7050.0220 SPECIFIC WATER QUALITY STANDARDS BY ASSOCIATED USE CLASSES.

Subpart 1. **Purpose and scope.** The numeric and narrative water quality standards in this chapter prescribe the qualities or properties of the waters of the state that are necessary for the designated public uses and benefits. If the standards in this chapter are exceeded, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to designated uses or established classes of the waters of the state.

All surface waters are protected for multiple beneficial uses. Numeric water quality standards are tabulated in this part for all uses applicable to four common categories of surface waters, so that all applicable standards for each category are listed together in subparts 3a to 6a. The four categories are:

A. cold water sport fish (trout waters), also protected for drinking water: classes 1B, 2A, 3A or 3B, 4A and 4B, and 5 (subpart 3a);

B. cool and warm water sport fish, also protected for drinking water: classes 1B or 1C, 2Bd, 3A or 3B, 4A and 4B, and 5 (subpart 4a);

C. cool and warm water sport fish, indigenous aquatic life, and wetlands: classes 2B, 2C, or 2D; 3A, 3B, 3C, or 3D; 4A and 4B or 4C; and 5 (subpart 5a); and

D. limited resource value waters: classes 3C, 4A and 4B, 5, and 7 (subpart 6a).

Subp. 2. **Explanation of tables.**

A. Class 1 domestic consumption (DC) standards are the United States Environmental Protection Agency primary (maximum contaminant levels) and secondary drinking water standards, as contained in Code of Federal Regulations, title 40, parts 141 and 143, as amended through July 1, 2006. The DC standards are listed in subparts 3a and 4a, except that individual pollutants, substances, or organisms in the treatment technological, disinfectants, microbiological, and radiological categories are not listed unless they are listed because a secondary drinking water standard or a standard for another use class exists.

B. Certain drinking water standards are not applicable to class 1 waters. The following are not applicable to class 1 surface waters: the primary drinking water standards for acrylamide, epichlorohydrin, copper, lead, and turbidity (treatment technique standards) and the standards in the disinfectants and microbiological organisms categories. The drinking water standards not applicable to class 1 ground waters are listed in part 7050.0221.

C. Class 2 standards for metals are expressed as total metal in subparts 3a to 5a, but must be converted to dissolved metal standards for application to surface waters.

Conversion factors for converting total metal standards to dissolved metal standards are listed in part 7050.0222, subpart 9. The conversion factor for metals not listed in part 7050.0222, subpart 9, is one. The dissolved metal standard equals the total metal standard times the conversion factor. Water quality-based effluent limits for metals are expressed as total metal.

D. The tables of standards in subparts 3a to 6a include the following abbreviations and acronyms:

AN	means aesthetic enjoyment and navigation, class 5 waters
*	an asterisk following the FAV and MS values or double dashes (–) means part 7050.0222, subpart 7, item G, applies
(c)	means the chemical is assumed to be a human carcinoge
CS	means chronic standard, defined in part 7050.0218, subpart 3
DC	means domestic consumption (drinking water), class 1 waters
–	double dashes means there is no standard
exp. ()	means the natural antilogarithm (base e) of the expression in parenthesis
FAV	means final acute value, defined in part 7050.0218, subpart 3
IC	means industrial consumption, class 3 waters
IR	means agriculture irrigation use, class 4A waters
LS	means agriculture livestock and wildlife use, class 4B waters
MS	means maximum standard, defined in part 7050.0218, subpart 3
NA	means not applicable
(S)	means the associated value is a secondary drinking water standard
su	means standard unit. It is the reporting unit for pH
TH	means total hardness in mg/L, which is the sum of the calcium and magnesium concentrations expressed as $CaCO_3$
TON	means threshold odor number

E. Important synonyms or acronyms for some chemicals are listed in parentheses below the primary name.

F. When two or more use classes have standards for the same pollutant, the most stringent standard applies pursuant to part 7050.0450. All surface waters are protected for class 6, but this class has no numeric standards so it is not included in the tables.

Subp. 3. [Repealed, 24 SR 1105]

Subp. 3a. **Cold water sport fish, drinking water, and associated use classes.** Water quality standards applicable to use classes 1B, 2A, 3A or 3B, 4A and 4B, and 5 surface waters.

A. MISCELLANEOUS SUBSTANCE, CHARACTERISTIC, OR POLLUTANT

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B IR**	**5 AN**
(1) Ammonia, un-ionized as N, µg/L							
16	–	–	–	–	–	–	–
(2) Asbestos, >10 µm (c), fibers/L							
–	–	–	7.0e+06	–	–	–	–
(3) Bicarbonates (HCO_3), meq/L							
–	–	–	–	–	5	–	–
(4) Bromate, µg/L							
–	–	–	10	–	–	–	–
(5) Chloride, mg/L							
230	860	1,720	250(S)	50/100	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B IR**	**5 AN**
(6) Chlorine, total residual, µg/L							
11	19	38	–	–	–	–	–
(7) Chlorite, µg/L							
–	–	–	1,000	–	–	–	–
(8) Color, Pt-Co							
30	–	–	15(S)	–	–	–	–
(9) Cyanide, free, µg/L							

5.2	22	45	200	–	–	–	–

(10) *Escherichia (E.) coli* bacteria, organisms/100 mL

See item D	–	–	–	–	–	–	–
2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B IR**	**5 AN**

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(11) Eutrophication standards for lakes and reservoirs (phosphorus, total, µg/L; chlorophyll-a, µg/L; Secchi disk transparency, meters)

See part 7050.0222, subparts 2 and 2a	–	–	–	–	–	–	–

(12) Eutrophication standards for rivers, streams, and navigational pools (phosphorus, total µg/L; chlorophyll-a (seston), µg/L; five-day biochemical oxygen demand (BOD_5), mg/L; diel dissolved oxygen flux, mg/L; chlorophyll-a (periphyton), mg/m^2)

See part 7050.0222, subparts 2 and 2b	–	–	–	–	–	–	–

(13) Fluoride, mg/L

–	–	–	4	–	–	–	–

(14) Fluoride, mg/L

–	–	–	2(S)	–	–	–	–

(15) Foaming agents, µg/L

–	–	–	500(S)	–	–	–	–

(16) Hardness, Ca+Mg as $CaCO_3$, mg/L

–	–	–	–	50/250	–	–	–

2A CS	2A MS	2A FAV	1B DC	3A/3B IC	4A IR	4B IR	5 AN
(17) Hydrogen sulfide, mg/L							
–	–	–	–	–	–	–	0.02
(18) Nitrate as N, mg/L							
–	–	–	10	–	–	–	–
(19) Nitrite as N, mg/L							
–	–	–	1	–	–	–	–
(20) Nitrate + Nitrite as N, mg/L							
–	–	–	10	–	–	–	–
(21) Odor, TON							
–	–	–	3(S)	–	–	–	–

2A CS	2A MS	2A FAV	1B DC	3A/3B IC	4A IR	4B IR	5 AN
(22) Oil, µg/L							
500	5,000	10,000	–	–	–	–	–
(23) Oxygen, dissolved, mg/L							
7, as a daily minimum	–	–	–	–	–	–	–
(24) pH minimum, su							
6.5	–	–	6.5(S)	6.5/6.0	6.0	6.0	6.0
(25) pH maximum, su							
8.5	–	–	8.5(S)	8.5/9.0	8.5	9.0	9.0

(26) Radioactive materials

See item E	–	–	See item E	–	See item E	See item E	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B IR**	**5 AN**

(27) Salinity, total, mg/L

–	–	–	–	–	–	1,000	–

(28) Sodium, meq/L

–	–	–	–	–	60% of total cations	–	–

(29) Specific conductance at 25°C, μmhos/cm

–	–	–	–	–	1,000	–	–

(30) Sulfate, mg/L

–	–	–	250(S)	–	–	–	–

(31) Sulfates, wild rice present, mg/L

–	–	–	–	–	10	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B IR**	**5 AN**

(32) Temperature, °F

No material increase	–	–	–	–	–	–	–

(33) Total dissolved salts, mg/L

–	–	–	–	–	700	–	–

(34) Total dissolved solids, mg/L

–	–	–	500(S)	–	–	–	–

(35) Total suspended solids (TSS), mg/L

See part 7050.0222, subpart 2	–	–	–	–	–	–	–

B. METALS AND ELEMENTS

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(1) Aluminum, total, µg/L

87	748	1,496	50-200(S)	–	–	–	–

(2) Antimony, total, µg/L

5.5	90	180	6	–	–	–	–

(3) Arsenic, total, µg/L

2.0	360	720	10	–	–	–	–

(4) Barium, total, µg/L

–	–	–	2,000	–	–	–	–

(5) Beryllium, total, µg/L

–	–	–	4.0	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(6) Boron, total, µg/L

–	–	–	–	–	500	–	–

(7) Cadmium, total, µg/L

1.1	3.9	7.8	5	–	–	–	–

Class 2A cadmium standards are hardness dependent. Cadmium values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate cadmium standards for any hardness value not to exceed 400 mg/L.

(8) Chromium +3, total, µg/L

207	1,737	3,469	–	–	–	–	–

Class 2A trivalent chromium standards are hardness dependent. Chromium +3 values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate trivalent chromium standards for any hardness value not to exceed 400 mg/L.

(9) Chromium +6, total, µg/L

11	16	32	–	–	–	–	–

(10) Chromium, total, µg/L

–	–	–	100	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(11) Cobalt, total, µg/L

2.8	436	872	–	–	–	–	–

(12) Copper, total, µg/L

9.8	18	35	1,000 (S)	–	–	–	–

Class 2A copper standards are hardness dependent. Copper values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate copper standards for any hardness value not to exceed 400 mg/L.

(13) Iron, total, µg/L

–	–	–	300(S)	–	–	–	–

(14) Lead, total, µg/L

3.2	82	164	NA	–	–	–	–

Class 2A lead standards are hardness dependent. Lead values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate lead standards for any hardness value not to exceed 400 mg/L.

(15) Manganese, total, µg/L

–	–	–	50(S)	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(16) Mercury, total, in water, ng/L

6.9	2,400*	4,900*	2,000	–	–	–	–

(17) Mercury, total in edible fish tissue, mg/kg or parts per million

0.2	–	–	–	–	–	–	–

(18) Nickel, total, µg/L

158	1,418	2,836	–	–	–	–	–

Class 2A nickel standards are hardness dependent. Nickel values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate nickel standards for any hardness value not to exceed 400 mg/L.

(19) Selenium, total, µg/L

5.0	20	40	50	–	–	–	–

(20) Silver, total, µg/L

0.12	2.0	4.1	100(S)	–	–	–	–

Class 2A silver MS and FAV are hardness dependent. Silver values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate silver standards for any hardness value not to exceed 400 mg/L.

2A CS	2A MS	2A FAV	1B DC	3A/3B IC	4A IR	4B LS	5 AN
(21) Thallium, total, µg/L							
0.28	64	128	2	–	–	–	–
(22) Zinc, total, µg/L							
106	117	234	5,000 (S)	–	–	–	–

Class 2A zinc standards are hardness dependent. Zinc values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 2, for examples at other hardness values and equations to calculate zinc standards for any hardness value not to exceed 400 mg/L.

C. ORGANIC POLLUTANTS OR CHARACTERISTICS

2A CS	2A MS	2A FAV	1B DC	3A/3B IC	4A IR	4B LS	5 AN
(1) Acenaphthene, µg/L							
20	56	112	–	–	–	–	–
(2) Acetochlor, µg/L							
3.6	86	173	–	–	–	–	–
(3) Acrylonitrile (c), µg/L							
0.38	1,140*	2,281*	–	–	–	–	–
(4) Alachlor (c), µg/L							
3.8	800*	1,600*	2	–	–	–	–
(5) Aldicarb, µg/L							
–	–	–	3	–	–	–	–

2A CS	2A MS	2A FAV	1B DC	3A/3B IC	4A IR	4B LS	5 AN
(6) Aldicarb sulfone, µg/L							
–	–	–	2	–	–	–	–
(7) Aldicarb sulfoxide, µg/L							
–	–	–	4	–	–	–	–
(8) Anthracene, µg/L							
0.035	0.32	0.63	–	–	–	–	–
(9) Atrazine (c), µg/L							
3.4	323	645	3	–	–	–	–
(10) Benzene (c), µg/L							
5.1	4,487*	8,974*	5	–	–	–	–

2A CS	2A MS	2A FAV	1B DC	3A/3B IC	4A IR	4B LS	5 AN
(11) Benzo(a)pyrene, µg/L							
–	–	–	0.2	–	–	–	–
(12) Bromoform, µg/L							
33	2,900	5,800	See sub-item (73)	–	–	–	–
(13) Carbofuran, µg/L							
–	–	–	40	–	–	–	–
(14) Carbon tetrachloride (c), µg/L							
1.9	1,750*	3,500*	5	–	–	–	–

(15) Chlordane (c), ng/L

0.073	1,200*	2,400*	2,000	–	–	–	–
2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(16) Chlorobenzene, µg/L (Monochlorobenzene)

20	423	846	100	–	–	–	–

(17) Chloroform (c), µg/L

53	1,392	2,784	See sub-item (73)	–	–	–	–

(18) Chlorpyrifos, µg/L

0.041	0.083	0.17	–	–	–	–	–

(19) Dalapon, µg/L

–	–	–	200	–	–	–	–

(20) DDT (c), ng/L

0.11	550*	1,100*	–	–	–	–	–
2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(21) 1,2-Dibromo-3-chloropropane (c), µg/L

–	–	–	0.2	–	–	–	–

(22) Dichlorobenzene (ortho), µg/L

–	–	–	600	–	–	–	–

(23) 1,4-Dichlorobenzene (para) (c), µg/L

–	–	–	75	–	–	–	–

(24) 1,2-Dichloroethane (c), µg/L

3.5	45,050*	90,100*	5	–	–	–	–

(25) 1,1-Dichloroethylene, µg/L

–	–	–	7	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(26) 1,2-Dichloroethylene (cis), µg/L

–	–	–	70	–	–	–	–

(27) 1,2-Dichloroethylene (trans), µg/L

–	–	–	100	–	–	–	–

(28) 2,4-Dichlorophenoxyacetic acid (2,4-D), µg/L

–	–	–	70	–	–	–	–

(29) 1,2-Dichloropropane (c), µg/L

–	–	–	5	–	–	–	–

(30) Dieldrin (c), ng/L

0.0065	1,300*	2,500*	–	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(31) Di-2-ethylhexyl adipate, µg/L

–	–	–	400	–	–	–	–

(32) Di-2-ethylhexyl phthalate (c), µg/L

1.9	–*	–*	6	–	–	–	–

(33) Di-n-Octyl phthalate, µg/L

30	825	1,650	–	–	–	–	–

(34) Dinoseb, µg/L

–	–	–	7	–	–	–	–

(35) Diquat, µg/L

–	–	–	20	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(36) Endosulfan, µg/L

0.0076	0.084	0.17	–	–	–	–	–

(37) Endothall, µg/L

–	–	–	100	–	–	–	–

(38) Endrin, µg/L

0.0039	0.090	0.18	2	–	–	–	–

(39) Ethylbenzene (c), µg/L

68	1,859	3,717	700	–	–	–	–

(40) Ethylene dibromide, µg/L

–	–	–	0.05	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(41) Fluoranthene, µg/L

1.9	3.5	6.9	–	–	–	–	–

(42) Glyphosate, µg/L

–	–	–	700	–	–	–	–

(43) Haloacetic acids (c), µg/L (Bromoacetic acid, Dibromoacetic acid, Dichloroacetic acid, Monochloroacetic acid, and Trichloroacetic acid)

–	–	–	60	–	–	–	–

(44) Heptachlor (c), ng/L

0.10	260*	520*	400	–	–	–	–

(45) Heptachlor epoxide (c), ng/L

0.12	270*	530*	200	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(46) Hexachlorobenzene (c), ng/L

0.061	–*	–*	1,000	–	–	–	–

(47) Hexachlorocyclopentadiene, µg/L

–	–	–	50	–	–	–	–

(48) Lindane (c), µg/L (Hexachlorocyclohexane, gamma-)

0.0087	1.0*	2.0*	0.2	–	–	–	–

(49) Methoxychlor, µg/L

–	–	–	40	–	–	–	–

(50) Methylene chloride (c), µg/L (Dichloromethane)

45	13,875*	27,749*	5	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(51) Metolachlor

23	271	543	–	–	–	–	–

(52) Naphthalene, µg/L

65	409	818	–	–	–	–	–

(53) Oxamyl, µg/L (Vydate)

–	–	–	200	–	–	–	–

(54) Parathion, µg/L

0.013	0.07	0.13	–	–	–	–	–

(55) Pentachlorophenol, µg/L

0.93	15	30	1	–	–	–	–

Class 2A MS and FAV are pH dependent. Pentachlorophenol values shown are for a pH of 7.5 only. See part 7050.0222, subpart 2, for examples at other pH values and equations to calculate pentachlorophenol standards for any pH value.

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(56) Phenanthrene, µg/L

3.6	32	64	–	–	–	–	–

(57) Phenol, µg/L

123	2,214	4,428	–	–	–	–	–

(58) Picloram, µg/L

–	–	–	500	–	–	–	–

(59) Polychlorinated biphenyls (c), ng/L (PCBs, total)

0.014	1,000*	2,000*	500	–	–	–	–

(60) Simazine, µg/L

–	–	–	4	–	–	–	–

2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(61) Styrene (c), µg/L

–	–	–	100	–	–	–	–

(62) 2,3,7,8-Tetrachlorodibenzo-p-dioxin, ng/L (TCDD-dioxin)

–	–	–	0.03	–	–	–	–

(63) 1,1,2,2-Tetrachloroethane (c), µg/L

1.1	1,127*	2,253*	–	–	–	–	–

(64) Tetrachloroethylene (c), µg/L

3.8	428*	857*	5	–	–	–	–

(65) Toluene, µg/L

253	1,352	2,703	1,000	–	–	–	–
2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(66) Toxaphene (c), ng/L

0.31	730*	1,500*	3,000	–	–	–	–

(67) 2,4,5-TP, µg/L (Silvex)

–	–	–	50	–	–	–	–

(68) 1,2,4-Trichlorobenzene, µg/L

–	–	–	70	–	–	–	–

(69) 1,1,1-Trichloroethane, µg/L

329	2,957	5,913	200	–	–	–	–

(70) 1,1,2-Trichloroethane, µg/L

–	–	–	5	–	–	–	–
2A CS	**2A MS**	**2A FAV**	**1B DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(71) 1,1,2-Trichloroethylene (c), µg/L

25	6,988	13,976*	5	–	–	–	–

(72) 2,4,6-Trichlorophenol, µg/L

2.0	102	203	–	–	–	–	–

(73) Trihalomethanes, total (c), µg/L (Bromodichloromethane, Bromoform, Chlorodibromomethane, and Chloroform)

–	–	–	80	–	–	–	–

(74) Vinyl chloride (c), µg/L

0.17	–*	–*	2	–	–	–	–

(75) Xylenes, total, µg/L

166	1,407	2,814	10,000	–	–	–	–

D. *Escherichia (E.) coli* bacteria shall not exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31.

E. For radioactive materials, see parts 7050.0221, subpart 2; 7050.0222, subpart 2; and 7050.0224, subparts 2 and 3.

Subp. 4. [Repealed, 24 SR 1105]

Subp. 4a. **Cool and warm water sport fish, drinking water, and associated use classes.** Water quality standards applicable to use classes 1B or 1C, 2Bd, 3A or 3B, 4A and 4B, and 5 surface waters.

A. MISCELLANEOUS SUBSTANCE, CHARACTERISTIC, OR POLLUTANT

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(1) Ammonia, un-ionized as N, µg/L

40	–	–	–	–	–	–	–

(2) Asbestos, >10 µm (c), fibers/L

–	–	–	7.0e+06	–	–	–	–

(3) Bicarbonates (HCO_3), meq/L

–	–	–	–	–	5	–	–

(4) Bromate, µg/L

–	–	–	10	–	–	–	–

(5) Chloride, mg/L

230	860	1,720	250(S)	50/100	–	–	–
2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(6) Chlorine, total residual, µg/L

11	19	38	–	–	–	–	–

(7) Chlorite, µg/L

–	–	–	1,000	–	–	–	–

(8) Color, Pt-Co

–	–	–	15(S)	–	–	–	–

(9) Cyanide, free, µg/L

5.2	22	45	200	–	–	–	–

(10) *Escherichia (E.) coli* bacteria, organisms/100 mL

See item D	–	–	–	–	–	–	–
2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(11) Eutrophication standards for lakes, shallow lakes, and reservoirs (phosphorus, total, µg/L; chlorophyll-a, µg/L; Secchi disk transparency, meters)

See part 7050.0222, subparts 3 and 3a	–	–	–	–	–	–	–

(12) Eutrophication standards for rivers, streams, and navigational pools (phosphorus, total µg/L; chlorophyll-a (seston), µg/L; five-day biochemical oxygen demand (BOD_5), mg/L; diel dissolved oxygen flux, mg/L; chlorophyll-a (periphyton), mg/m^2)

See part 7050.0222, subparts 3 and 3b	–	–	–	–	–	–	–

(13) Fluoride, mg/L

–	–	–	4	–	–	–	–

(14) Fluoride, mg/L

–	–	–	2(S)	–	–	–	–

(15) Foaming agents, µg/L

–	–	–	500(S)	–	–	–	–

(16) Hardness, Ca+Mg as $CaCO_3$, mg/L

–	–	–	–	50/250	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

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(17) Hydrogen sulfide, mg/L

–	–	–	–	–	–	–	0.02

(18) Nitrate as N, mg/L

–	–	–	10	–	–	–	–

(19) Nitrite as N, mg/L

–	–	–	1	–	–	–	–

(20) Nitrate + Nitrite as N, mg/L

–	–	–	10	–	–	–	–

(21) Odor, TON

–	–	–	3(S)	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(22) Oil, µg/L

500	5,000	10,000	–	–	–	–	–

(23) Oxygen, dissolved, mg/L

See part 7050.0222, subpart 3	–	–	–	–	–	–	–

(24) pH minimum, su

6.5	–	–	6.5(S)	6.5/6.0	6.0	6.0	6.0

(25) pH maximum, su

9.0	–	–	8.5(S)	8.5/9.0	8.5	9.0	9.0

(26) Radioactive materials

See item E	–	–	See item E	–	See item E	See item E	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(27) Salinity, total, mg/L

–	–	–	–	–	–	1,000	–

(28) Sodium, meq/L

–	–	–	–	–	60% of total cations	–	–

(29) Specific conductance at 25°C, µmhos/cm

–	–	–	–	–	1,000	–	–

(30) Sulfate, mg/L

–	–	–	250(S)	–	–	–	–

(31) Sulfates, wild rice present, mg/L

–	–	–	–	–	10	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(32) Temperature, °F

See item F	–	–	–	–	–	–	–

(33) Total dissolved salts, mg/L

–	–	–	–	–	700	–	–

(34) Total dissolved solids, mg/L

–	–	–	500(S)	–	–	–	–

(35) Total suspended solids (TSS), mg/L

See part 7050.0222, subpart 3	–	–	–	–	–	–	–

B. METALS AND ELEMENTS

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(1) Aluminum, total, µg/L

125	1,072	2,145	50-200(S)	–	–	–	–

(2) Antimony, total, µg/L

5.5	90	180	6	–	–	–	–

(3) Arsenic, total, µg/L

2.0	360	720	10	–	–	–	–

(4) Barium, total, µg/L

–	–	–	2,000	–	–	–	–

(5) Beryllium, total, µg/L

–	–	–	4.0	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(6) Boron, total, µg/L

–	–	–	–	–	500	–	–

(7) Cadmium, total, µg/L

1.1	33	67	5	–	–	–	–

Class 2Bd cadmium standards are hardness dependent. Cadmium values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate cadmium standards for any hardness value not to exceed 400 mg/L.

(8) Chromium +3, total, µg/L

207	1,737	3,469	–	–	–	–	–

Class 2Bd trivalent chromium standards are hardness dependent. Chromium +3 values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate trivalent chromium standards for any hardness value not to exceed 400 mg/L.

(9) Chromium +6, total, µg/L

11	16	32	–	–	–	–	–

(10) Chromium, total, µg/L

–	–	–	100	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(11) Cobalt, total, µg/L

2.8	436	872	–	–	–	–	–

(12) Copper, total, µg/L

9.8	18	35	1,000 (S)	–	–	–	–

Class 2Bd copper standards are hardness dependent. Copper values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate copper standards for any hardness value not to exceed 400 mg/L.

(13) Iron, total, µg/L

–	–	–	300(S)	–	–	–	–

(14) Lead, total, µg/L

3.2	82	164	NA	–	–	–	–

Class 2Bd lead standards are hardness dependent. Lead values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate lead standards for any hardness value not to exceed 400 mg/L.

(15) Manganese, total, µg/L

–	–	–	50(S)	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(16) Mercury, total in water, ng/L

6.9	2,400*	4,900*	2,000	–	–	–	–

(17) Mercury, total in edible fish tissue, mg/kg or parts per million

0.2	–	–	–	–	–	–	–

(18) Nickel, total, µg/L

158	1,418	2,836	–	–	–	–	–

Class 2Bd nickel standards are hardness dependent. Nickel values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate nickel standards for any hardness value not to exceed 400 mg/L.

(19) Selenium, total, µg/L

5.0	20	40	50	–	–	–	–

(20) Silver, total, µg/L

1.0	2.0	4.1	100(S)	–	–	–	–

Class 2Bd silver MS and FAV are hardness dependent. Silver values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate silver standards for any hardness value not to exceed 400 mg/L.

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B IC**	**4A IR**	**4B LS**	**5 AN**

(21) Thallium, total, µg/L

0.28	64	128	2	–	–	–	–

(22) Zinc, total, µg/L

106	117	234	5,000 (S)	–	–	–	–

Class 2Bd zinc standards are hardness dependent. Zinc values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 3, for examples at other hardness values and equations to calculate zinc standards for any hardness value not to exceed 400 mg/L.

C. ORGANIC POLLUTANTS OR CHARACTERISTICS

2Bd CS	2Bd MS	2Bd FAV	1B/1C DC	3A/3B ICIC	4A IR	4B LS	5 AN
(1) Acenaphthene, µg/L							
20	56	112	–	–	–	–	–
(2) Acetochlor, µg/L							
3.6	86	173	–	–	–	–	–
(3) Acrylonitrile (c), µg/L							
0.38	1,140*	2,281*	–	–	–	–	–
(4) Alachlor (c), µg/L							
4.2	800*	1,600*	2	–	–	–	–
(5) Aldicarb, µg/L							
–	–	–	3	–	–	–	–

2Bd CS	2Bd MS	2Bd FAV	1B/1C DC	3A/3B ICIC	4A IR	4B LS	5 AN
(6) Aldicarb sulfone, µg/L							
–	–	–	2	–	–	–	–
(7) Aldicarb sulfoxide, µg/L							
–	–	–	4	–	–	–	–
(8) Anthracene, µg/L							
0.035	0.32	0.63	–	–	–	–	–
(9) Atrazine (c), µg/L							
3.4	323	645	3	–	–	–	–
(10) Benzene (c), µg/L							

6.0	4,487*	8,974*	5	–	–	–	–
2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(11) Benzo(a)pyrene, µg/L

–	–	–	0.2	–	–	–	–

(12) Bromoform, µg/L

41	2,900	5,800	See subitem (73)	–	–	–	–

(13) Carbofuran, µg/L

–	–	–	40	–	–	–	–

(14) Carbon tetrachloride (c), µg/L

1.9	1,750*	3,500*	5	–	–	–	–

(15) Chlordane (c), ng/L

0.29	1,200*	2,400*	2,000	–	–	–	–
2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(16) Chlorobenzene, µg/L (Monochlorobenzene)

20	423	846	100	–	–	–	–

(17) Chloroform (c), µg/L

53	1,392	2,784	See subitem (73)	–	–	–	–

(18) Chlorpyrifos, µg/L

0.041	0.083	0.17	–	–	–	–	–

(19) Dalapon, µg/L

–	–	–	200	–	–	–	–

(20) DDT (c), ng/L

1.7	550*	1,100*	–	–	–	–	–
2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(21) 1,2-Dibromo-3-chloropropane (c), µg/L

–	–	–	0.2	–	–	–	–

(22) Dichlorobenzene (ortho), µg/L

–	–	–	600	–	–	–	–

(23) 1,4-Dichlorobenzene (para) (c), µg/L

–	–	–	75	–	–	–	–

(24) 1,2-Dichloroethane (c), µg/L

3.8	45,050*	90,100*	5	–	–	–	–

(25) 1,1-Dichloroethylene, µg/L

–	–	–	7	–	–	–	–
2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(26) 1,2-Dichloroethylene (cis), µg/L

–	–	–	70	–	–	–	–

(27) 1,2-Dichloroethylene (trans), µg/L

–	–	–	100	–	–	–	–

(28) 2,4-Dichlorophenoxyacetic acid (2,4-D), µg/L

–	–	–	70	–	–	–	–

(29) 1,2-Dichloropropane (c), µg/L

–	–	–	5	–	–	–	–

(30) Dieldrin (c), ng/L

0.026	1,300*	2,500*	–	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(31) Di-2-ethylhexyl adipate, µg/L

–	–	–	400	–	–	–	–

(32) Di-2-ethylhexyl phthalate (c), µg/L

1.9	–*	–*	6	–	–	–	–

(33) Di-n-Octyl phthalate, µg/L

30	825	1,650	–	–	–	–	–

(34) Dinoseb, µg/L

–	–	–	7	–	–	–	–

(35) Diquat, µg/L

–	–	–	20	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(36) Endosulfan, µg/L

0.029	0.28	0.56	–	–	–	–	–

(37) Endothall, µg/L

–	–	–	100	–	–	–	–

(38) Endrin, µg/L

0.016	0.090	0.18	2	–	–	–	–

(39) Ethylbenzene (c), µg/L

68	1,859	3,717	700	–	–	–	–

(40) Ethylene dibromide, µg/L

–	–	–	0.05	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(41) Fluoranthene, µg/L

1.9	3.5	6.9	–	–	–	–	–

(42) Glyphosate, µg/L

–	–	–	700	–	–	–	–

(43) Haloacetic acids (c), µg/L (Bromoacetic acid, Dibromoacetic acid, Dichloroacetic acid, Monochloroacetic acid, and Trichloroacetic acid)

–	–	–	60	–	–	–	–

(44) Heptachlor (c), ng/L

0.39	260*	520*	400	–	–	–	–

(45) Heptachlor epoxide (c), ng/L

0.48	270*	530*	200	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(46) Hexachlorobenzene (c), ng/L

0.24	–*	–*	1,000	–	–	–	–

(47) Hexachlorocyclopentadiene, µg/L

–	–	–	50	–	–	–	–

(48) Lindane (c), µg/L (Hexachlorocyclohexane, gamma-)

0.032	4.4*	8.8*	0.2	–	–	–	–

(49) Methoxychlor, µg/L

–	–	–	40	–	–	–	–

(50) Methylene chloride (c), µg/L (Dichloromethane)

46	13,875*	27,749*	5	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(51) Metolachlor

23	271	543	–	–	–	–	–

(52) Naphthalene, µg/L

81	409	818	–	–	–	–	–

(53) Oxamyl, µg/L (Vydate)

–	–	–	200	–	–	–	–

(54) Parathion, µg/L

0.013	0.07	0.13	–	–	–	–	–

(55) Pentachlorophenol, µg/L

1.9	15	30	1	–	–	–	–

Class 2Bd MS and FAV are pH dependent. Pentachlorophenol values shown are for a pH of 7.5 only. See part 7050.0222, subpart 3, for examples at other pH values and equations to calculate pentachlorophenol standards for any pH value.

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(56) Phenanthrene, µg/L

3.6	32	64	–	–	–	–	–

(57) Phenol, µg/L

123	2,214	4,428	–	–	–	–	–

(58) Picloram, µg/L

–	–	–	500	–	–	–	–

(59) Polychlorinated biphenyls (c), ng/L (PCBs, total)

0.029	1,000*	2,000*	500	–	–	–	–

(60) Simazine, µg/L

–	–	–	4	–	–	–	–

2Bd CS	**2Bd MS**	**2Bd FAV**	**1B/1C DC**	**3A/3B ICIC**	**4A IR**	**4B LS**	**5 AN**

(61) Styrene (c), µg/L

–	–	–	100	–	–	–	–

(62) 2,3,7,8-Tetrachlorodibenzo-p-dioxin, ng/L (TCDD-dioxin)

–	–	–	0.03	–	–	–	–

(63) 1,1,2,2-Tetrachloroethane (c), µg/L

1.5	1,127*	2,253*	–	–	–	–	–

(64) Tetrachloroethylene (c), µg/L

3.8	428*	857*	5	–	–	–	–

(65) Toluene, µg/L

253	1,352	2,703	1,000	–	–	–	–

2Bd CS	2Bd MS	2Bd FAV	1B/1C DC	3A/3B ICIC	4A IR	4B LS	5 AN
(66) Toxaphene (c), ng/L							
1.3	730*	1,500*	3,000	–	–	–	–
(67) 2,4,5-TP, µg/L (Silvex)							
–	–	–	50	–	–	–	–
(68) 1,2,4-Trichlorobenzene, µg/L							
–	–	–	70	–	–	–	–
(69) 1,1,1-Trichloroethane, µg/L							
329	2,957	5,913	200	–	–	–	–
(70) 1,1,2-Trichloroethane, µg/L							
–	–	–	5	–	–	–	–

2Bd CS	2Bd MS	2Bd FAV	1B/1C DC	3A/3B ICIC	4A IR	4B LS	5 AN
(71) 1,1,2-Trichloroethylene (c), µg/L							
25	6,988*	13,976*	5	–	–	–	–
(72) 2,4,6-Trichlorophenol, µg/L							
2.0	102	203	–	–	–	–	–
(73) Trihalomethanes, total (c), µg/L (Bromodichloromethane, Bromoform, Chlorodibromomethane, and Chloroform)							
–	–	–	80	–	–	–	–
(74) Vinyl chloride (c), µg/L							
0.18	–*	–*	2	–	–	–	–

(75) Xylenes, total, µg/L

166	1,407	2,814	10,000	–	–	–	–

D. *Escherichia (E.) coli* bacteria shall not exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31.

E. For radioactive materials, see parts 7050.0221, subpart 3; 7050.0222, subpart 3; and 7050.0224, subparts 2 and 3.

F. Temperature must not exceed five degrees Fahrenheit above natural in streams and three degrees Fahrenheit above natural in lakes, based on monthly average of maximum daily temperature, except in no case shall it exceed the daily average temperature of 86 degrees Fahrenheit.

Subp. 5. [Repealed, 24 SR 1105]

Subp. 5a. **Cool and warm water sport fish and associated use classes.** Water quality standards applicable to use classes 2B, 2C, or 2D; 3A, 3B, or 3C; 4A and 4B; and 5 surface waters. See parts 7050.0223, subpart 5; 7050.0224, subpart 4; and 7050.0225, subpart 2, for class 3D, 4C, and 5 standards applicable to wetlands, respectively.

A. MISCELLANEOUS SUBSTANCE, CHARACTERISTIC, OR POLLUTANT

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**
(1) Ammonia, un-ionized as N, µg/L						
40	–	–	–	–	–	–
(2) Bicarbonates (HCO_3), meq/L						
–	–	–	–	5	–	–
(3) Chloride, mg/L						
230	860	1,720	50/100/250	–	–	–
(4) Chlorine, total residual, µg/L						
11	19	38	–	–	–	–

(5) Cyanide, free, µg/L

5.2	22	45	–	–	–	–
2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(6) *Escherichia (E.) coli* bacteria, organisms/100 mL

See item D	–	–	–	–	–	–

(7) Eutrophication standards for lakes, shallow lakes, and reservoirs (phosphorus, total, µg/L; chlorophyll-a, µg/L; Secchi disk transparency, meters)

See part 7050.0222, subparts 4, 4a, and 5	–	–	–	–	–	–

(8) Eutrophication standards for rivers, streams, and navigational pools (phosphorus, total µg/L; chlorophyll-a (seston), µg/L; five-day biochemical oxygen demand (BOD_5), mg/L; diel dissolved oxygen flux, mg/L; chlorophyll-a (periphyton), mg/m^2)

See part 7050.0222, subparts 4 and 4b	–	–	–	–	–	–

(9) Hardness, Ca+Mg as $CaCO_3$, mg/L

–	–	–	50/250/500	–	–	–

(10) Hydrogen sulfide, mg/L

–	–	–	–	–	–	0.02

(11) Oil, µg/L

500	5,000	10,000	–	–	–	–

2B,C&D CS	2B,C&D MS	2B,C&D FAV	3A/3B/3C IC	4A IR	4B LS	5 AN
(12) Oxygen, dissolved, mg/L						
See part 7050.0222, subparts 4 to 6	–	–	–	–	–	–
(13) pH minimum, su						
6.5 See item E	–	–	6.5/6.0/6.0	6.0	6.0	6.0
(14) pH maximum, su						
9.0 See item E	–	–	8.5/9.0/9.0	8.5	9.0	9.0
(15) Radioactive materials						
See item F	–	–	–	See item F	See item F	–
(16) Salinity, total, mg/L						
–	–	–	–	–	1,000	–
2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**
(17) Sodium, meq/L						
–	–	–	–	60% of total cations	–	–
(18) Specific conductance at 25°C, μ mhos/cm						

–	–	–	–	1,000	–	–

(19) Sulfates, wild rice present, mg/L

–	–	–	–	10	–	–

(20) Temperature, °F

See item G	–	–	–	–	–	–

(21) Total dissolved salts, mg/L

–	–	–	–	700	–	–

(22) Total suspended solids (TSS), mg/L

See part 7050.0222, subpart 4	–	–	–	–	–	–

B. METALS AND ELEMENTS

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(1) Aluminum, total, µg/L

125	1,072	2,145	–	–	–	–

(2) Antimony, total, µg/L

31	90	180	–	–	–	–

(3) Arsenic, total, µg/L

53	360	720	–	–	–	–

(4) Boron, total, µg/L

–	–	–	–	500	–	–

(5) Cadmium, total, µg/L

1.1	33	67	–	–	–	–

Class 2B, 2C, and 2D cadmium standards are hardness dependent. Cadmium values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate cadmium standards for any hardness value not to exceed 400 mg/L.

2B,C&D CS	2B,C&D MS	2B,C&D FAV	3A/3B/3C IC	4A IR	4B LS	5 AN
(6) Chromium +3, total, µg/L						
207	1,737	3,469	–	–	–	–

Class 2B, 2C, and 2D trivalent chromium standards are hardness dependent. Chromium +3 values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate trivalent chromium standards for any hardness value not to exceed 400 mg/L.

(7) Chromium +6, total, µg/L						
11	16	32	–	–	–	–
(8) Cobalt, total, µg/L						
5.0	436	872	–	–	–	–
(9) Copper, total, µg/L						
9.8	18	35	–	–	–	–

Class 2B, 2C, and 2D copper standards are hardness dependent. Copper values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate copper standards for any hardness value not to exceed 400 mg/L.

(10) Lead, total, µg/L						
3.2	82	164	–	–	–	–

Class 2B, 2C, and 2D lead standards are hardness dependent. Lead values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate lead standards for any hardness value not to exceed 400 mg/L.

2B,C&D CS	2B,C&D MS	2B,C&D FAV	3A/3B/3C IC	4A IR	4B LS	5 AN
(11) Mercury, total in water, ng/L						
6.9	2,400*	4,900*	–	–	–	–
(12) Mercury, total in edible fish tissue, mg/kg or parts per million						
0.2	–	–	–	–	–	–
(13) Nickel, total, µg/L						
158	1,418	2,836	–	–	–	–

Class 2B, 2C, and 2D nickel standards are hardness dependent. Nickel values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate nickel standards for any hardness value not to exceed 400 mg/L.

2B,C&D CS	2B,C&D MS	2B,C&D FAV	3A/3B/3C IC	4A IR	4B LS	5 AN
(14) Selenium, total, µg/L						
5.0	20	40	–	–	–	–
(15) Silver, total, µg/L						
1.0	2.0	4.1	–	–	–	–

Class 2B, 2C, and 2D silver MS and FAV are hardness dependent. Silver values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate silver standards for any hardness value not to exceed 400 mg/L.

2B,C&D CS	2B,C&D MS	2B,C&D FAV	3A/3B/3C IC	4A IR	4B LS	5 AN
(16) Thallium, total, µg/L						
0.56	64	128	–	–	–	–
(17) Zinc, total, µg/L						
106	117	234	–	–	–	–

Class 2B, 2C, and 2D zinc standards are hardness dependent. Zinc values shown are for a total hardness of 100 mg/L only. See part 7050.0222, subpart 4, for examples at other hardness values and equations to calculate zinc standards for any hardness value not to exceed 400 mg/L.

C. ORGANIC POLLUTANTS OR CHARACTERISTICS

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**
(1) Acenaphthene, µg/L						
20	56	112	–	–	–	–
(2) Acetochlor, µg/L						
3.6	86	173	–	–	–	–
(3) Acrylonitrile (c), µg/L						
0.89	1,140*	2,281*	–	–	–	–
(4) Alachlor (c), µg/L						
59	800	1,600	–	–	–	–
(5) Anthracene, µg/L						
0.035	0.32	0.63	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**
(6) Atrazine (c), µg/L						
10	323	645	–	–	–	–
(7) Benzene (c), µg/L						
98	4,487	8,974	–	–	–	–
(8) Bromoform, µg/L						
466	2,900	5,800	–	–	–	–

(9) Carbon tetrachloride (c), µg/L

5.9	1,750*	3,500*	–	–	–	–

(10) Chlordane (c), ng/L

0.29	1,200*	2,400*	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(11) Chlorobenzene, µg/L (Monochlorobenzene)

20	423	846	–	–	–	–

(12) Chloroform (c), µg/L

155	1,392	2,78	–	–	–	–

(13) Chlorpyrifos, µg/L

0.041	0.083	0.17	–	–	–	–

(14) DDT (c), ng/L

1.7	550*	1,100*	–	–	–	–

(15) 1,2-Dichloroethane (c), µg/L

190	45,050*	90,100*	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(16) Dieldrin (c), ng/L

0.026	1,300*	2,500*	–	–	–	–

(17) Di-2-ethylhexyl phthalate (c), µg/L

2.1	–*	–*	–	–	–	–

(18) Di-n-Octyl phthalate, µg/L

30	825	1,650	–	–	–	–

(19) Endosulfan, µg/L

0.031	0.28	0.56	–	–	–	–

(20) Endrin, µg/L

0.016	0.090	0.18	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(21) Ethylbenzene (c), µg/L

68	1,859	3,717	–	–	–	–

(22) Fluoranthene, µg/L

1.9	3.5	6.9	–	–	–	–

(23) Heptachlor (c), ng/L

0.39	260*	520*	–	–	–	–

(24) Heptachlor epoxide (c), ng/L

0.48	270*	530*	–	–	–	–

(25) Hexachlorobenzene (c), ng/L

0.24	–*	–*	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(26) Lindane (c), µg/L (Hexachlorocyclohexane, gamma-)

0.036	4.4*	8.8*	–	–	–	–

(27) Methylene chloride (c), µg/L (Dichloromethane)

1,940	13,875	27,749	–	–	–	–

(28) Metolachlor

23	271	543	–	–	–	–

(29) Naphthalene, µg/L

81	409	818	–	–	–	–

(30) Parathion, µg/L

0.013	0.07	0.13	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(31) Pentachlorophenol, µg/L

5.5	15	30	–	–	–	–

Class 2B, 2C, and 2D standards are pH dependent, except that the CS will not exceed 5.5 µg/L. Pentachlorophenol values shown are for a pH of 7.5 only. See part 7050.0222, subpart 4, for examples at other pH values and equations to calculate pentachlorophenol standards for any pH value.

(32) Phenanthrene, µg/L

3.6	32	64	–	–	–	–

(33) Phenol, µg/L

123	2,214	4,428	–	–	–	–

(34) Polychlorinated biphenyls (c), ng/L (PCBs, total)

0.029	1,000*	2,000*	–	–	–	–

(35) 1,1,2,2-Tetrachloroethane (c), µg/L

13	1,127	2,253	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(36) Tetrachloroethylene (c), µg/L

8.9	428	857	–	–	–	–

(37) Toluene, µg/L

253	1,352	2,703	–	–	–	–

(38) Toxaphene (c), ng/L

1.3	730*	1,500*	–	–	–	–

(39) 1,1,1-Trichloroethane, µg/L

329	2,957	5,913	–	–	–	–

(40) 1,1,2-Trichloroethylene (c), µg/L

120	6,988	13,976	–	–	–	–

2B,C&D CS	**2B,C&D MS**	**2B,C&D FAV**	**3A/3B/3C IC**	**4A IR**	**4B LS**	**5 AN**

(41) 2,4,6-Trichlorophenol, µg/L

2.0	102	203	–	–	–	–

(42) Vinyl chloride (c), µg/L

9.2	–*	–*	–	–	–	–

(43) Xylenes, total, µg/L

166	1,407	2,814	–	–	–	–

D. *Escherichia (E.) coli* bacteria shall not exceed 126 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between April 1 and October 31.

E. For pH, maintain background. See part 7050.0222, subpart 6.

F. For radioactive materials, see parts 7050.0222, subpart 4; and 7050.0224, subparts 2 and 3.

G. Temperature must not exceed:

(1) Class 2B standard: five degrees Fahrenheit above natural in streams and three degrees Fahrenheit above natural in lakes, based on monthly average of maximum daily temperature, except in no case shall it exceed the daily average temperature of 86 degrees Fahrenheit;

(2) Class 2C standard: five degrees Fahrenheit above natural in streams and three degrees Fahrenheit above natural in lakes, based on monthly average of maximum daily temperature, except in no case shall it exceed the daily average temperature of 90 degrees Fahrenheit; and

(3) Class 2D standard: maintain background as defined in part 7050.0222, subpart 6.

Subp. 6. [Repealed, 24 SR 1105]

Subp. 6a. **Limited resource value waters and associated use classes.**

A. WATER QUALITY STANDARDS APPLICABLE TO USE CLASSES 3C, 4A, 4B, 5, AND 7 SURFACE WATERS

7	**3C**	**4A**	**4B**	**5**
LIMITED RESOURCE VALUE	**1C**	**1R**	**LS**	**AN**
(1) Bicarbonates (HCO_3), meq/L				
–	–	5	–	–
(2) Boron, µg/L				
–	–	500	–	–
(3) Chloride, mg/L				
–	250	–	–	–
(4) *Escherichia (E.) coli* bacteria, organisms/100 mL				
See item B	–	–	–	–
(5) Hardness, Ca+Mg as $CaCO_3$, mg/L				
–	500	–	–	–

7 LIMITED RESOURCE VALUE	**3C 1C**	**4A 1R**	**4B LS**	**5 AN**
(6) Hydrogen sulfide, mg/L				
–	–	–	–	0.02
(7) Oxygen, dissolved, mg/L				
See item C	–	–	–	–
(8) pH minimum, su				
6.0	6.0	6.0	6.0	6.0
(9) pH maximum, su				
9.0	9.0	8.5	9.0	9.0
(10) Radioactive materials				
–	–	See item D	See item D	–

7 LIMITED RESOURCE VALUE	**3C 1C**	**4A 1R**	**4B LS**	**5 AN**
(11) Salinity, total, mg/L				
–	–	–	1,000	–
(12) Sodium, meq/L				
–	–	60% of total cations	–	–
(13) Specific conductance at 25°C, µmhos/cm				

–	–	1,000	–	–

(14) Sulfates, wild rice present, mg/L

–	–	10	–	–

(15) Total dissolved salts, mg/L

–	–	700	–	–

(16) Toxic pollutants

See item E	–	–	–	–

B. *Escherichia (E.) coli* bacteria shall not exceed 630 organisms per 100 milliliters as a geometric mean of not less than five samples representative of conditions within any calendar month, nor shall more than ten percent of all samples taken during any calendar month individually exceed 1,260 organisms per 100 milliliters. The standard applies only between May 1 and October 31.

C. The level of dissolved oxygen shall be maintained at concentrations that will avoid odors or putrid conditions in the receiving water or at concentrations at not less than one milligram per liter (daily average) provided that measurable concentrations are present at all times.

D. For radioactive materials, see part 7050.0224, subparts 2 and 3.

E. Toxic pollutants shall not be allowed in such quantities or concentrations that will impair the specified uses.

Subp. 7. **Site-specific modifications of standards.**

A. The standards in this part and in parts 7050.0221 to 7050.0227 are subject to review and modification as applied to a specific surface water body, reach, or segment. If site-specific information is available that shows that a site-specific modification is more appropriate than the statewide or ecoregion standard for a particular water body, reach, or segment, the site-specific information shall be applied.

B. The information supporting a site-specific modification can be provided by the commissioner or by any person outside the agency. The commissioner shall evaluate all relevant data in support of a modified standard and determine whether a change in the standard for a specific water body or reach is justified.

C. Any effluent limit determined to be necessary based on a modified standard shall only be required after the discharger has been given notice of the specific proposed effluent limits and an opportunity to request a hearing as provided in part 7000.1800.

D. Through the procedures established in items A to C, the following site-specific reservoir eutrophication standards apply to Lake Pepin (25-0001-00) in lieu of the water quality standards listed in this part and part 7050.0222:

(1) Phosphorus, total	µg/L	less than or equal to 100
(2) Chlorophyll-a (seston)	µg/L	less than or equal to 28

Statutory Authority: *MS s 115.03; 115.44*

History: *9 SR 913; 12 SR 1810; 15 SR 1057; 18 SR 2195; 24 SR 1105; 24 SR 1133; 32 SR 1699; 39 SR 154*

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