~~	~~182.43~~	~~207~~	~~218.83~~	~~247~~	~~254.17~~	~~287~~	~~288.64~~	~~327~~	~~322.38~~	~~367~~	~~355.50~~
~~8~~	~~NA~~	~~48~~	~~63.43~~	~~88~~	~~106.01~~	~~128~~	~~145.62~~	~~168~~	~~183.36~~	~~208~~	~~219.73~~	~~248~~	~~255.04~~	~~288~~	~~289.49~~	~~328~~	~~323.22~~	~~368~~	~~356.32~~
~~9~~	~~NA~~	~~49~~	~~64.55~~	~~89~~	~~107.03~~	~~129~~	~~146.59~~	~~169~~	~~184.28~~	~~209~~	~~220.62~~	~~249~~	~~255.91~~	~~289~~	~~290.34~~	~~329~~	~~324.05~~	~~369~~	~~357.14~~
~~10~~	~~NA~~	~~50~~	~~65.66~~	~~90~~	~~108.05~~	~~130~~	~~147.55~~	~~170~~	~~185.20~~	~~210~~	~~221.52~~	~~250~~	~~256.78~~	~~290~~	~~291.19~~	~~330~~	~~324.89~~	~~370~~	~~357.96~~
~~11~~	~~NA~~	~~51~~	~~66.78~~	~~91~~	~~109.07~~	~~131~~	~~148.51~~	~~171~~	~~186.13~~	~~211~~	~~222.41~~	~~251~~	~~257.65~~	~~291~~	~~292.04~~	~~331~~	~~325.72~~	~~371~~	~~358.78~~
~~12~~	~~NA~~	~~52~~	~~67.88~~	~~92~~	~~110.08~~	~~132~~	~~149.47~~	~~172~~	~~187.05~~	~~212~~	~~223.30~~	~~252~~	~~258.52~~	~~292~~	~~292.90~~	~~332~~	~~326.55~~	~~372~~	~~359.60~~
~~13~~	~~NA~~	~~53~~	~~68.99~~	~~93~~	~~111.09~~	~~133~~	~~150.43~~	~~173~~	~~187.97~~	~~213~~	~~224.20~~	~~253~~	~~259.39~~	~~293~~	~~293.74~~	~~333~~	~~327.39~~	~~373~~	~~360.41~~
~~14~~	~~NA~~	~~54~~	~~70.09~~	~~94~~	~~112.10~~	~~134~~	~~151.39~~	~~174~~	~~188.89~~	~~214~~	~~225.09~~	~~254~~	~~260.26~~	~~294~~	~~294.59~~	~~334~~	~~328.22~~	~~374~~	~~361.23~~
~~15~~	~~NA~~	~~55~~	~~71.19~~	~~95~~	~~113.11~~	~~135~~	~~152.34~~	~~175~~	~~189.81~~	~~215~~	~~225.98~~	~~255~~	~~261.13~~	~~295~~	~~295.44~~	~~335~~	~~329.05~~	~~375~~	~~362.05~~
~~16~~	~~NA~~	~~56~~	~~72.28~~	~~96~~	~~114.12~~	~~136~~	~~153.30~~	~~176~~	~~190.73~~	~~216~~	~~226.87~~	~~256~~	~~262.00~~	~~296~~	~~296.29~~	~~336~~	~~329.88~~	~~376~~	~~362.87~~
~~17~~	~~NA~~	~~57~~	~~73.37~~	~~97~~	~~115.13~~	~~137~~	~~154.25~~	~~177~~	~~191.65~~	~~217~~	~~227.76~~	~~257~~	~~262.86~~	~~297~~	~~297.14~~	~~337~~	~~330.72~~	~~377~~	~~363.69~~
~~18~~	~~NA~~	~~58~~	~~74.46~~	~~98~~	~~116.13~~	~~138~~	~~155.21~~	~~178~~	~~192.56~~	~~218~~	~~228.65~~	~~258~~	~~263.73~~	~~298~~	~~297.99~~	~~338~~	~~331.55~~	~~378~~	~~364.50~~
~~19~~	~~NA~~	~~59~~	~~75.55~~	~~99~~	~~117.14~~	~~139~~	~~156.16~~	~~179~~	~~193.48~~	~~219~~	~~229.54~~	~~259~~	~~264.60~~	~~299~~	~~298.83~~	~~339~~	~~332.38~~	~~379~~	~~365.32~~
~~20~~	~~NA~~	~~60~~	~~76.63~~	~~100~~	~~118.14~~	~~140~~	~~157.11~~	~~180~~	~~194.40~~	~~220~~	~~230.42~~	~~260~~	~~265.46~~	~~300~~	~~299.68~~	~~340~~	~~333.21~~	~~380~~	~~366.14~~
~~21~~	~~NA~~	~~61~~	~~77.71~~	~~101~~	~~119.14~~	~~141~~	~~158.06~~	~~181~~	~~195.31~~	~~221~~	~~231.31~~	~~261~~	~~266.33~~	~~301~~	~~300.53~~	~~341~~	~~334.04~~	~~381~~	~~366.95~~
~~22~~	~~NA~~	~~62~~	~~78.79~~	~~102~~	~~120.14~~	~~142~~	~~159.01~~	~~182~~	~~196.22~~	~~222~~	~~232.20~~	~~262~~	~~267.19~~	~~302~~	~~301.37~~	~~342~~	~~334.87~~	~~382~~	~~367.77~~
~~23~~	~~NA~~	~~63~~	~~79.87~~	~~103~~	~~121.14~~	~~143~~	~~159.96~~	~~183~~	~~197.14~~	~~223~~	~~233.08~~	~~263~~	~~268.05~~	~~303~~	~~302.22~~	~~343~~	~~335.70~~	~~383~~	~~368.58~~
~~24~~	~~NA~~	~~64~~	~~80.94~~	~~104~~	~~122.13~~	~~144~~	~~160.91~~	~~184~~	~~198.05~~	~~224~~	~~233.97~~	~~264~~	~~268.92~~	~~304~~	~~303.06~~	~~344~~	~~336.53~~	~~384~~	~~369.40~~
~~25~~	~~36.50~~	~~65~~	~~82.01~~	~~105~~	~~123.13~~	~~145~~	~~161.85~~	~~185~~	~~198.96~~	~~225~~	~~234.85~~	~~265~~	~~269.78~~	~~305~~	~~303.91~~	~~345~~	~~337.36~~	~~385~~	~~370.22~~
~~26~~	~~37.73~~	~~66~~	~~83.08~~	~~106~~	~~124.12~~	~~146~~	~~162.80~~	~~186~~	~~199.87~~	~~226~~	~~235.74~~	~~266~~	~~270.64~~	~~306~~	~~304.75~~	~~346~~	~~338.18~~	~~386~~	~~371.03~~
~~27~~	~~38.96~~	~~67~~	~~84.14~~	~~107~~	~~125.11~~	~~147~~	~~163.74~~	~~187~~	~~200.78~~	~~227~~	~~236.62~~	~~267~~	~~271.50~~	~~307~~	~~305.59~~	~~347~~	~~339.01~~	~~387~~	~~371.84~~
~~28~~	~~40.18~~	~~68~~	~~85.21~~	~~108~~	~~126.10~~	~~148~~	~~164.69~~	~~188~~	~~201.69~~	~~228~~	~~237.50~~	~~268~~	~~272.37~~	~~308~~	~~306.44~~	~~348~~	~~339.84~~	~~388~~	~~372.66~~
~~29~~	~~41.39~~	~~69~~	~~86.27~~	~~109~~	~~127.09~~	~~149~~	~~165.63~~	~~189~~	~~202.60~~	~~229~~	~~238.39~~	~~269~~	~~273.23~~	~~309~~	~~307.28~~	~~349~~	~~340.67~~	~~389~~	~~373.47~~
~~30~~	~~42.59~~	~~70~~	~~87.33~~	~~110~~	~~128.08~~	~~150~~	~~166.57~~	~~190~~	~~203.51~~	~~230~~	~~239.27~~	~~270~~	~~274.09~~	~~310~~	~~308.12~~	~~350~~	~~341.49~~	~~390~~	~~374.28~~
~~31~~	~~43.79~~	~~71~~	~~88.38~~	~~111~~	~~129.06~~	~~151~~	~~167.51~~	~~191~~	~~204.42~~	~~231~~	~~240.15~~	~~271~~	~~274.95~~	~~311~~	~~308.96~~	~~351~~	~~342.32~~	~~391~~	~~375.10~~
~~32~~	~~44.99~~	~~72~~	~~89.44~~	~~112~~	~~130.05~~	~~152~~	~~168.45~~	~~192~~	~~205.32~~	~~232~~	~~241.03~~	~~272~~	~~275.81~~	~~312~~	~~309.81~~	~~352~~	~~343.15~~	~~392~~	~~375.91~~
~~33~~	~~46.18~~	~~73~~	~~90.49~~	~~113~~	~~131.03~~	~~153~~	~~169.39~~	~~193~~	~~206.23~~	~~233~~	~~241.91~~	~~273~~	~~276.66~~	~~313~~	~~310.65~~	~~353~~	~~343.97~~	~~393~~	~~376.72~~
~~34~~	~~47.36~~	~~74~~	~~91.54~~	~~114~~	~~132.01~~	~~154~~	~~170.33~~	~~194~~	~~207.13~~	~~234~~	~~242.79~~	~~274~~	~~277.52~~	~~314~~	~~311.49~~	~~354~~	~~344.80~~	~~394~~	~~377.53~~
~~35~~	~~48.54~~	~~75~~	~~92.58~~	~~115~~	~~132.99~~	~~155~~	~~171.26~~	~~195~~	~~208.04~~	~~235~~	~~243.67~~	~~275~~	~~278.38~~	~~315~~	~~312.33~~	~~355~~	~~345.62~~	~~395~~	~~378.35~~
~~36~~	~~49.71~~	~~76~~	~~93.63~~	~~116~~	~~133.97~~	~~156~~	~~172.20~~	~~196~~	~~208.94~~	~~236~~	~~244.55~~	~~276~~	~~279.24~~	~~316~~	~~313.17~~	~~356~~	~~346.45~~	~~396~~	~~379.16~~
~~37~~	~~50.88~~	~~77~~	~~94.67~~	~~117~~	~~134.95~~	~~157~~	~~173.13~~	~~197~~	~~209.84~~	~~237~~	~~245.42~~	~~277~~	~~280.10~~	~~317~~	~~314.01~~	~~357~~	~~347.27~~	~~397~~	~~379.97~~
~~38~~	~~52.04~~	~~78~~	~~95.71~~	~~118~~	~~135.92~~	~~158~~	~~174.07~~	~~198~~	~~210.75~~	~~238~~	~~246.30~~	~~278~~	~~280.95~~	~~318~~	~~314.85~~	~~358~~	~~348.10~~	~~398~~	~~380.78~~
~~39~~	~~53.20~~	~~79~~	~~96.75~~	~~119~~	~~136.90~~	~~159~~	~~175.00~~	~~199~~	~~211.65~~	~~239~~	~~247.18~~	~~279~~	~~281.81~~	~~319~~	~~315.69~~	~~359~~	~~348.92~~	~~399~~	~~381.59~~
~~40~~	~~54.35~~	~~80~~	~~97.79~~	~~120~~	~~137.87~~	~~160~~	~~175.93~~	~~200~~	~~212.55~~	~~240~~	~~248.05~~	~~280~~	~~282.66~~	~~320~~	~~316.52~~	~~360~~	~~349.74~~	~~400~~	~~382.40~~

Table 21. Water Quality Standards for Pentachlorophenol
Acute Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 22. Water Quality Standards for Pentachlorophenol
Chronic Aquatic and Wildlife coldwater, warmwater and edw
No change to table

Table 23. Water Quality Standards for Pentachlorophenol
Acute Aquatic and Wildlife ephemeral
No change to table

Table 24. Acute Criteria for Total Ammonia (in mg N / L)
No change to table

Table 25. Chronic Criteria for Total Ammonia (in mg N / L) for A&Wc, and A&Ww Designated Uses
No change to table