Proposed Permanent Rules Relating to Water Quality

7001.1080 ESTABLISHMENT OF SPECIAL CONDITIONS FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS.

[For text of subpart 1, see M.R.]

Subp. 2. Effluent limitations, standards, or prohibitions.

Except as provided in subpart 3, the commissioner shall establish effluent limitations, standards, or prohibitions for each pollutant to be discharged from each outfall or discharge point of the permitted facility; except that if the commissioner finds that as a result of exceptional circumstances it is not feasible to establish effluent limitations, standards, or prohibitions which are applicable at the point of discharge, the commissioner shall establish effluent limitations, standards, or prohibitions for pollutants in internal waste streams at the point prior to mixing with other waste streams or cooling water streams. In determining the appropriate effluent limitations, standards, or prohibitions the commissioner shall comply with the following requirements:

[For text of item A, see M.R.]

B. In establishing effluent limitations, standards, or prohibitions the commissioner shall consider the following:

[For text of subitems (1) and (2), see M.R.]

(3) the applicable water quality standards in parts 7050.0100 to 7050.0220, 7050.0300 to 7050.0380, 7055.0010 to 7055.0120, 7055.0210 to 7055.0250 to 7055.0310, 7056.0010 to 7056.0120, 7056.0040 to 7056.0120.
WATER QUALITY STANDARDS FOR PROTECTION OF QUALITY-AND-PURITY WATERS OF THE STATE

7050.0110 SCOPE.

Parts 7050.0130 to 7050.0227 apply to all waters of the state, both surface and underground, and include general provisions applicable to the maintenance of water quality and aquatic habitats; definitions of water use classes; standards for dischargers of sewage, industrially and other wastes; and standards of quality and purity for specific water use classes. This chapter includes a classification system of beneficial uses applicable to waters of the state, narrative and numeric water quality standards that protect specific beneficial uses, nondegradation provisions, and other provisions to protect the physical, chemical, and biological integrity of waters of the state. Parts 7050.0400 to 7050.0470 classify all surface waters within or bordering Minnesota and designate the beneficial uses for which these waters are protected. This chapter apply applies to point source and nonpoint source discharges and to the physical alterations of wetlands. Other water quality rules of general or specific application that include any more stringent water quality or efficient standards or prohibitions are preserved.
Effluent limits and treatment requirements for discharges of sewage, industrial wastes, and other wastes are located in chapter 7053.

7050.0130 GENERAL DEFINITIONS.

Subpart 1. Scope. For purposes of this chapter, the following terms have the meanings given them.

A. Subp. 2. Terms defined in statute. The terms "waters of the state," "sewage," "industrial-wastes," and "other-wastes," "groundwater," "water pollution," and "toxic pollutant," as well as any other terms for which definitions are given in the pollution control statutes, as used herein have the meanings ascribed to them in Minnesota Statutes, sections 115.01 and 115.41, with the exception that disposal systems or treatment works operated under permit or certificate of compliance of the agency shall not be construed to be "waters of the state."

Subp. 3. Seven-day ten-year low flow or $7Q_{10}$.

A. "Seven-day ten-year low flow" or $7Q_{10}$ means the lowest average seven-day flow with a once in ten-year recurrence interval. A $7Q_{10}$ is derived by identifying the lowest average flow for a seven-consecutive-day period from daily flow records for each year of record, from a continuous flow gauging station. The seven-day average low flow values for each year are arrayed in order of magnitude and fitted to a probability distribution. The $7Q_{10}$ is the stream or river flow that is equal to or exceeded by 90 percent of the values in the distribution.
B. The period of record for determining the specific flow for the stated recurrence interval, where records are available, shall include at least the most recent ten years of record, including flow records obtained after establishment of flow regulation devices, if any. Where stream flow records are not available, the flow may be estimated on the basis of available information on the watershed characteristics, precipitation, runoff, and other relevant data. The calculations shall not be applied to lakes and their embayments which have no comparable flow recurrence interval.

Subp. 4. Commissioner. "Commissioner" means the commissioner of the Minnesota Pollution Control Agency or the commissioner's designee.

Subp. 5. Nonpoint source. "Nonpoint source" means a land management or land use activity that contributes or may contribute to ground and surface water pollution as a result of runoff, seepage, or percolation and that is not defined as a point source under Minnesota Statutes, section 115.01, subdivision 11.

"Physical-alteration" means the dredging, filling, draining, or permanent inundating of a wetland; reestablishing a degraded wetland by reestablishing its hydrology is not a physical-alteration.

Subp. 6. Surface waters. "Surface waters" means waters of the state excluding groundwater as defined in Minnesota Statutes, section 115.01, subdivision 6.
saturated-by-surface-water-or-groundwater-at-a-frequency-and
duration-sufficient-to-support-and-that-under-normal
circumstances-do-support-a-prevalence-of-vegetation-typically
adapted-for-life-in-saturated-soil-conditions---wetlands
generally-include-swamps-marshes-bogs-and-similar-areas-
constructed-wetlands-designed-for-wastewater-treatment-are-not
waters-of-the-state---wetlands-must-have-the-following
attributes:

(1) a-predominance-of-hydric-soils;
(2) inundated-or-saturated-by-surface-water-or
groundwater-at-a-frequency-and-duration-sufficient-to-support-a
prevalence-of-hydrophytic-vegetation-typically-adapted-for-life
in-a-saturated-soil-condition-and
(3) under-normal-circumstances-support-a
prevalence-of-such-vegetation;

Or Subp. 7. Other terms. Other terms and abbreviations
used herein-which in this chapter are defined in the part in
which they are used. Terms and abbreviations used in this
chapter that are not specifically defined in applicable federal
or state law shall be construed in conformance with the context,
and in relation to the applicable section of the statutes
pertaining to the matter at-hand, and current professional usage.

7050.0140 USES-OF USE CLASSIFICATIONS FOR WATERS OF THE STATE.
The-classifications-are-listed-separately-in-accordance
with-the-need-for-water-quality-protection-considerations-of
heat-use-in-the-interest-of-the-public,-and-other
considerations-as-indicated-in-Minnesota-Statutes,-section

wq-rule-1-10

Approved by Revisor

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Subpart 1. Introduction. Based on considerations of best usage and the need for water quality protection in the interest of the public, and in conformance with the requirements of Minnesota Statutes, section 115.44, the waters of the state are grouped into one or more of the classes in subparts 2 to 8. The classifications are listed in parts 7050.0400 to 7050.0470. The classifications should not be construed to be in order of priority, nor considered to be exclusive or prohibitory of other beneficial uses.

Subp. 2. Class 1 waters, domestic consumption. Domestic consumption includes all waters of the state that are or may be used as a source of supply for drinking, culinary or food processing use, or other domestic purposes and for which quality control is or may be necessary to protect the public health, safety, or welfare.

Subp. 3. Class 2 waters, aquatic life and recreation. Aquatic life and recreation includes all waters of the state that support or may support fish, other aquatic life, bathing, boating, or other recreational purposes and for which quality control is or may be necessary to protect aquatic or terrestrial life or their habitats or the public health, safety, or welfare.

Subp. 4. Class 3 waters, industrial consumption. Industrial consumption includes all waters of the state that are or may be used as a source of supply for industrial process or cooling water, or any other industrial or commercial purposes, and for which quality control is or may be necessary to protect
the public health, safety, or welfare.

Subp. 5. Class 4 waters, agriculture and wildlife.

Agriculture and wildlife includes all waters of the state that are or may be used for any agricultural purposes, including stock watering and irrigation, or by waterfowl or other wildlife and for which quality control is or may be necessary to protect terrestrial life and its habitat or the public health, safety, or welfare.

Subp. 6. Class 5 waters, aesthetic enjoyment and navigation. Aesthetic enjoyment and navigation includes all waters of the state that are or may be used for any form of water transportation or navigation or fire prevention and for which quality control is or may be necessary to protect the public health, safety, or welfare.

Subp. 7. Class 6 waters, other uses and protection of border waters. Other uses includes all waters of the state that serve or may serve the uses in subparts 2 to 6 or any other beneficial uses not listed in this part, including without limitation any such uses in this or any other state, province, or nation of any waters flowing through or originating in this state, and for which quality control is or may be necessary for the declared purposes in this part, to conform with the requirements of the legally constituted state or national agencies having jurisdiction over such waters, or for any other considerations the agency may deem proper.

Subp. 8. Class 7 waters, limited resource value waters.

Limited resource value waters include surface waters of the
state that have been subject to a use attainability analysis and have been found to have limited value as a water resource. Water quantities in these waters are intermittent or less than one cubic foot per second at the 70% flow as defined in part 7050.0130, subpart 3. These waters shall be protected so as to allow secondary body contact use, to preserve the groundwater for use as a potable water supply, and to protect aesthetic qualities of the water. It is the intent of the agency that very few waters be classified as limited resource value waters. The use attainability analysis must take into consideration those factors listed in Minnesota Statutes, section 115.44, subdivisions 2 and 3. The agency, in cooperation and agreement with the Department of Natural Resources with respect to determination of fisheries values and potential, shall use this information to determine the extent to which the waters of the state demonstrate that:

A. the existing and potential faunal and floral communities are severely limited by natural conditions as exhibited by poor water quality characteristics, lack of habitat, or lack of water;

B. the quality of the resource has been significantly altered by human activity and the effect is essentially irreversible; or

C. there are limited recreational opportunities, such as fishing, swimming, wading, or boating, in and on the water resource.

The conditions in items A and C or B and C must be
established by the use attainability analysis before the waters can be classified as limited resource value waters.

7050.0150 DETERMINATION OF COMPLIANCE-WITH WATER QUALITY, BIOLOGICAL AND PHYSICAL CONDITIONS, AND COMPLIANCE WITH STANDARDS AND-WATER-QUALITY-CONDITION.

Subpart 1. Policy and scope. The intent of the state is to protect and maintain surface waters in a condition which allows for the maintenance of all existing beneficial uses. The condition of a surface water body is determined by its physical, chemical, and biological qualities. The agency shall determine an exceedance of water quality standards or an impaired condition based on pollution of the waters of the state from point and nonpoint sources that has resulted in degradation of the physical, chemical, or biological qualities of the water body to the extent that attainable or previously existing beneficial uses are actually or potentially lost.

The narrative water quality standards in subpart 3 prescribe the qualities or properties of surface waters that are necessary for the protection of designated public uses and benefits. If the narrative standards in this part are exceeded, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses of the waters of the state.

Subparts 5 to 7 list factors the commissioner will use to determine if surface waters are in compliance with applicable narrative standards in subpart 3. Determination of compliance
with the narrative standards will be made for individual water
bodies on a case-by-case basis.

Subp. 2. Other standards preserved. The requirements of
this part are in addition to the application of other narrative
or numerical numeric water quality standards in this chapter.
If the requirements of this part conflict with any other
narrative or numerical numeric standard in this chapter, the
more stringent standard applies.

[For text of subp 3, see M.R.]

Subp. 4. Definitions. For the purposes of this part, the
following terms have the meanings given them.

A. "122-day ten-year low flow" or "122Q10" means the
lowest average 122-day flow with a once in ten-year recurrence
interval. A 122Q10 is derived using the same methods used to
derive a 7Q10, and the guidelines regarding period of record for
flow data and estimating a 7Q10 apply equally to determining a
122Q10, as described in part 7050.0130, subpart 3.

B. "Altered materially," "material increase,"
"material manner," "seriously impaired," and "significant
increase," as used in subparts 3, 5, and 6, mean that pollution
of the waters of the state has resulted in degradation of the
physical, chemical, or biological qualities of the water body to
the extent that attainable or previously existing beneficial
uses are actually or potentially lost.

B+C. "Chlorophyll-a" means a pigment in green plants
including algae. The concentration of chlorophyll-a, expressed
in weight per unit volume of water, is a measurement of the
abundance of algae.

E. "Ecoregion" means an area of relative
homogeneity in ecological systems based on similar soils, land
use, land surface form, and potential natural vegetation.

E. "Eutrophication" means the increased productivity
of the biological community in water bodies in response to
increased nutrient loading. Eutrophication is characterized by
increased growth and abundance of algae and other aquatic
plants, reduced water clarity, reduction or loss of dissolved
oxygen, and other chemical and biological changes. The
acceleration of eutrophication due to excess nutrient loading
from human sources and activities, called cultural
eutrophication, causes a degradation of lake quality and
possible loss of beneficial uses.

F. "Fish and other biota" and "lower aquatic biota"
mean the aquatic community including, but not limited to, game
and nongame fish, minnows and other small fish, mollusks,
insects, crustaceans and other invertebrates, submerged or
emergent rooted vegetation, suspended or floating algae,
substrate-attached algae, and microscopic organisms. "Other
biota" includes aquatic or semiaquatic organisms that depend on
aquatic systems for food or habitat such as amphibians and
certain wildlife species.

G. "Hydraulic residence time" means the time water
resides in a basin or, alternately, the time it would take to
fill the basin if it were empty.

H. "Impaired water" or "impaired condition" means
a water body that does not meet applicable water quality standards or fully support applicable beneficial uses, due in whole or in part to water pollution from point or nonpoint sources, or any combination thereof.

Fr I. "Index of biological integrity" or "IBI" means an index developed by measuring attributes of an aquatic community that change in quantifiable and predictable ways in response to human disturbance, representing the health of that community.

J. "Lake" means an enclosed basin filled or partially filled with standing fresh water with a maximum depth greater than 15 feet. Lakes may have no inlet or outlet, an inlet or outlet, or both an inlet and outlet.

K. "Lake morphometry" means the physical characteristics of the lake basin that are reasonably necessary to determine the shape of a lake, such as maximum length and width, maximum and mean depth, area, volume, and shoreline configuration.

L. "Mixing status" means the frequency of complete mixing of the lake water from surface to bottom, which is determined by whether temperature gradients are established and maintained in the water column during the summer season.

M. "Measurable increase" or "measurable impact" means a change in trophic status that can be discerned above the normal variability in water quality data using a weight of evidence approach. The change in trophic status does not require a demonstration of statistical significance to be
considered measurable. Mathematical models may be used as a tool in the data analysis to help predict changes in trophic status.

N. "Natural causes" means the multiplicity of factors that determine the physical, chemical, or biological conditions that would exist in a water body in the absence of measurable impacts from human activity or influence.

F. Q. "Normal fishery" and "normally present" mean the fishery and other aquatic biota expected to be present in the water body in the absence of pollution of the water, consistent with any variability due to natural hydrological, substrate, habitat, or other physical and chemical characteristics. Expected presence is based on comparing the aquatic community in the water body of interest to the aquatic community in representative reference water bodies.

F. Q. "Nuisance algae bloom" means an excessive population of algae that is characterized by obvious green or blue-green pigmentation in the water, floating mats of algae, reduced light transparency, aesthetic degradation, loss of recreational use, possible harm to the aquatic community, or possible toxicity to animals and humans. Algae blooms are measured through tests for chlorophyll-a, observations using a Secchi disk, and observations of impaired recreational and aesthetic conditions by the users of the water body, or any other reliable data that identifies the population of algae in an aquatic community.

F. Q. "Readily available and reliable data and
1 information" means chemical, biological, and physical data and
2 information determined by the commissioner to meet the quality
3 assurance and quality control requirements in subpart 8, that
4 are not more than ten years old from the time they are used for
5 the assessment. A subset of data in the ten-year period, or
6 data more than ten years old can be used if credible scientific
7 evidence shows that these data are representative of current
8 conditions.

9 By R. "Reference water body" means a water body least
10 impacted by point or nonpoint sources of pollution that is
11 representative of water bodies in the same ecoregion or
12 watershed. Reference water bodies are used as a base for
13 comparing the quality of similar water bodies in the same
14 ecoregion or watershed.

15 S. "Reservoir" means a body of water in a natural or
16 artificial basin or watercourse where the outlet or flow is
17 artificially controlled by a structure such as a dam.
18 Reservoirs are distinguished from river systems by having a
19 hydraulic residence time of at least 14 days. For purposes of
20 this item, residence time is determined using a flow equal to
21 the 1220 10 for the months of June through September, a 1220 10
22 for the summer months.

23 Mr T. "Secchi disk transparency" means the average
24 water depth of the point where a weighted white or black and
25 white disk disappears when viewed from the shaded side of a
26 boat, and the point where it reappears upon raising it after it
27 has been lowered beyond visibility. The Secchi disk measures
1. **Shallow lake** means an enclosed basin filled or partially filled with standing fresh water with a maximum depth of 15 feet or less or with 80 percent or more of the lake area shallow enough to support emergent and submerged rooted aquatic plants (the littoral zone). It is uncommon for shallow lakes to thermally stratify during the summer. The quality of shallow lakes will permit the propagation and maintenance of a healthy indigenous aquatic community and they will be suitable for boating and other forms of aquatic recreation for which they may be usable. For purposes of this chapter, shallow lakes are differentiated from wetlands and lakes on a case-by-case basis.

Wetlands are defined in part 7050.0186, subpart 1a.

2. "Summer-average" means a representative average of concentrations or measurements of nutrient enrichment factors, taken over one summer growing season from June 1 through September 30.

3. "Transparency tube" means a graduated clear plastic tube, 24 inches or more in length by 1-1/2 inches in diameter, with a stopper at the bottom end, the inside surfaces of which is painted black and white. The tube is filled with water from a surface water; the water is released through a valve at the bottom end until the painted surface of the stopper is just visible through the water column when viewed from the top of the tube. The depth of water at the point of initial visibility is the transparency. The transparency tube measures water clarity and is usually used in rivers and streams.
"Trophic status or condition" means the productivity of a lake as measured by the phosphorus content, algae abundance, and depth of light penetration.

"Water body" means a lake, reservoir, wetland, or a geographically defined portion of a river or stream.

Subp. 5. Impairment of waters due to excess algae or plant growth. In evaluating whether the narrative standards in subpart 3, which prohibit any material increase in undesirable slime growths or aquatic plants including algae, are being met, the commissioner will use all readily available and reliable data and information for the following factors of use impairment:

A. representative summer-average concentrations of total phosphorus and total nitrogen measured in the water body throughout the summer growing season;

B. representative summer-average concentrations of chlorophyll-a measured in the water body throughout the summer growing season;

C. representative measurements of light transparency in the water body, as measured with a Secchi disk in lakes or a transparency tube in rivers and streams, throughout the growing season; and

D. any other scientifically objective, credible, and supportable factor.

A finding of an impaired condition must be supported by data showing elevated levels of nutrients in item A, and at least one factor showing impaired conditions resulting from nutrient over-enrichment in items B and C. The trophic status
data described in items A to D must be assessed in light of the
magnitude, duration, and frequency of nuisance algae blooms in
the water body; and documented impaired recreational and
aesthetic conditions observed by the users of the water body due
to excess algae or plant growth, reduced transparency, or other
deleterious conditions caused by nutrient over-enrichment.

Assessment of trophic status and the response of a given
water body to nutrient enrichment will take into account the
trophic status of reference water bodies; and all relevant
factors that affect the trophic status of the given water body
appropriate for its geographic region, such as the temperature,
morphometry, hydraulic residence time, mixing status, watershed
size, and location. The factors in this subpart apply to lakes,
shallow lakes, and reservoirs and, where scientifically
justified, to rivers, streams, and wetlands.

[For text of subps 6 to 8, see M.R.]

7050.0185 NONDEGRADATION FOR ALL WATERS.

Subpart 1. Policy. The-potential-capacity-of-the-water-to
assimilate-additional-wastes-and The beneficial uses inherent in
water resources are valuable public resources. It is the policy
of the state of Minnesota to protect all waters from significant
degradation from point and nonpoint sources and wetland
alterations, and to maintain existing water uses, and aquatic
and wetland habitats, and the level of water quality necessary
to protect these uses. Existing beneficial uses and the water
quality necessary to protect the existing uses must be
maintained and protected from point and nonpoint sources of
It is the policy of the agency that water quality conditions that are better than applicable water quality standards and are better than levels necessary to support existing beneficial uses must be maintained and protected unless the commissioner finds that, after full satisfaction of this part, a lowering of water quality is acceptable. In allowing a lowering of water quality, the existing beneficial uses must be fully maintained and protected and the provisions in subpart 3 must be applied.

Subp. 2. Definitions. For the purpose of this part, the following terms have the meanings given them:

G. "Significant discharge" means:

(a) data collected from the receiving water or from a water representative of the receiving water;

(b) the entire once-in-ten-year, seven-day low-flow flow of the receiving water as defined in part 7050.0210, subpart 7 3; and

(c) a mass balance equation that treats all toxic pollutants as conservative substances.
Subp. 3. Minimum treatment. Any person authorized to maintain a new or expanded discharge of sewage, industrial waste, or other waste, whether or not the discharge is significant, shall comply with applicable water quality standards of this chapter and effluent limitations and water quality standards of this chapter and shall maintain all existing beneficial uses in the receiving waters limits in chapter 7050 and other applicable federal and state point source treatment requirements. Nonpoint sources of pollution shall be controlled as required by this chapter, chapters 7020 and 7080, and any other applicable federal or state requirements. All existing beneficial uses shall be maintained in the receiving waters.

[For text of subps 4 to 9, see M.R.]

7050.0186 WETLAND MITIGATION STANDARDS AND MITIGATION.

Subpart 1. Policy and wetland beneficial uses. It is the policy of the state to protect wetlands from significant adverse impacts on wetland-designated-use and prevent significant adverse impacts on wetland beneficial uses caused by chemical, physical, biological, or radiological changes. Wetlands mitigation maintains nondegradation of wetland-designated-use. The quality of wetlands shall be maintained to permit the propagation and maintenance of a healthy community of aquatic and terrestrial species indigenous to wetlands, preserve wildlife habitat, and support biological diversity of the landscape. In addition, these waters shall be suitable for boating and other forms of aquatic recreation as specified in
part 7050.0222, subpart 6; general industrial use as specified in part 7050.0223, subpart 5; irrigation, use by wildlife and livestock, erosion control, groundwater recharge, low flow augmentation, stormwater retention, and stream sedimentation as specified in part 7050.0224, subpart 4; and aesthetic enjoyment as specified in part 7050.0225, subpart 2.

Subp. la. Definitions.

A. "Physical alteration" means the dredging, filling, draining, or permanent inundating of a wetland. Restoring a degraded wetland by reestablishing its hydrology is not a physical alteration.

B. "Wetlands" are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Constructed wetlands designed for wastewater treatment are not waters of the state. Wetlands must have the following attributes:

(1) a predominance of hydric soils;

(2) inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in a saturated soil condition; and

(3) under normal circumstances, support a prevalence of such vegetation.
Subp. 1b. Wetland pollution prohibited. Wetland conditions shall be protected from chemical, physical, biological, or radiological changes to prevent significant adverse impacts to the designated beneficial uses listed in subpart 1. The nondegradation provisions in this chapter are applicable to wetlands.

Subp. 2. Wetland mitigation principles. The wetland mitigative sequence incorporates the following principles in items A to C in descending order of priority:

- Wetland mitigation maintains nondegradation of wetland designated uses:

  [For text of items A to C, see M.R.]

  [For text of subps 3 to 6, see M.R.]

7050.0190 VARIANCE FROM STANDARDS.

Subpart 1. Standard Variance. In any case where, upon application of the responsible person or persons, the agency finds that by reason of exceptional circumstances the strict enforcement of any provision of these standards would cause undue hardship, that disposal of the sewage, industrial waste, or other waste is necessary for the public health, safety, or welfare; and that strict conformity with the standards would be unreasonable, impractical, or not feasible under the circumstances; the agency in its discretion may grant a variance therefrom upon such conditions as it may prescribe for prevention, control, or abatement of pollution in harmony with the general purposes of these classifications and standards and the intent of the applicable state and federal laws. The United States Environmental Protection Agency shall be advised of
any permits—which variances that may be issued under this clause part together with information as to the need therefor.

Subp. 2. Listing. By October 1 each year, the commissioner shall prepare a list of the variances in effect granted by the agency under this part. This list shall must be available for public inspection and shall must be provided to the United States Environmental Protection Agency. This list shall must identify the person granted the variance, the rule from which the variance was granted, the water affected, the year granted, and any restrictions that apply in lieu of the rule requirement.

Subp. 3. Review. Variances from water quality standards granted by the agency under this part shall be subject to agency and public review at least every three years. Variances from discharge effluent limits and treatment requirements are granted by the agency under parts 7000.7000 and 7053.0195. Variances may be modified or suspended under the procedures in part 7000.7000.

7056.0210 GENERAL STANDARDS FOR DISCHARGERS-TO WATERS OF THE STATE.

Subpart 1. [See repealer.]

[For text of subp 2, see M.R.]

Subp. 3. [See repealer.]

Subp. 4. Highest levels of water quality. The highest levels of water quality, including, but not limited to, dissolved oxygen, which are attainable in the waters of the state by continuous operation at their the maximum capability of
all primary and secondary units of treatment works or their equivalent, discharging effluents into the waters of the state shall, must be maintained in order to enhance conditions for the specified uses.

Subp. 5. Mixing zones. Reasonable allowance will be made for dilution of the effluents, which are in compliance with part 7050, this chapter and chapter 7053, as applicable, following discharge into waters of the state. The agency, by allowing dilution, may will consider the effect on all uses of the waters of the state into which the effluents are discharged. The extent of dilution allowed regarding any specific discharge as specified in part 7053.0205, subpart 7, shall not violate the applicable water quality standards.

For expediting mixing and dispersion of sewage and industrial wastes or other waste effluents in the receiving waters are to be provided as far as practicable when deemed necessary by the agency to maintain the quality of the receiving waters in accordance with applicable standards in this chapter and chapter 7052, including the nondegradation requirements contained in those chapters. This subpart also applies in cases where a Class 7 water is tributary to a Class 2 water.

Mixing zones must be established by the agency on an individual basis, with primary consideration being given to the following guidelines:

[F] For text of items A to E, see M.R.]

F. Overlapping of mixing zones should be minimized and measures taken to prevent adverse synergistic effects.
Subp. 6c. Other requirements preserved. The requirements of this chapter and specifically the requirements in parts 7050.0211 to 7050.0212 are in addition to any requirement imposed an a discharge by the Clean Water Act, United States Code, title 33, sections 1251 et seq., and its implementing regulations. In the case of a conflict between the requirements of parts 7050.0210 to 7050.0228 this chapter and the requirements of the Clean Water Act or its implementing regulations, the more stringent requirement controls.

Subp. 7. Minimum stream flow. Dischargers of sewage, industrial waste, or other wastes Point and nonpoint sources of water pollution shall be controlled so that the water quality standards will be maintained at all stream flows which are equal to or exceeded by 90 percent of the seven-consecutive daily-average-flows-of-record (the lowest weekly flow with a once-in-ten-year recurrence-interval) for the critical-month(s), except for the purpose of setting ammonia effluent limits.

Dischargers of ammonia in sewage, industrial waste, or other wastes shall be controlled so that the ammonia water quality standard will be maintained at all stream flows which are equal to or exceeded by 90 percent of the 90 consecutive daily-average flows-of-record (the lowest 38 day flow with a once-in-ten-year recurrence-interval) for the critical-month(s) -- the period of record for determining the specific flow for the stated recurrence-interval where records are available shall include
at-test-the-most-recent-ten-years-of-record—including-flow
records-obtained-after-establishment-of-flow-regulation-devices;
if-any.—The-calculations-shall-not-be-applied-to-lakes-and
their-embayments-which-have-no-comparable-flow-recurrence
interval—Where-stream-flow-records-are-not-available—the-flow
may-be-estimated-on-the-basis-of-available-information-on-the
watershed-characteristics—precipitation—run-off—and-other
relevant-data greater than the 70% for the critical month or
months, unless another flow condition is specifically stated as
applicable in this chapter.

Allowance—shall-not-be-made-in-the-design-of-treatment
works-for-low-stream-flow-augmentation-unless-the-flow
augmentation-of-minimum-flow-is-dependable-and-controlled-under
applicable-laws-or-regulations:

Subp. 9. [See repealer.]
Subp. 10. [See repealer.]
Subp. 12. [See repealer.]
Subp. 13. [See text of subp 13, see M.R.]
Subp. 13a. [See repealer.]
Subp. 15. [See repealer.]
Subp. 17. [See repealer.]
Subp. 18. [See repealer.]

7050.0217 OBJECTIVES FOR PROTECTION OF SURFACE WATERS FROM TOXIC
POLLUTANTS.

Subpart 1. Purpose and applicability. The purpose of
parts 7050.0219 this part and part 7050.0218 are to
establish methods for developing site-specific water quality
criteria for toxic pollutants in the absence of numerical
numeric standards listed in parts 7050.0221 to 7050.0227
7050.0220, 7050.0222, and 7050.0227. The
site-specific numerical numeric criteria established by these
methods protect Class 1 surface waters for public and private
domestic consumption and Class 2 waters for the propagation and
maintenance of fish and aquatic life, the consumption of fish
and edible aquatic life by humans, the use of surface waters for
public and private domestic consumption where applicable, and
the consumption of aquatic organisms by wildlife. These
criteria also protect the uses assigned to Class 7, limited
resource value, waters as described in parts 7050.0221 to
7050.0140 and 7050.0227.

Subp. 2. Objectives. Protection of the aquatic community
from the toxic effects of pollutants means the protection of no
less than 95 percent of all the species in any aquatic
community. Greater protection may be applied to a community if
economically, recreationally, or ecologically important species
are very sensitive.

Protection of human consumers of fish, other edible aquatic
organisms, and water for drinking from surface waters means that
exposure from noncarcinogenic chemicals shall be below levels
expected to produce known adverse effects; and the incremental
cancer risk from exposure to carcinogenic chemicals, singly or
in mixtures, shall not exceed one in 100,000. The combined risk
from mixtures of carcinogens will be determined as described in
part 7050.0222, subpart 7, item D.
Protection of wildlife that eat aquatic organisms means the protection of the most sensitive wildlife species or populations. Greater protection may be applied if the exposed animals include endangered or threatened wildlife species listed in chapter 6134, or in the Code of Federal Regulations, title 50, part 17, under the Endangered Species Act of 1973, United States Code, title 16, sections 1531 to 1543.

Methods for protection of surface waters from the discharge of toxic pollutants not listed in parts 7050.0221 to 7050.0227 do not address all pollutants which may be discharged to surface waters and cause toxic effects. Therefore, methods are established in this part to address on a site-by-site and case-by-case basis the discharge into surface waters of toxic pollutants not listed in parts 7050.0221 to 7050.0227.

The agency may also adopt new standards according to Minnesota Statutes, chapter 14, to replace those listed in parts 7050.0221 to 7050.0227 that are more stringent or less stringent if new scientific evidence shows that a change in the standard is justified.

Site-specific criteria for toxic pollutants not listed in parts 7050.0221 to 7050.0227 shall be derived by the commissioner.
using the procedures in this part.

[For text of items A and B, see M.R.]

Subp. 3. Definitions. For the purposes of parts 7050.0217 to 7050.0227, the following terms have the meanings given them.

[For text of items A to C, see M.R.]

D. "Bioaccumulation factor" or "BAP" means the concentration of a pollutant in one or more tissues of an aquatic organism, exposed from any source of the pollutant but primarily from the dist- and-bottom-sediments-in-addition-to-the water column, diet, and bottom sediments, divided by the average concentration in the solution in which the organism had been living, under steady state conditions.

E. "Bioconcentration factor" or "BCF" means the concentration of a pollutant in one or more tissues of an aquatic organism, exposed only to the water as the source of the pollutant, divided by the average concentration in the solution in which the organism had been living, under steady state conditions.

[For text of items F and G, see M.R.]

F. "Chronic criterion" or "CC" means the highest water concentration of a toxicant or effluent to which organisms, including humans or wildlife, can be exposed indefinitely without causing chronic toxicity. "CC_{df}\) means a chronic criterion based on protecting humans from exposure to the pollutant from both drinking water and eating sport-caught fish. "CC_{f}\) means a chronic criterion based on protecting humans from exposure to the pollutant from eating sport-caught
fish only. "CC" means a chronic criterion based on protecting 

wiltlife from exposure to the pollutant from eating aquatic 

organisms.

1. "Chronic standard" or "CS" means the highest water 

concentration of a toxicant to which organisms can be exposed 

indefinitely without causing chronic toxicity. Chronic 

standards are listed in part parts 7050.0220 and 7050.0222. 

[For text of items J to N, see M.R.]

Q. "Final acute value" or "FAV" means an estimate of 

the concentration of a pollutant corresponding to the cumulative 

probability of 0.05 in the distribution of all the acute 

toxicity values for the genera or species from the acceptable 

acute toxicity tests conducted on a pollutant. The FAV is the 

acute toxicity limitation applied to mixing zones in part 

7050.0210, subpart 5; and to dischargers in parts 7050.0211 

7053.0215, subpart 1; 7050.0212 7053.0225, subpart 6; 

and 7050.0214 7053.0215, subpart 1.

[For text of item P, see M.R.]

Q. "X-value" means the fraction of the total 

allowable-daily-dose-of-a-toxic-pollutant-that-is-attributed-to 

drinking-water-and-fish-consumption-relative-to-other-sources-of 

the-pollutant-to-humans, such-as-air-or-food, in the calculation 

of criteria; in the absence of sufficient data to establish a 

chemical-specific-X-value, the X-value will be 0.2.

R. "Lethal concentration" or "LC50" means the 

toxicant concentration killing 50 percent of the exposed 

organisms in a specific time of observation.
5. R. "Lowest observable adverse effect level" or "LOAEL" means the lowest tested concentration that caused a statistically significant occurrence of an adverse effect in comparison with a control when all higher test concentrations caused adverse effects.

6. S. "Maximum criterion" or "MC" means the highest concentration of a toxicant in water to which aquatic organisms can be exposed for a brief time with zero to slight mortality. The MC equals the FAV divided by two.

7. T. "Maximum standard" or "MS" means the highest concentration of a toxicant in water to which aquatic organisms can be exposed for a brief time with zero to slight mortality. The MS equals the FAV divided by two. Maximum standards are listed in part 7050.0222.


9. V. "No observable adverse effect level" or "NOAEL" means the highest tested concentration that did not cause a statistically significant occurrence of an adverse effect in comparison with a control when no lower test concentration
caused an injurious or adverse effect.

X-1. "Octanol to water partition coefficient" or "K_{ow}" means the ratio of the concentration of a substance in the octanol phase to its concentration in the aqueous phase of a two-phase octanol to water system after equilibrium of the substance between the two phases has been achieved. The \log_{10} K_{ow} has been shown to be proportional to the bioconcentration potential of lipophilic organic chemicals.

X-2. "Parachor" means the surface tension adjusted molar volume, and specifically is the molecular weight of a liquid times the fourth root of its surface tension, divided by the difference between the density of the liquid and the density of the vapor in equilibrium with it; essentially constant over wide ranges of temperature. Parachor relates to the physical properties of a molecule that affect its potential to bioaccumulate in aquatic organisms.

X-3. "Percent effluent" means the representation of acute or chronic toxicity of an effluent as a percent of whole effluent mixed in dilution water, where acute toxicity is expressed by LC50s or EC50s and chronic toxicity is expressed by NOAELs.

AA-2. "Reference dose" or "Rfd" means an estimate of a daily exposure to the human population, including sensitive subpopulations, that is likely to be without appreciable risk or deleterious effects over a lifetime. The Rfd is expressed in units of daily dose as was formerly known as the acceptable daily-intake, mg/kg/day.
AA. "Relative source contribution factor" or "RSC"

means the fraction of the total allowable daily dose of a toxic pollutant that is attributed to drinking water and fish consumption relative to other sources of the pollutant to humans, such as air or food, in the calculation of criteria. In the absence of sufficient data to establish a chemical-specific RSC value, the RSC is 0.2.

[For text of items 88 to HH, see M.R.]

Subp. 4. Adoption of USEPA national criteria. The USEPA establishes aquatic life criteria under section 304(a)(1) of the Clean Water Act, United States Code, title 33, section 1314.
The USEPA criteria, subject to modification as described in this subpart, are applicable to Class 2 waters of the state. The USEPA has described the national methods for developing aquatic life criteria in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses," available through the National Technical Information Service, Springfield, VA.

USEPA criteria that vary with an ambient water quality characteristic such as total hardness or pH will be established for specific waters or reaches using data available to the commissioner. Central values such as the means or medians for the characteristic will be used unless there is evidence to support using different values. Values for water quality characteristics can be estimated for specific waters or reaches that have no data by using data from a nearby watershed with similar chemical properties.
B. The USEPA criteria are adopted, subject to modification as described in this item or item C, for application to the cool and warm water fisheries habitats and wetlands. Cool and warm water fisheries (Class 2Bd, 2B, and 2C) waters are defined in part 7050.0430 or listed in part 7050.0470. Wetlands (Class 2D) waters are defined in part 7050.0425 or listed in part 7050.0470.

(1) Acute data, in the form of the ranked genus mean acute values used by the USEPA to determine the national criteria, are the data used to determine the Class 2Bd, 2B, and 2C, and 2D criteria.

(4) The FAV is determined according to the national methods as follows:

\[
S^2 = \frac{\Sigma((\ln \text{GMAV})^2) - ((\Sigma(\ln \text{GMAV}))^2/4)}{\Sigma(\Sigma(\text{square root of } P))^2/4}
\]

\[
L = \frac{\Sigma(\ln \text{GMAV}) - S(\Sigma(\text{square root of } P))^4/4}{4}
\]

\[
A = S(\text{square root of } 0.05) + L
\]

FAV = e^A

where: FAV = final acute value

N = number of GMAVs

P = rank/N+1

\[\ln = \text{natural logarithm to base } e\]

S, L, and A are intermediate steps
(5) If, as a result of the recalculation of the USEPA criterion for application to Class 2Bd, 2B, and 2C, and 2D waters, the FAV for these water classes is lower than the FAV for Class 2A waters, the Class 2Bd, 2B, and 2C, or 2D FAV will be changed to equal the Class 2A FAV, unless the lower Class 2Bd, 2B, and 2C, or 2D FAV is justified based on the available toxicological data.

[For text of subitems (6) and (7), see M.R.]

[For text of item C, see M.R.]

[For text of subp 5, see M.R.]

Subp. 6. Human health-based criteria. Human health-based aquatic life criteria protect humans from potential adverse effects of eating fish and edible aquatic organisms from Class 2 waters and from the consumption of drinking water from Class 1 surface waters (includes Class 2A and 2Bd waters).

The REDs used to calculate criteria for noncarcinogenic chemicals and the q1*s used to calculate criteria for carcinogenic chemicals are obtained from the Integrated Risk Information System (IRIS), online, maintained, and made available by the USEPA-Office-of-Health-and-Environmental Assessment-Environmental-Criteria-and-Assessment-Office, Cincinnati, OH.

A. Criteria for noncarcinogenic chemicals applicable to surface waters designated Class 2A or 2Bd are calculated as follows:

\[
d_{\text{CEC}} \text{ mg/L} = \frac{\text{RFD mg/kg/day} \times \text{70 kg} \times \text{RSC}}{2 \text{ L/day} + [0.030 \text{ kg/day} \times \text{BAF}]} \]
where:

de \( CC_{df} \) = drinking water plus fish consumption chronic criterion in mg/L

RFD = reference dose in mg/kg/day

70 kg = standard weight of an adult

K = exposure-attributed to drinking water and fish consumption (see item B)

RSC = relative source contribution factor (see item E)

2 L/day = two liters of water consumed per day

0.030 kg/day = amount of fish assumed to be consumed per day

BAR = final BAF in liters (per kg of L/kg)

B. Criteria for noncarcinogenic chemicals applicable to Class 2B or 2C or 2D surface waters are calculated as follows:

\[
CC_{df} \text{ mg/L} = \frac{\text{RFD mg/kg/day} \times 70 \text{ kg} \times \text{RSC}}{0.01 \text{ L/day} + (0.030 \text{ kg/day} \times \text{BAR})}
\]

where:

de \( CC_{df} \) = fish consumption chronic criterion in mg/L

0.01 L/day = assumed incidental ingestion of water

other variables as previously identified

C. Criteria for carcinogenic chemicals applicable to surface waters designated Class 2A or 2Bc are calculated as follows:

\[
CC_{df} \text{ mg/L} = 70 \text{ kg} \times 10^{-5}
\]

where:

10\(^{-5}\) = a cancer risk level of one chance in 100,000

\( qL^* \) = the cancer potency factor in days \( \times \) times kg/mg

other variables as previously identified

D. Criteria for carcinogenic chemicals applicable to Class 2B or 2C surface waters are calculated as follows:

\[
CC_{df} \text{ mg/L} = 70 \text{ kg} \times 10^{-5}
\]

where: variables as previously identified
E. A default exposure-value-transfer relative source contribution factor (ESC) of 0.2 will must be used unless the Minnesota Department of Health uses a different exposure value in the calculation of a drinking water criterion, or sufficient exposure data is available to support an alternative value.

Subp. 7. Bioaccumulation. A final BAF can be determined either from bioaccumulation measurements in the field or from laboratory bioconcentration experiments. Laboratory tests should have a duration of at least 28 days, or the bioconcentration should have achieved steady state.

Bioconcentration tests should meet the requirements in the national methods.

If measured BAFs and BCFs are not available for lipophilic organic chemicals, a final BAF can be estimated using the relationship between bioconcentration and the log of the octanol to water partition coefficient (log \(K_{ow}\)) as described in item D.

[D for text of items A to C, see M.R.]

D. A final BAF for lipophilic organic chemicals is determined according to subitems (1) to (4) when no measured BAFs or BCFs are available.

(1) A BCF can be estimated based on the relationship between BCFs and the log \(K_{ow}\). A value of six is used to calculate the BCF for chemicals with log \(K_{ow}\) values greater than six. The equation is: \(\log_{10}\text{BCF} = 0.79\log_{10}\text{K}_{ow} - 0.40\)

\[
\log_{10}\text{BCF} = 0.79\log_{10}\text{K}_{ow} - 0.40
\]

where: \(\log_{10}\text{K}_{ow}\) is the log of the octanol to water partition coefficient.
If measured log $K_{OW}$ values are not available in the scientific literature, they may be estimated using quantitative structure activity relationships. The average percent lipid of the organisms used to establish this relationship is 7.6.

[For text of subitems (2) to (4), see M.R.]

[For text of subp 8, see M.R.]

Subp. 9. Wildlife-based criteria. The agency shall use the procedures in this subpart to establish wildlife-based criteria. Wildlife criteria shall protect wildlife consumers of freshwater aquatic organisms from adverse effects of toxic pollutants. Wildlife criteria are applicable to all surface waters, subject to the exceptions in subpart 10, item B, subitem (1).

[For text of item A, see M.R.]

B. Wildlife-based criteria are calculated using the following formula:

\[
\text{WEE CC}_{\text{w}} = \frac{\text{NOAEL} \times \text{BWt} \times \text{SSF}}{\text{DW} + (F \times \text{BAF})}
\]

where:
- \(\text{WEE CC}_{\text{w}}\) = wildlife ec chronic criterion in mg/L
- \(\text{NOAEL}\) = no observable adverse effect level in mg of substance per kg of body weight per day (mg/kg BWt/day) as derived from mammalian or avian toxicity studies. If the NOAEL is in mg/L, the NOAEL will be multiplied by the average daily volume of water consumed by the test animals in liters per day and divided by the average weight of the test animals in kg. If the NOAEL is in mg/kg of food consumed, the NOAEL will be multiplied by the average amount of food consumed daily by the test animals and divided by the average weight of the test animals in kg.
- \(\text{BWt}\) = average body weight of test organisms in kg
- \(\text{SSF}\) = species sensitivity factor to account for

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difference in the sensitivity in test species. This factor will vary between 1 and 0.1. The appropriate factor will be determined by the commissioner based on available scientific data on the relative sensitivity of the test organism compared to other wildlife species.

\[ DW = \text{average volume of water consumed per day by the test animals in liters} \]

\[ F = \text{average amount of food consumed per day by test animals in kg} \]

\[ \text{BAF} = \text{BAF in liters per kg} \]

[For text of item C, see M.R.]

D. A final BAF for calculating a wildlife chronic criterion \((\text{WC}_{2, \text{w}})\) is determined as in subpart 7, except that the BCFs and BAFs are adjusted to represent whole body BCFs and BAFs.

1. Normalized BCFs and BAFs are multiplied by 12 percent lipid for WC \((\text{CC}_{2, \text{w}})\) applicable to Class 2A waters.

2. Normalized BCFs and BAFs are multiplied by five percent lipid for WC \((\text{CC}_{2, \text{w}})\) applicable to Class 2Bd, 2B, and 2C waters.

[For text of subitems (3) to (5), see M.R.]

Subp. 10. Applicable criteria. The criterion for a pollutant includes: the CC, the MC, and the FAV. The criteria for toxic pollutants for surface waters are the lowest of the applicable criteria derived under this part.

A. Applicable criteria for Class 2A, 2Bd, 2B, and 2C, and 2D surface waters are the lowest of the following:

1. a CC and MC based on toxicity to aquatic organisms from subpart 4 or 5;

2. a CC based on plant toxicity from subpart 4 or 5;
(3) a decrease in 

(4) a concentration that will prevent 

unacceptable taste or odor in water, fish, or other edible 

aquatic organisms from subpart 8; or 

(5) a 

B. Applicable criteria for Class 7 waters are the 

lowest of the following: 

(1) a 

organisms can be sustained in the Class 7 water so that they are 

subject to predation by wildlife; or 

(2) other drinking water or aquatic life 

standards for toxic pollutants, consistent with the uses Class 7 

waters are protected for under part 7050:0308 7050.0140. 

C. In If the site-specific application of criteria 

developed in this subpart is used to establish an effluent 

limitation for national pollutant discharge elimination system 

and state disposal system permits or to establish the degree of 

remedial action cleanup activities, the provisions of part 

7050.0222, subpart 7, items B to E shall apply. 

7050.0220 SPECIFIC WATER QUALITY STANDARDS OF QUALITY-AND 

PURITY BY ASSOCIATED USE CLASSES. 

Subpart 1. General Purpose and Scope. The numerical 

numeric and narrative water quality standards in parts-7050:8227 

to-7050:8227 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 part chapter 

are exceeded, it is considered indicative of a polluted 

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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.

Standards for metals are expressed as total metal but must be converted to dissolved metal standards to determine water quality-based effluent limits. Water-quality-based effluent limits for metals are expressed as total metal. Conversion factors for converting total to dissolved metal standards are listed in Part 7050 of Subpart 9. The conversion factor for metals not listed in Part 7050 of Subpart 9 is one. The dissolved-metal-standard equals the total-metal-standard times the conversion factor.

The all surface waters are protected for multiple beneficial uses. Numeric water quality standards are listed for associated classes in tables under 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. Subpart 3a 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. Subpart 4a 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. Subpart 5a 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. subpart-6a; 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 listed in the tables in subparts 3a and 4a 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, part parts 143 and 4143, subparts E and 6 and part 143 (1992) and sections 141-61 and 141-62 as amended through July 17, 1992, excluding the bacteriological, radiological, treatment technological, and water treatment additive standards 2004. 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, epichlorohydin, 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 E, applies
- (c) means the chemical is assumed to be a human carcinogen
- CS or-“means chronic standard”-means-the-highest-water-concentration-of-a-toxicant-to-which-organisms-can-be-exposed-indefinitely-without-causing-chronic-toxicity, 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
- 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 or "means maximum standard" means the highest concentration of a toxicant in water to which aquatic organisms can be exposed for a brief time with zero to slight mortality. The MS equals the PAV divided by two, 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 CaCO₃.

TON means threshold odor number.

For the PAV and MS values noted with an asterisk (*), see part 7050.0227, subpart 7, item E.

E. Important synonyms or acronyms for some chemicals are listed in parentheses below the primary name. Standards that vary with total hardness or pH are in the form of formulas and are listed as numbered notes at the end of the table.

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 standard so it is not included in the tables.

Subp. 3a. Water-quality standards applicable to use classes IB, 2A, 3A, or 3B, 4A, and 4B.

Cold water sport, 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 OR CHARACTERISTIC, OR POLLUTANT
<table>
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<th>STANDARDS FOR - SS - CLASSES</th>
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<tbody>
<tr>
<td>2A</td>
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<tr>
<td>CS</td>
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</tr>
</tbody>
</table>

1. **Ammonia**, un-ionized as N — $\text{units}_e$ mg/L

2. **Asbestos, >10 μm (c)** — $\text{units}_e$ fibers/L

3. **Bicarbonates (HCO₃)** — $\text{units}_e$ mg/L

4. **Bromate, µg/L**

5. **Chloride** — $\text{units}_e$ mg/L

6. **Chlorine, total residual** — $\text{units}_e$ µg/L

7. **Chlorite, µg/L**

8. **Color** — $\text{units}_e$ Pt-Co

9. **Cyanide, free** — $\text{units}_e$ µg/L

10. **Dissolved oxygen** — $\text{units}_e$ mg/L

---

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1. daily
2. minimum
3. **9**-faecal-coliform-organisms—See-Note-8-1-below
4. **10** *Escherichia (E.) coli* bacteria, organisms/100 mL
5. See item D
6. **11** Eutrophication standards for lakes and reservoirs
7. (phosphorus, total, µg/L; chlorophyll-a, µg/L; Secchi depth
8. transparency, meters)
9. part 7059.0222, subparts 2 and 2a
10. **12** Fluoride --Units mg/L
11. **13** Fluoride --Units mg/L
12. **14** Foaming agents --Units mg/L
13. **15** Hardness, Ca+Mg as CaCO₃ --Units mg/L
14. **16** Hydrogen sulfide --Units mg/L
15. **17** Nitrate, as N --Units mg/L
16. **18** Nitrite as N --Units mg/L

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<td>4B</td>
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<td>Odor, --Units: TON</td>
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46 Approved by Revisor _________

wq-rule-1-10
1 (28) Specific conductance at 25°C, µmhos/cm
2
3 (25) (29) Sulfate --Units mg/L
4
5 (26) (30) Sulfates, wild rice present --Units mg/L
6
7 (27) Specific conductance at 25°C --Units µmhos/cm
8
9 2A 2A 2A 1B 3A/3B 4A 4B 5
10 CS MS FAV DC IC IR LS AN
11
12 (28) (31) Temperature --Units °F --No-material increase
13
14 No -- -- -- -- -- -- --
15
16 increase
17 (29) (32) Total dissolved salts --Units mg/L
18
19 (30) (33) Total dissolved solids --Units mg/L
20
21 (31) (34) Turbidity --Units NTU
22 10 none none 1-5 NA -- -- --
23
24 B. METALS AND ELEMENTS SUBSTANCE-OR-CHARACTERISTIC STANDARDS-FOR-USE-CLASSES
25
26 2A 2A 2A 1B 3A/3B 4A 4B 5
27 CS MS FAV DC IC IR LS AN
28
29 (1) Aluminum --Units total, µg/L

wq-rule-1-10

Approved by Revisor _________
(2) Antimony --units total, µg/L

(3) Arsenic --units total, µg/L

(4) Barium --units total, µg/L

(5) Beryllium --units total, µg/L

(6) Boron --units total, µg/L

(7) Cadmium --units total, µg/L --See-Note-No. 3-below

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 between 10 and 400 mg/L.

(8) Chromium, +3 --units total, µg/L --See-Note-No. 4 below

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 between 10 and 400 mg/L.
(9) Chromium, +6 --Units, total, µg/L
11 16 32 -- -- -- --

(10) Chromium, total --Units, µg/L
-- -- -- 100 -- -- --

(11) Cobalt --Units, total, µg/L
2.8 436 872 -- -- -- --

(12) Copper --Units, total, µg/L --See-Note-No.5-below
9.8 18 35 1,000 -- -- -- --

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 between 10 and 400 mg/L.

(13) Iron --Units, total, µg/L
-- -- -- 300(S) -- -- --

(14) Lead --Units, total, µg/L --See-Note-No.6-below
3.2 62 164 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 between 10 and 400 mg/L.

(15) Manganese --Units, total, µg/L
-- -- -- 50(S) -- -- -- --
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<td>4.9*</td>
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<td>4.900*</td>
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<tr>
<td>10</td>
<td>CS</td>
<td>MS</td>
<td>FAV</td>
<td>DC</td>
<td>3A/3B</td>
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(17) Mercury, total in edible fish tissue, mg/kg or parts per million

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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 between 10 and 400 mg/L.

(19) Selenium --Units=, total, ug/L

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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 between 10 and 400 mg/L.
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 between 10 and 400 mg/L.

C. ORGANICS-SUBSTANCE-OR-CHARACTERISTIC ORGANIC POLLUTANTS OR CHARACTERISTICS

STANDARDS-FOR-USE-CLASSES

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<td>IR</td>
<td>LS</td>
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18 (1) Acenaphthene --Units: µg/L

19 (2) Acetochlor, µg/L

20 (3) Acrylonitrile (c) --Units: µg/L

23 0.38 1,140* 2,281* -- -- -- --

24 (4) Alachlor (c) --Units: µg/L

25 3.8 800* 1,600* 2 -- -- --

26 (5) Aldicarb --Units: µg/L

27 -- -- -- 3 -- -- --

28 (6) Aldicarb sulfone --Units: µg/L
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<td>µg/L</td>
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<td>23</td>
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<td>Units</td>
<td>µg/L</td>
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<td>25</td>
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<td>27</td>
<td>28</td>
<td>2,4-Dichlorophenoxyacetic acid (2,4-D)</td>
<td>--</td>
<td>Units</td>
<td>µg/L</td>
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53

Approved by Revisor

wq-rule-1-10
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<tr>
<td>1</td>
<td>1,2-Dichloropropane (c)</td>
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</tr>
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<td>Dieldrin (c)</td>
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</tr>
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<td>--</td>
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</tr>
<tr>
<td>9</td>
<td>Endrin</td>
<td>--</td>
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<tr>
<td>10</td>
<td>Ethylbenzene (c)</td>
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* Approved by Revisor: 54
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<td>--</td>
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<tr>
<td>2</td>
<td>(40) (41)</td>
<td>Fluoranthene</td>
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<td>1.9</td>
<td>3.5</td>
<td>6.9</td>
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</tr>
<tr>
<td>4</td>
<td>(44) (42)</td>
<td>Glyphosate</td>
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<td>Units</td>
<td>µg/L</td>
</tr>
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<td>2A</td>
<td>1B</td>
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<td>DC</td>
<td>IC</td>
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<td>8</td>
<td>IR</td>
<td>LS</td>
<td>AN</td>
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</table>

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

12 (42) (44) Heptachlor (c) -- Units | ng/L |
14 0.10 | 260* | 520* | 400 | -- |
15 (43) (45) Heptachlor epoxide (c) -- Units | ng/L |
16 0.12 | 270* | 530* | 200 | -- |
17 (44) (46) Hexachlorobenzene (c) -- Units | ng/L |
18 0.061 | none | none | 1,000 | -- |
19 -- | -- |
20 (45) (47) Hexachlorocyclopentadiene -- Units | µg/L |
21 -- | -- | 50 | -- |
22 (46) (48) Lindane (c), µg/L (Hexachlorocyclohexane, gamma–) -- Units | µg/L |
24 0.0087 | 1.0* | 2.0* | 0.2 | -- |
25 (47) (49) Methoxychlor -- Units | µg/L |
26 -- | -- | 40 | -- |
27 (48) (50) Methylene chloride (c) (Dichloromethane) -- Units | µg/L (Dichloromethane) |

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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | 45 | 13,875* | 27,749* | 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 | (49) Oxamyl (Vydate) --Units (μg/L) 200 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 | (51) Metolachlor 23 | 271 | 543 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 | (50) Naphthalene --Units (μg/L) 64 65 | 409 | 818 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8 | (53) Oxamyl, μg/L (Vydate) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   | 2A 2A 2A 1B 3A/3B 4A 4B 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10 | CS MS FAV DC IC IR LS AN |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12 | (54) Parathion --Units (μg/L) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14 | 0.013 0.07 0.13 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16 | (56) Pentachlorophenol --Units (μg/L) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18 | |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20 | 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. |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22 | |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24 | (56) Phenanthrene --Units (μg/L) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 26 | (57) Phenol --Units (μg/L) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 28 | (58) Picloram --Units (μg/L) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

Approved by Revisor

wq-rule-1-10
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<th>Polychlorinated biphenyls (c) (+PCBs-total)</th>
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<td>t56t (59) Polychlorinated biphenyls (c) (+PCBs-total)--</td>
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<td>57</td>
<td>60</td>
<td>Units in ng/L (PCBs, total)</td>
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<td>0.014</td>
<td>1,000*</td>
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<td>5</td>
<td>57</td>
<td>60</td>
<td>Units in µg/L</td>
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<td>61</td>
<td>Styrene (c) --Units in µg/L</td>
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<td>100</td>
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<td>62</td>
<td>2,3,7,8-Tetrachlorodibenzo-p-dioxin (+PCDD-dioxin)</td>
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<td>1.1</td>
<td>1,127*</td>
<td>2,253*</td>
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<td>65</td>
<td>Tetrachloroethylene (c) --Units in µg/L</td>
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<td>18</td>
<td>3.6</td>
<td>428*</td>
<td>857*</td>
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<td>Toluene --Units in µg/L</td>
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<td>253</td>
<td>1,352</td>
<td>2,703</td>
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<td>66</td>
<td>Toxaphene (c) --Units in ng/L</td>
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<td>730*</td>
<td>1,500*</td>
<td>3,000</td>
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<td>23</td>
<td>64</td>
<td>67</td>
<td>2,4,5-TP (Silvex)--Units in µg/L (Silvex)</td>
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<td>--</td>
<td>50</td>
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<td>25</td>
<td>65</td>
<td>68</td>
<td>1,2,4-Trichlorobenzene --Units in µg/L</td>
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<td>--</td>
<td>--</td>
<td>70</td>
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<tr>
<td>27</td>
<td>66</td>
<td>69</td>
<td>1,1,1-Trichloroethane --Units in µg/L</td>
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<td>28</td>
<td>329</td>
<td>2,957</td>
<td>5,913</td>
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</table>
06/18/07

1 1,1,2-Trichloroethane --UnitstL µg/L

2 2A 2A 2A 1B 3A/3B 4A 4B 5

3 CS MS PAV DC IC 1R LS AN

6 1,1,2-Trichloroethylene (c) --UnitstL µg/L

7 25 6,988* 13,976* 5 -- -- -- --

8 2,4,6-Trichlorophenol --UnitstL µg/L

9 2.0 102 203 -- -- -- --

10 Trihalomethanes, total (c) (Bromodichloromethane)

11 (Bromoform) (Chlorodibromomethane) (Chloroform) --UnitstL µg/L

12 (Bromodichloromethane, bromoform, chlorodibromomethane, and Chloroform)

14 -- -- -- -- 100 80 -- -- --

15 Vinyl chloride (c) --UnitstL µg/L

16 0.17 none none 2 -- -- --

17 --* --*

18 Xylenes, total, --Unitst µg/L

19 166 1,407 2,814 10,000 -- -- --

20 Note: Not 27-RFASAB-COLIPERM-ORGANISMS

21 D. Escherichia (E., coli) bacteria shall not exceed

22 200 126 organisms per 100 milliliters as a geometric mean of not

23 less than five samples in representative of conditions within

24 any calendar month, nor shall more than ten percent of all

25 samples taken during any calendar month individually exceed 400

26 1,260 organisms per 100 milliliters. The standard applies only

27 between April 1 and October 31.

28 Note: Not 27-RADIOACTIVE-MATERIALS

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E. For radioactive materials, see parts 7050.0221, subparts 27, 37-47, and 50. 7050.0222, subparts 47-57, and subpart 2; and 7050.0224, subparts 27 and 37-47.

Note: No--37--Cadmium

Standards--that--vary--with Total-Hardness (+TH)

<table>
<thead>
<tr>
<th>EXAMPLE-STANDARDS--IN--mg/ft²</th>
<th>AT-TOTAL-HARDNESS--OPF</th>
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<tbody>
<tr>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>400</td>
<td>500</td>
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</table>

6. Example Standards--in--mg/ft²

SAB-ABN BS-AH VAB-ABN BS-AH

7. Note: No--47--Chromium--43

Standards--that--vary--with Total-Hardness (+TH)

<table>
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<th>EXAMPLE-STANDARDS--IN--mg/ft²</th>
<th>AT-TOTAL-HARDNESS--OPF</th>
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<td>200</td>
<td>300</td>
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<td>400</td>
<td>500</td>
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8. Example Standards--in--mg/ft²

SAB-ABN BS-AH VAB-ABN BS-AH

9. Note: No--57--Copper

Standards--that--vary--with Total-Hardness (+TH)

<table>
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<th>EXAMPLE-STANDARDS--IN--mg/ft²</th>
<th>AT-TOTAL-HARDNESS--OPF</th>
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<tr>
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<tr>
<td>200</td>
<td>300</td>
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<tr>
<td>400</td>
<td>500</td>
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</table>

10. Example Standards--in--mg/ft²

SAB-ABN BS-AH VAB-ABN BS-AH

11. Note: No--67--Lead

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Standards That Vary With Total Hardness (TH)

**CS**

\[
\text{Exp: } t = 273 \times \text{int(TH-mg/l)} + 7615
\]

**MS**

\[
\text{Exp: } t = 273 \times \text{int(TH-mg/l)} + 8169
\]

**FAV**

\[
\text{Exp: } t = 273 \times \text{int(TH-mg/l)} + 7643
\]

**Note: No>7.7-Nickel**

Standards That Vary With Total Hardness (TH)

**CS**

\[
\text{Exp: } t = 0.846 \times \text{int(TH-mg/l)} + 1545
\]

**MS**

\[
\text{Exp: } t = 0.846 \times \text{int(TH-mg/l)} + 3612
\]

**FAV**

\[
\text{Exp: } t = 0.846 \times \text{int(TH-mg/l)} + 8543
\]

**Note: No>0.7-Silver**

Standards That Vary With Total Hardness (TH)

**CS**

\[
8 \pm 12
\]

**MS**

\[
8 \pm 72 \times \text{int(TH-mg/l)} - 7,2156
\]

**FAV**

\[
1.2 \times \text{int(TH-mg/l)} = 520
\]

The MS and FAV shall be no less than 0.12 mg/l

**Note: No>9.7-Boron**

Standards That Vary With Total Hardness (TH)

**CS**

\[
\text{Exp: } t = 0.8473 \times \text{int(TH-mg/l)} + 7615
\]

Approved by Revisor: ____________
Subp. 4a. Water-quality standards applicable to use classes 1B or 1C, 2Bd, 3A or 3B, 4A and 4B, and 5 surface waters.

A. MISCELLANEOUS SUBSTANCE OR CHARACTERISTIC, OR POLLUTANT

<table>
<thead>
<tr>
<th>Substance/Characteristic</th>
<th>2Bd</th>
<th>2Bd</th>
<th>2Bd</th>
<th>1B/1C</th>
<th>3A/3B</th>
<th>4A</th>
<th>4B</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Ammonia, un-ionized as N</td>
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<td>40</td>
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<td>none</td>
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<tr>
<td>Asbestos, &gt;10 μm (c)</td>
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<td>7.0e+06</td>
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<tr>
<td>Bicarbonates (HCO₃⁻)</td>
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<td>Bromate, μg/L</td>
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</tbody>
</table>
(5) Chloride — Units = mg/L

230  860  1,720  250(S)  50/100  --  --  --

(6) Chlorine, total residual — Units = μg/L

11  19  38  --  --  --  --  --

(7) Chlorite, μg/L

--  --  --  1,000  --  --  --  --

(8) Color — Units = Pt-Co

--  --  --  15(S)  --  --  --  --

(9) Cyanide, free — Units = μg/L

5.2  22  45  200  --  --  --  --

(10) Dissolved oxygen — Units = mg/L — See part 7058.0222, subpart 3

(11) E. coli bacteria, organisms/100 mL

See — = = = = = = = =

item D

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

See = = = = = = = =

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

See = = = = = = = =

part

7050.0222,

subparts

3 and 3a

Approved by Revisor ————————
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1 | (12) Fluoride --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3 | (13) Fluoride --Units±, mg/L |   |   |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 |   |   |   |   |   |   |   |   |   | 2(S) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5 | (14) Foaming agents --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 500(S) |   |   |   |
| 7 | (15) Hardness, Ca+Mg as CaCO₃ --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 50/250 |
| 8 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9 | (16) Hydrogen sulfide --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 0.02 |
| 10 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11 | 2BD | 2BD | 2BD | 1B/1C | 3A/3B | 4A | 4B | 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12 | CS | MS | FAV | DC | IC | TR | LS | AN |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14 | (17) Nitrate as N --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16 | (18) Nitrite as N --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18 | (19) Nitrate + Nitrite as N --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20 | (20) Odor --Units±, TON |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22 | (21) Oil --Units±, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 23 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24 | (22) Oxygen, dissolved, mg/L |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 25 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 26 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 27 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 28 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

Approved by Revisor ____________

wq-rule-1-10
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<tr>
<th>Item</th>
<th>Unit</th>
<th>Description</th>
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<tbody>
<tr>
<td>23</td>
<td>pH</td>
<td>pH-low---Units= minimum, su</td>
</tr>
<tr>
<td>24</td>
<td>pH</td>
<td>pH-high---Units= maximum, su</td>
</tr>
<tr>
<td>25</td>
<td>Radioactive materials --See-Note-Not-2-below</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Salinity, total --Units= mg/L</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Sodium --Units= mg/L</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Specific conductance at 25°C --Units= uhos/cm</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Sulfate --Units= mg/L</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Sulfates, wild rice present --Units= mg/L</td>
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</tr>
<tr>
<td>31</td>
<td>Temperature --Units= °F --See-Note-Not-3 below</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Total dissolved salts --Units= mg/L</td>
<td></td>
</tr>
</tbody>
</table>
Total dissolved solids --Units, mg/L

Turbidity --Units, NTU

Table B. Metals and Elements Substance or Characteristic

<table>
<thead>
<tr>
<th></th>
<th>2Bd</th>
<th>2Bd</th>
<th>2Bd</th>
<th>1B/1C</th>
<th>3A/3B</th>
<th>4A</th>
<th>4B</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>CS</td>
<td>MS</td>
<td>FAV</td>
<td>DC</td>
<td>IC</td>
<td>IR</td>
<td>LS</td>
<td>AN</td>
</tr>
<tr>
<td>12</td>
<td>(1) Aluminum --Units, total, μg/L</td>
<td>125</td>
<td>1,072</td>
<td>2,145</td>
<td>50-</td>
<td>--</td>
<td>--</td>
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</tr>
<tr>
<td>14</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>(2) Antimony --Units, total, μg/L</td>
<td>5.5</td>
<td>90</td>
<td>180</td>
<td>6</td>
<td>--</td>
<td>--</td>
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<tr>
<td>17</td>
<td>(3) Arsenic --Units, total, μg/L</td>
<td>2.0</td>
<td>360</td>
<td>720</td>
<td>50</td>
<td>10</td>
<td>--</td>
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<tr>
<td>19</td>
<td>(4) Barium --Units, total, μg/L</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>2,000</td>
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</tr>
<tr>
<td>21</td>
<td>(5) Beryllium --Units, total, μg/L</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>4.0</td>
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</tr>
<tr>
<td>23</td>
<td>(6) Boron --Units, total, μg/L</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>500</td>
<td>--</td>
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<tr>
<td>25</td>
<td>(7) Cadmium --Units, total, μg/L --See-Note-Ne-4-below</td>
<td>1.1</td>
<td>33</td>
<td>67</td>
<td>5</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

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 between 10 and 400 mg/L.

(8) Chromium $\text{V}+3$ --Units $\text{mg/L}$ --See-Note-No.-5 below

207 1,737 3,469 = = = = =

Class 2Bd trivalent chromium standards are hardness dependent.

Chromium $\text{V}+3$ 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 between 10 and 400 mg/L.

<table>
<thead>
<tr>
<th>2Bd</th>
<th>2Bd</th>
<th>2Bd</th>
<th>1B/1C</th>
<th>3A/3B</th>
<th>4A</th>
<th>4B</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>MS</td>
<td>FAV</td>
<td>DC</td>
<td>IC</td>
<td>IC</td>
<td>IR</td>
<td>LS</td>
</tr>
</tbody>
</table>

(9) Chromium $\text{VI}+6$ --Units $\text{mg/L}$

11 16 32 = = = = =

(10) Chromium, total --Units $\text{mg/L}$

= = = 100 = = = =

(11) Cobalt --Units $\text{mg/L}$

2.8 436 872 = = = = =

(12) Copper --Units $\text{mg/L}$ --See-Note-No.-6-below

9.8 18 35 1,000 = = = =

(9)

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 between 10 and 400 mg/L.
1. Iron --Units, total, mg/L
2. -- -- -- -- 300(S) -- -- -- --

3. Lead --Units, total, mg/L --See-Note-No.-7-below
4. 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 between 10 and 400 mg/L.

5. Manganese --Units, total, mg/L
6. -- -- -- -- 50(S) -- -- -- --

7. Mercury --Units, total in water, mg/L
8. 0.0069 2.4* 4.9* 2 -- -- -- --
9. 6.9 2,400* 4,900* 2,000

10. Mercury, total in edible fish tissue, mg/kg or parts per million
11. 0.2 -- -- -- -- -- --

12. (15) Nickel --Units, total, mg/L --See-Note-No.-8 below
13. 158 1,418 2,836 ±00 -- -- -- --
14. --

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.
value between 10 and 400 mg/L.

1. Selenium --Units: total, μg/L

|   | 5.0 | 20 | 40 | 50 | -- | -- | -- | -- |

2. Silver --Units: total, μg/L --See-Note-No.-9

|   | 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 between 10 and 400 mg/L.

3. Thallium --Units: total, μg/L

|   | 0.28 | 64 | 129 | 2 | -- | -- | -- | -- |

4. Zinc --Units: total, μg/L --See-Note-No.-10

|   | 106 | 117 | 234 | 5,000 | -- | -- | -- | -- |

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 between 10 and 400 mg/L.

C. ORGANIC-POLLUTANTS OR CHARACTERISTICS ORGANIC POLLUTANTS OR CHARACTERISTICS

STANDARDS-FOR-USE-CLASSES
<table>
<thead>
<tr>
<th></th>
<th>2Bd</th>
<th>2Bd</th>
<th>2Bd</th>
<th>1B/1C</th>
<th>3A/3B</th>
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<tbody>
<tr>
<td>1</td>
<td>CS</td>
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<td>4</td>
<td>(1)</td>
<td>Acenaphthene --Units µg/L</td>
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<td>Acetochlor, µg/L</td>
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<td>Acrylonitrile (c) --Units µg/L</td>
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<td>9</td>
<td>0.38</td>
<td>1,140*</td>
<td>2,281*</td>
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<td>4.2</td>
<td>800*</td>
<td>1,600*</td>
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<td>(5)</td>
<td>Aldicarb --Units µg/L</td>
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<td>Aldicarb sulfoxide --Units µg/L</td>
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<td>28</td>
<td>(56)</td>
<td>Pentachlorophenol</td>
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<td>µg/L</td>
<td>See-Note</td>
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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.

<p>| (56) Phenanthrene --Units ug/L | 3.6 | 64 | -- | -- | -- | -- |
| (57) Phenol --Units ug/L | 123 | 2,214 | 4,428 | -- | -- | -- |
| (58) Picloram --Units ug/L | -- | -- | -- | 500 | -- | -- |
| (59) Polychlorinated biphenyls (c) --Units ng/L (PCBs, total) | 0.029 | 1,000* | 2,000* | 500 | -- | -- |
| (60) Simazine --Units ug/L | 2Bd | 2Bd | 2Bd | 1B/1C | 3A/3B | 4A | 4B | 5 |
| (61) Styrene (c) --Units ug/L | CS | MS | FAV | DC | IC | IR | LS | AN |
| (62) 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD-dioxin) --Units ng/L | -- | -- | -- | 0.03 | -- | -- | -- |
| (63) 1,1,2,2-Tetrachloroethane (c) --Units ug/L | 1.5 | 1,127* | 2,253* | -- | -- | -- |
| (64) Tetrachloroethylene (c) --Units ug/L | -- | -- | -- | -- | -- | -- | -- | -- |</p>
<table>
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<th>No.</th>
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<th>Concentration (ng/L)</th>
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<td>2,703, 1,000</td>
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<td>3</td>
<td>Tetrachloroethylene (c)</td>
<td>3,000</td>
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<tr>
<td>4</td>
<td>2,4,5-TP</td>
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<tr>
<td>5</td>
<td>1,2,4-Trichlorobenzene</td>
<td>70</td>
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<tr>
<td>6</td>
<td>1,1,2-Trichloroethane</td>
<td>200</td>
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<tr>
<td>7</td>
<td>1,1,1-Trichloroethane</td>
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<td>8</td>
<td>1,1,2-Trichloroethylene (c)</td>
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<tr>
<td>9</td>
<td>2,4,6-Trichlorophenol</td>
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<td>10</td>
<td>Trihalomethanes, total (c)</td>
<td>102</td>
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<tr>
<td>11</td>
<td>Vinyl chloride (c)</td>
<td>2</td>
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</table>

*Note: Concentrations are in ng/L.*

**Approved by Revisor:__________**
1 (72) (75) Xylenes, total -- Units, \( \mu g/L \)
2 166 1,407 2,814 10,000 -- -- --
3 **Note-** No.--27.--PECAL-COLIFORM-ORGANISMS
4 D. *Escherichia (E.) coli* bacteria shall not exceed
5 \( 200 \times 10^6 \) organisms per 100 milliliters as a geometric mean of not
6 less than five samples in representative of conditions within
7 any calendar month, nor shall more than ten percent of all
8 samples taken during any calendar month individually
9 exceed \( 2,000 \times 10^6 \) organisms per 100 milliliters. The standard
10 applies only between April 1 and October 31.
11 **Note-** No.--27.--RADIOACTIVE-MATERIALS
12 E. For radioactive materials, see parts 7050.0221,
13 subparts-27; subpart 3-47 and-5; 7050.0222, subparts-47-57 and-6
14 subpart 3; and 7050.0224, subparts 27 and 37 and-4.
15 **Note-** No.--37.--TEMPERATURE:
16 F. Temperature must not exceed five degrees
17 Fahrenheit above natural in streams and three degrees Fahrenheit
18 above natural in lakes, based on monthly average of maximum
19 daily temperature, except in no case shall it exceed the daily
20 average temperature of 86 degrees Fahrenheit.
21 **Note-** No.--47.--Cadmium
22 **STANDARD**S THAT VARY WITH-- EXAMPLES--STANDARDS IN -- mg/l
23 **TOTAL HARDNESS** (TH) AT--TOTAL HARDNESS OF:
24 50 100 200 300 400
25 26 65--
27 exp{\( -7,852 + 170(TH-mg/l) - 3490 \)}
28 29 MS--
30 \exp{\( -128 + 170(TH-mg/l) - 1,605 \)}
31 32 FAV--
33 \exp{\( -120 + 170(TH-mg/l) - 899 \)}

Approved by Revisor
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<tr>
<th>Note-No.</th>
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<td><strong>EXAMPLE-STANDARDS-IN-µg/l</strong></td>
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<tr>
<td>TOTAL-HARDNESS-(TH)</td>
<td>AT-TOTAL-HARDNESS-OP</td>
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<tr>
<td><strong>ES</strong></td>
<td>50 100 200 300 400</td>
</tr>
<tr>
<td>exp(0.519 ln(TH-mg/l)+1.563)</td>
<td>117 207 365 509 644</td>
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<tr>
<td><strong>MS</strong></td>
<td>984 1737 3064 4278 5405</td>
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<tr>
<td>exp(0.619 ln(TH-mg/l)+3.688)</td>
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<tr>
<td><strong>PAV</strong></td>
<td>1966 3469 6120 8530 10797</td>
</tr>
<tr>
<td>exp(0.619 ln(TH-mg/l)+4.360)</td>
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<tr>
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<td>AT-TOTAL-HARDNESS-OP</td>
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<tr>
<td><strong>ES</strong></td>
<td>50 100 200 300 400</td>
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<tr>
<td>exp(0.620 ln(TH-mg/l)+0.577)</td>
<td>6.4 9.0 15 19 23</td>
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<tr>
<td><strong>MS</strong></td>
<td>9.2 1.8 34 50 65</td>
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<tr>
<td>exp(0.9442 ln(TH-mg/l)+1.464)</td>
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<td><strong>PAV</strong></td>
<td>10 35 60 100 131</td>
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<tr>
<td>exp(0.9442 ln(TH-mg/l)+4.7793)</td>
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<tr>
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<td>50 100 200 300 400</td>
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<tr>
<td>exp(1.273 ln(TH-mg/l)+1.705)</td>
<td>1.3 3.2 7.7 13 19</td>
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<tr>
<td><strong>MS</strong></td>
<td>34 57 197 331 477</td>
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<tr>
<td>exp(1.273 ln(TH-mg/l)+1.460)</td>
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<td><strong>PAV</strong></td>
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<td>exp(1.273 ln(TH-mg/l)+0.7643)</td>
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<td>exp(0.046 ln(TH-mg/l)+1.645)</td>
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Subp. 5a. Water-quality-standards-applicable-to-use

Classes 2B, 2C, or 2D; 3A, 3B, or 3C; 4A and 4B; and 5 surface waters. See Note 4 below 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 OR CHARACTERISTIC, OR POLLUTANT

STANDARDS-FOR-USE-CLASSES

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1. Ammonia, un-ionized as N — Unites per L

2. Bicarbonates (HCO₃) — Unites per L

3. Chloride — Unites per L

4. Chlorine, total residual — Unites per L

5. Cyanide, free — Unites per L

6. Dissolved-oxygen — Unites per L

7. Fecal-coli-form-organisms — Unites per L

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

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

CS NS FAV IC IR LS AN

(B) Hardness, Ca+Mg as CaCO₃ --Units mg/L

-- -- -- 50/250/500 -- -- --

(9) Hydrogen sulfide --Units mg/L

-- -- -- -- -- 0.02

(10) Oil --Units µg/L

500 5,000 10,000 -- -- -- --

(11) Oxygen, dissolved, mg/L

See -- -- -- -- -- --

part

7050.0222,

subparts

4 to 6

(12) pH—low--Units minimum, su --See-Note-No.--4--below

6.5 -- -- 6.5/6.0/6.0 6.0 6.0 6.0

See

item E

(13) pH—high--Units maximum, su --See-Note-No.--4

below

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wq-rule-1-10
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<th>Temperature</th>
<th>Total dissolved salts</th>
<th>Turbidity</th>
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<td>23</td>
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<td>24</td>
<td>item G</td>
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<td>26</td>
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<td>--</td>
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<td>27</td>
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<td>28</td>
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<td>See</td>
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<td>31</td>
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<td>See</td>
<td>See</td>
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<tr>
<td>32</td>
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<tr>
<td>Substance</td>
<td>Units</td>
<td>Total, μg/L</td>
<td>100 mg/L</td>
<td>200 mg/L</td>
<td>300 mg/L</td>
<td>400 mg/L</td>
<td>500 mg/L</td>
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<tr>
<td>Aluminum</td>
<td>125</td>
<td>1,072</td>
<td>2,145</td>
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<td>Antimony</td>
<td>31</td>
<td>90</td>
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<td>--</td>
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<tr>
<td>Arsenic</td>
<td>53</td>
<td>360</td>
<td>720</td>
<td>--</td>
<td>--</td>
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<tr>
<td>Boron</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<td>500</td>
<td>--</td>
<td></td>
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<tr>
<td>Cadmium</td>
<td>1.1</td>
<td>33</td>
<td>67</td>
<td>--</td>
<td>--</td>
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<tr>
<td>Chromium</td>
<td>207</td>
<td>1,737</td>
<td>3,469</td>
<td>--</td>
<td>--</td>
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</tbody>
</table>

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 between 10 and 400 mg/L.

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 between 10 and 400 mg/L.

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 between 10 and 400 mg/L.

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 between 10 and 400 mg/L.

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 between 10 and 400 mg/L.

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 between 10 and 400 mg/L.

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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 between 10 and 400 mg/L.
1 (8) Cobalt --Units: total, µg/L
2  5.0  436  872  --  --  --  --

4  CS  MS  FAV  IC  IR  LS  AN

6 (9) Copper --Units: total, µg/L --See-Note-9-beiow
7  9.8  18  35  --  --  --  --

9 Class 2B, 2C, and 2D copper standards are hardness dependent.

10 Copper values shown are for a total hardness of 100 mg/L only.

11 See part 7050.0222, subpart 4, for examples at other hardness

values and equations to calculate copper standards for any

hardness value between 10 and 400 mg/L.

14 (10) Lead --Units: total, µg/L --See-Note-10-beiow
15  3.2  92  164  --  --  --  --

16 Class 2B, 2C, and 2D lead standards are hardness dependent.

17 Lead values shown are for a total hardness of 100 mg/L only.

18 See part 7050.0222, subpart 4, for examples at other hardness

values and equations to calculate lead standards for any

hardness value between 10 and 400 mg/L.

21 (11) Mercury --Units: µg/L, total in water, mg/L
22  0.0069  2.4*  4.9*  --  --  --  --

23  6.9  2,400*  4,900*

24 (12) Mercury, total in edible fish tissue, mg/kg or parts per
25 million
26  0.2  --  --  --  --  --  --

27 * (13) Nickel --Units: total, µg/L --See-Note-Ne-
28 *-below
29  158  1,410  2,036  --  --  --  --

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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 between 10 and 400 mg/L.

<table>
<thead>
<tr>
<th>Selenium -- Units: total, µg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0</td>
</tr>
</tbody>
</table>

Class 2B, 2C, and 2D silver standards 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 between 10 and 400 mg/L.

<table>
<thead>
<tr>
<th>Thorium -- Units: total, µg/L</th>
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</thead>
<tbody>
<tr>
<td>0.56</td>
</tr>
</tbody>
</table>

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 between 10 and 400 mg/L.
C. ORGANIC POLLUTANTS OR CHARACTERISTICS

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<tbody>
<tr>
<td>CS</td>
<td>MS</td>
<td>FAV</td>
<td>IC</td>
<td>IR</td>
<td>LS</td>
<td>AN</td>
<td></td>
</tr>
</tbody>
</table>

1 (1) Acenaphthene -- Units μg/L
   | 20      | 56      | 112     | --        | --  | --  | -- |

2 (2) Acetochlor, μg/L
   | 1.7     | 86      | 173     | --        | --  | --  | -- |

3 (3) Acrylonitrile (c) -- Units μg/L
   | 0.035   | 0.32    | 0.63    | --        | --  | --  | -- |

4 (4) Alachlor -- Units μg/L
   | 59      | 800     | 1,600   | --        | --  | --  | -- |

5 (5) Anthracene -- Units μg/L
   | 0.035   | 0.32    | 0.63    | --        | --  | --  | -- |

6 (6) Atrazine -- Units μg/L
   | 10      | 323     | 645     | --        | --  | --  | -- |

7 (7) Benzene -- Units μg/L
   | 114     | 98      | 4,487   | 8,974     | --  | --  | -- |

8 (8) Bromoform -- Units μg/L
   | 466     | 2,900   | 5,800   | --        | --  | --  | -- |

9 (9) Carbon tetrachloride (c) -- Units μg/L
   | 5.9     | 1,750*  | 3,500*  | --        | --  | --  | -- |

10 (10) Chlordane (c) -- Units μg/L
<pre><code>  | 0.29    | 1,200*  | 2,400*  | --        | --  | --  | -- |
</code></pre>
<table>
<thead>
<tr>
<th>No.</th>
<th>Compound</th>
<th>Unit(s)</th>
<th>Concentration (ug/L)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Chlorobenzene</td>
<td>µg/L (Monochlorobenzene)</td>
<td>20 423 845</td>
</tr>
<tr>
<td>2</td>
<td>Chloroform</td>
<td>µg/L (Chloroform)</td>
<td>155 1,392 2,784</td>
</tr>
<tr>
<td>3</td>
<td>Chlorpyrifos</td>
<td>µg/L (Chlorpyrifos)</td>
<td>2 411</td>
</tr>
<tr>
<td>4</td>
<td>Dieldrin</td>
<td>ng/L (Dieldrin)</td>
<td>1.7 550* 1,100*</td>
</tr>
<tr>
<td>5</td>
<td>1,2-Dichloroethane</td>
<td>µg/L (1,2-Dichloroethane)</td>
<td>190 45,050* 90,100*</td>
</tr>
<tr>
<td>6</td>
<td>Di-2-ethylhexyl phthalate</td>
<td>µg/L (Di-2-ethylhexyl phthalate)</td>
<td>2.1 none none</td>
</tr>
<tr>
<td>7</td>
<td>Di-n-Octyl phthalate</td>
<td>µg/L (Di-n-Octyl phthalate)</td>
<td>none none</td>
</tr>
<tr>
<td>8</td>
<td>Endosulfan</td>
<td>µg/L (Endosulfan)</td>
<td>0.031 0.28 0.56</td>
</tr>
<tr>
<td>9</td>
<td>Endrin</td>
<td>µg/L (Endrin)</td>
<td>0.016 0.090 0.18</td>
</tr>
<tr>
<td>10</td>
<td>Ethylbenzene</td>
<td>µg/L (Ethylbenzene)</td>
<td>60 1,859 3,717</td>
</tr>
<tr>
<td>11</td>
<td>Fluoranthene</td>
<td>µg/L (Fluoranthene)</td>
<td>0.041 0.083 0.17</td>
</tr>
<tr>
<td>12</td>
<td>1,3-Dichlorobenzene</td>
<td>µg/L (1,3-Dichlorobenzene)</td>
<td>0.026 1,300* 2,500*</td>
</tr>
</tbody>
</table>
| 13  | DDT (c)                         | ng/L (DDT (c))  | 17
| 14  | Di-2-ethylhexyl phthalate (c)   | µg/L (Di-2-ethylhexyl phthalate (c)) | 550* 1,100* |
| 15  | Di-n-Octyl phthalate (c)        | µg/L (Di-n-Octyl phthalate (c)) | 550* 1,100* |
| 16  | Endrin                          | µg/L (Endrin)    | 0.031 0.28 0.56     |
| 17  | Ethylbenzene                    | µg/L (Ethylbenzene) | 0.041 0.083 0.17    |
| 18  | Fluoranthene                    | µg/L (Fluoranthene) | 0.041 0.083 0.17    |

Approved by Revisor: ____________________________
<p>| | | | | |</p>
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<tr>
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<tr>
<td>1</td>
<td>1.9</td>
<td>3.5</td>
<td>6.9</td>
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</tr>
<tr>
<td>2</td>
<td><strong>Heptachlor (c)</strong></td>
<td>--</td>
<td>Units<strong>ng/L</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.39</td>
<td>260*</td>
<td>520*</td>
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<tr>
<td>4</td>
<td><strong>Heptachlor epoxide (c)</strong></td>
<td>--</td>
<td>Units<strong>ng/L</strong></td>
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<tr>
<td>5</td>
<td>0.48</td>
<td>270*</td>
<td>530*</td>
<td>--</td>
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<tr>
<td>6</td>
<td><strong>Hexachlorobenzene (c)</strong></td>
<td>--</td>
<td>Units<strong>ng/L</strong></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0.24</td>
<td>none</td>
<td>none</td>
<td>--</td>
</tr>
<tr>
<td>8</td>
<td>--*</td>
<td>--*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 9 | **Lindane (c)** | -- | Units**ng/L** (Hexachlorocyclohexane, gamma-)
| 10 | 0.036 | 4.4* | 8.8* | -- |
| 11 | **Methylene chloride (c)** | -- | Units**ng/L** (Dichloromethane)
| 12 | 1,940 | 13,875 | 27,749 | -- |
| 13 | **Metolachlor** | -- | |
| 14 | 23 | 271 | 543 | -- |
| 15 | **Naphthalene** | -- | Units**ng/L** |
| 16 | 81 | 409 | 918 | -- |
| 17 | **Parathion** | -- | Units**ng/L** |
| 18 | 0.013 | 0.07 | 0.13 | -- |
| 19 | **Pentachlorophenol** | -- | Units**ng/L** | See-Note |
| 20 | -- | -- | -- | -- |
| 21 | Class 2B, 2C, and 2D standards are pH dependent, except that the |
| 22 | CS will not exceed 5.5 µg/L. Pentachlorophenol values shown are |

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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.

<table>
<thead>
<tr>
<th>#</th>
<th>(32) Phenanthrene --Units µg/L</th>
<th>3.6</th>
<th>32</th>
<th>64</th>
<th>--</th>
<th>--</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>(33) Phenol --Units µg/L</td>
<td>123</td>
<td>2,214</td>
<td>4,428</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(34) Polychlorinated biphenyls (c) (PCBs, total) --Units ng/L (PCBs, total)</td>
<td>0.029</td>
<td>1,000*</td>
<td>2,000*</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(35) 1,1,2,2-Tetrachloroethane (c) --Units µg/L</td>
<td>1,127</td>
<td>2,253</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>(36) Tetrachloroethylene (c) --Units µg/L</td>
<td>8.9</td>
<td>428</td>
<td>657</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(37) Toluene --Units µg/L</td>
<td>253</td>
<td>1,352</td>
<td>2,703</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(38) Toxaphene (c) --Units ng/L</td>
<td>1.3</td>
<td>730*</td>
<td>1,500*</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(39) 1,1,1-Trichloroethane --Units µg/L</td>
<td>329</td>
<td>2,957</td>
<td>5,913</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(40) 1,1,2-Trichloroethylene (c) --Units µg/L</td>
<td>120</td>
<td>6,988</td>
<td>13,976</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(41) 2,4,6-Trichlorophenol --Units µg/L</td>
<td>2.0</td>
<td>102</td>
<td>203</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>#</td>
<td>(42) Vinyl chloride (c) --Units µg/L</td>
<td>28</td>
<td>21</td>
<td>42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approved by Revisor...
D. Escherichia (E.) coli bacteria shall not exceed 200 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 2,800 organisms per 100 milliliters. The standard applies only between April 1 and October 31.

Note-No. 47
Note-No. 5—RADIOACTIVE-MATERIALS

F. For radioactive materials, see parts 7050.0222, subparts 47-57 and-6; and 7050.0224, subparts 27 and 37 and-4.

Note-No. 6—TEMPERATURE

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.

Note-No. 7—Cadmium

<table>
<thead>
<tr>
<th>STANDARDS-THAT-VARY-WITH</th>
<th>EXAMPLE-STANDARDS-IN-µg/l AT-TOTAL-HARDNESS-OF-T</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL-HARDNESS-(TH)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ES=</td>
<td></td>
<td>0.66</td>
<td>1.1</td>
<td>2.6</td>
<td>2.7</td>
<td>3.4</td>
</tr>
<tr>
<td>exp(x)=7052+ln(TH-mg/l)+3.490</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS=</td>
<td></td>
<td>15</td>
<td>33</td>
<td>73</td>
<td>116</td>
<td>160</td>
</tr>
<tr>
<td>exp(x)=120+ln(TH-mg/l)+1.685</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FA=</td>
<td></td>
<td>31</td>
<td>67</td>
<td>146</td>
<td>231</td>
<td>319</td>
</tr>
<tr>
<td>exp(x)=20+ln(TH-mg/l)+0.3919</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note-No. 8—CHROMIUM-+3

<table>
<thead>
<tr>
<th>STANDARDS-THAT-VARY-WITH</th>
<th>EXAMPLE-STANDARDS-IN-µg/l</th>
</tr>
</thead>
</table>

wq-rule-1-10

Approved by Revisor
06/18/07

TOTAL-HARNESS-{TH}

EXAMPEL-STANDARDS-IN-mg/" AT-TOTAL-HARNESS-OP+

50 100 200 300 400

---------------------------

CS--
expt0.8819{ln[TH-mg/2]}+0.5617 417 207 365 509 644

MS--
expt0.8819{ln[TH-mg/2]}+3.6006 984 1737 2064 4270 5465

PAY--
expt0.8819{ln[TH-mg/2]}+4.3006 1966 3469 6120 6530 10797

Note-Not-97-COPPER

STANDARDS-THE-VARY-WITH TOTAL-HARNESS-{TH}

EXAMPEL-STANDARDS-IN-mg/" AT-TOTAL-HARNESS-OP+

50 100 200 300 400

---------------------------

CS--
expt0.620{ln[TH-mg/2]}+0.570 6.4 9.8 5 19 23

MS--
expt0.9422{ln[TH-mg/2]}+1.4614 9.2 2.0 34 50 65

PAY--
expt0.9422{ln[TH-mg/2]}+8.7703 18 35 60 180 131

Note-Not-10:-5EAD

STANDARDS-THE-VARY-WITH TOTAL-HARNESS-{TH}

EXAMPEL-STANDARDS-IN-mg/" AT-TOTAL-HARNESS-OP+

50 100 200 300 400

---------------------------

CS--
expt1.273{ln[TH-mg/2]}+4.7605 1.3 3.2 7.7 13 19

MS--
expt1.273{ln[TH-mg/2]}+4.4605 34 82 197 332 477

PAY--
expt1.273{ln[TH-mg/2]}+8.7643 68 164 396 663 956

Note-Not-14-YH-7EREB

STANDARDS-THE-VARY-WITH TOTAL-HARNESS-{TH}

EXAMPEL-STANDARDS-IN-mg/" AT-TOTAL-HARNESS-OP+

50 100 200 300 400

---------------------------

CS--
expt0.046{ln[TH-mg/2]}+1.16045 88 150 289 399 509

MS--
<table>
<thead>
<tr>
<th>exp:0.846{int(TH-mg/1)}+3.3612</th>
<th>909 1410 2549 3592 4502</th>
</tr>
</thead>
<tbody>
<tr>
<td>exp:0.846{int(TH-mg/1)}+4.8543</td>
<td>1570 2035 5690 7105 9164</td>
</tr>
<tr>
<td>Note:Not-127-SILVER</td>
<td></td>
</tr>
</tbody>
</table>

**STANDARDS-THAT-VARY-WITH TOTAL-HARDNESS-(TH)**

<table>
<thead>
<tr>
<th>exp:1+72{int(TH-mg/1)}-7.2156</th>
<th>1+0 2+0 6+7 13 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>exp:1+72{int(TH-mg/1)}+6.5209</td>
<td>1+2 4+1 13 27 44</td>
</tr>
<tr>
<td>The MS and PAV shall be no-less-than 1+0-µg/l</td>
<td></td>
</tr>
<tr>
<td>Note:Not-137-BING</td>
<td></td>
</tr>
</tbody>
</table>

**STANDARDS-THAT-VARY-WITH TOTAL-HARDNESS-(TH)**

<table>
<thead>
<tr>
<th>exp:0.8473{int(TH-mg/1)}+0.76±5</th>
<th>59 166 19± 269 343</th>
</tr>
</thead>
<tbody>
<tr>
<td>exp:0.8473{int(TH-mg/1)}+0.6804</td>
<td>65 117 21± 297 379</td>
</tr>
<tr>
<td>exp:0.8473{int(TH-mg/1)}+1.55±6</td>
<td>130 234 42± 594 758</td>
</tr>
<tr>
<td>Note:Not-147-PENTACHLOROPHENOL</td>
<td></td>
</tr>
</tbody>
</table>

**STANDARD-THAT-VARIES-WITH-pH**

<table>
<thead>
<tr>
<th>exp:1±0{pH}+5±290</th>
<th>3±5 5±5 5±5 5±5 5±5</th>
</tr>
</thead>
<tbody>
<tr>
<td>not-to-exceed-5±5-µg/l</td>
<td></td>
</tr>
<tr>
<td>exp:1±0{pH}+4±930</td>
<td>5±5 9±1 15 25 41</td>
</tr>
<tr>
<td>MS=</td>
<td></td>
</tr>
<tr>
<td>PAV=</td>
<td></td>
</tr>
<tr>
<td>exp:1±0{pH}+4±1373</td>
<td>1± 10 30 50 62</td>
</tr>
</tbody>
</table>

Approved by Revisor __________
Subp. 6a. Water-quality-standards-applicable-to-use
Classes 3C, 4A-and-4B, 5, and 7 Limited resource value waters
and associated use classes.

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

MISCELLANEOUS-SUBSTANCE-OR-CHARACTERISTIC

STANDARDS-FOR-USE-CLASSES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>3C</th>
<th>4A</th>
<th>4B</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Bicarbonates (HCO₃) --Units --mg/L

(2) Boron --Units --µg/L

(3) Chloride --Units --mg/L

(4) Dissolved-oxygen--Units --mg/L---See-Note-Note

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

(5) Peculi- Escherichia (E.) coli bacteria, organisms/100 mL

(6) Hydrogen sulfide --Units --mg/L

(7) Oxygen, dissolved, mg/L

(8) pH--low---Units minimum, au

Approved by Revisor __________
### Limited Resource Value

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>LIMITED</td>
<td>3C</td>
<td>4A</td>
<td>4B</td>
</tr>
<tr>
<td>IC</td>
<td>RESOURCE</td>
<td>4R</td>
<td>LS</td>
<td>AN</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

(9) pH — high: maximum, su

<table>
<thead>
<tr>
<th>Column 7</th>
<th>Column 8</th>
<th>Column 9</th>
<th>Column 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0</td>
<td>9.0</td>
<td>8.5</td>
<td>9.0</td>
</tr>
</tbody>
</table>

(10) Radioactive materials — See Note-Neo-3-below

<table>
<thead>
<tr>
<th>Column 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>See</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>See</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>item D</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>item D</td>
</tr>
</tbody>
</table>

(11) Salinity, total — Unit: mg/L

<table>
<thead>
<tr>
<th>Column 15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 16</th>
<th>Column 17</th>
<th>Column 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>--</td>
<td>1,000</td>
</tr>
</tbody>
</table>

(12) Sodium — Unit: meq/L

<table>
<thead>
<tr>
<th>Column 19</th>
<th>Column 20</th>
<th>Column 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>--</td>
<td>50% of</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td>cations</td>
</tr>
</tbody>
</table>

(13) Specific conductance at 25°C — Unit: umhos/cm

<table>
<thead>
<tr>
<th>Column 22</th>
<th>Column 23</th>
<th>Column 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>--</td>
<td>1,000</td>
</tr>
</tbody>
</table>

(14) Sulfates, wild rice present — Unit: mg/L

<table>
<thead>
<tr>
<th>Column 25</th>
<th>Column 26</th>
<th>Column 27</th>
<th>Column 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>--</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

(15) Total dissolved salts — Unit: mg/L

<table>
<thead>
<tr>
<th>Column 29</th>
<th>Column 30</th>
<th>Column 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>--</td>
<td>--</td>
<td>700</td>
</tr>
</tbody>
</table>

(16) Toxic pollutants — See Note-Neo-4-below

<table>
<thead>
<tr>
<th>Column 32</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Item E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Column 33</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

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.

**Note-Neo-17-Dissolved-Oxygen**

C. The level of dissolved oxygen shall be maintained...
at concentrations which will avoid odors or putrid conditions in the receiving water or at concentrations at not less than 1 mg/L one milligram per liter (daily average) provided that measurable concentrations are present at all times.

Note - No. 27: Fecal-.coliform-organisms

Not-to-exceed-1,700-organisms-per-100-milliliters-in any-calendar-month-as-determined-by-a-geometric-mean of-a-minimum-of-five-samples-not-shall-more-than-ten percent-of-all-samples-taken-during-any-calendar-month individually-exceed-1,700-organisms-per-100 milliliters. The standard applies only between May 1 and October 31.

Note - No. 37: Radioactive-Materials

D. For radioactive materials, see part 7050.0224, subparts 27 and 37-and-4.

Note - No. 47: Toxic-Pollutants

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.

7050.0221 SPECIFIC WATER QUALITY STANDARDS OF QUALITY AND PURITY FOR CLASS 1 WATERS OF THE STATE; DOMESTIC CONSUMPTION.

Subpart 1. General.

A. The numerical numeric and narrative water quality standards in this part prescribe the qualities or properties of the waters of the state that are necessary for the domestic consumption designated public uses and benefits. If the standards in this part are exceeded in waters of the state that have the Class 1 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses.

B. The Class 1 standards in this part are the United Statee Environmental Protection Agency primary (maximum contaminant levels) and secondary drinking water standards, as contained in Code of Federal Regulations, title 40, parts 141.
1 and 143, as amended through July 1, 2004. These Environmental Protection Agency drinking water standards are adopted and incorporated by reference with the exceptions in this item. The following standards are not applicable to Class 1 ground waters: the primary drinking water standards for acrylamide, epichlorohydrin, copper, and lead (treatment technique standards) and standards in the disinfectants and disinfection by-products categories. The following standards 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.

Subp. 2. Class 1A waters; domestic consumption. The quality of Class 1A waters of the state shall be such that without treatment of any kind the raw waters will meet in all respects both the primary (maximum contaminant levels) and secondary drinking water standards issued by the United States Environmental Protection Agency as contained in Code of Federal Regulations, title 40, parts 141-147, subparts B and G, and part 143, as amended through July 1, 1997, and section 14362 and 14352 as amended through July 1997 referenced in subpart 1. These Environmental Protection Agency drinking water standards are adopted and incorporated by reference, except as noted in subpart 1. These standards will ordinarily be restricted to underground waters with a high degree of natural protection.

Subp. 3. Class 1B waters. The quality of Class 1B waters of the state shall be such that with approved disinfection, such
as simple chlorination or its equivalent, the treated water will meet both the primary (maximum contaminant levels) and secondary drinking water standards issued by the United States Environmental Protection Agency as contained in Code of Federal Regulations, title 40, part 141, subparts B and G, and part 143, as amended through July 17, 1992, except that the bacteriological standards shall not apply as referenced in subpart 1. These The Environmental Protection Agency drinking water standards, as modified in this part, are adopted and incorporated by reference, except as noted in subpart 1.

These standards will ordinarily be restricted to surface and underground waters with a moderately high degree of natural protection and apply to these waters in the untreated state.

Subp. 4. Class 1C waters. The quality of Class 1C waters of the state shall be such that with treatment consisting of coagulation, sedimentation, filtration, storage, and chlorination, or other equivalent treatment processes, the treated water will meet both the primary (maximum contaminant levels) and secondary drinking water standards issued by the United States Environmental Protection Agency as contained in Code of Federal Regulations, title 40, part 141, subparts B and G, and part 143, as amended through July 17, 1992, except that the bacteriological standards shall not apply, and the turbidity standard shall be Ellis-NYS as referenced in subpart 1. These The Environmental Protection Agency drinking water standards, as modified in this
part are adopted and incorporated by reference, except as noted in subpart 1.

These standards will ordinarily be restricted to surface waters, and groundwaters in aquifers not considered to afford adequate protection against contamination from surface or other sources of pollution. Such aquifers normally would include fractured and channeled limestone, unprotected impervious hard rock where water is obtained from mechanical fractures or joints with surface connections, and coarse gravels subjected to surface water infiltration. These standards shall also apply to these waters in the untreated state.

Subp. 5. [See repealer.]

[For text of subp 5, see M.R.]

7050.0222 SPECIFIC WATER QUALITY STANDARDS OF QUALITY AND PURITY FOR CLASS 2 WATERS OF THE STATE; AQUATIC LIFE AND RECREATION.

Subpart 1. General.

A. The numerical numeric and narrative water quality standards in this part prescribe the qualities or properties of the waters of the state that are necessary for the aquatic life and recreation designated public uses and benefits. If the standards in this part are exceeded in waters of the state that have the Class 2 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses.

B. Standards for metals are expressed as total metal
in this part, but must be converted to dissolved metal standards to-determine-water-quality-based-effluent-limits for application to surface waters. Water-quality-based-effluent-limits for metals-are-expressed-as-total-metal Conversion factors for converting total to dissolved metal standards are listed in subpart 9. The conversion factor for metals not listed in 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.

C. The tables of standards in this part include the following abbreviations and acronyms:

* an asterisk following the FAV and MS values or double dashes (--) means subpart 7, item E, applies [c] means the chemical is assumed to be a human carcinogen °C means degrees Celsius CS means chronic standard, defined in part 7050.0218, subpart 3 double dashes means there is no standard °F means degrees Fahrenheit FAV means final acute value, defined in part 7050.0218, subpart 3 HH in the "basis" column means the standard is human health-based MS means maximum standard, defined in part 7050.0218, subpart 3 NA means not applicable su means standard unit. It is the reporting unit for pH TH means total hardness in milligrams per liter, which is the sum of the calcium and magnesium concentrations expressed as CaCO3 tox in the "basis" column means the standard is
D. Important synonyms or acronyms for some chemicals are listed in parentheses below the primary name.

Subp. 2. Class 2A waters: aquatic life and recreation.

The quality of Class 2A surface waters shall be such as to permit the propagation and maintenance of a healthy community of cold water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface waters is also protected as a source of drinking water. The applicable standards are given below, with substances considered carcinogenic followed by a (e.g., the basis columns to the right of the chronic standards and to the right of the acute standards indicate whether the chronic and acute standards, respectively, are based on the protection of the aquatic community from adverse toxic effects (tox) or the protection of human consumers of drinking water and sport-caught fish. "NA" means not applicable — Subpart 7 item 7 should be referenced for PAV and MS values and "none" noted with an asterisk (*). Abbreviations, acronyms, and symbols are explained in subpart 1.

<table>
<thead>
<tr>
<th>Substance or Pollutant (Class 2A)</th>
<th>Units</th>
<th>CS</th>
<th>Basis for CS</th>
<th>MS</th>
<th>PAV</th>
<th>Basis for MS, PAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acenaphthene</td>
<td>µg/L</td>
<td>20</td>
<td>HE</td>
<td>56</td>
<td>112</td>
<td>Tox</td>
</tr>
<tr>
<td>Acetochlor</td>
<td>µg/L</td>
<td>1.7</td>
<td>Tox</td>
<td>86</td>
<td>173</td>
<td>Tox</td>
</tr>
</tbody>
</table>

Approved by Revisor

wq-rule-1-10
The percent un-ionized ammonia can be calculated for any temperature and pH by using the following formula:

\[ f = \frac{1}{10^3 (pK_a - pH)} \times 100 \]

where:

- \( f \) is the percent of total ammonia in the un-ionized state.
- \( pK_a \) is the dissociation constant for ammonia.
- \( pH \) is the pH of the solution.
- \( T \) is the temperature in degrees Kelvin (273.16° Kelvin = 0° Celsius).

\[ pK_a = 0.09 + \frac{2730}{T} \]

\[ T = \text{temperature in degrees Kelvin (273.16° Kelvin = 0° Celsius)} \]

### Table: Water Quality Parameters

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthracene</td>
<td>µg/L</td>
<td>0.035</td>
<td>Tox</td>
<td>0.32</td>
<td>0.63</td>
<td>Tox</td>
</tr>
<tr>
<td>Antimony, total</td>
<td>µg/L</td>
<td>5.5</td>
<td>HH</td>
<td>90</td>
<td>180</td>
<td>Tox</td>
</tr>
<tr>
<td>Arsenic, total</td>
<td>µg/L</td>
<td>2.0</td>
<td>HH</td>
<td>360</td>
<td>720</td>
<td>Tox</td>
</tr>
<tr>
<td>Atrazine (c)</td>
<td>µg/L</td>
<td>3.4</td>
<td>HH</td>
<td>323</td>
<td>645</td>
<td>Tox</td>
</tr>
<tr>
<td>Benzene (c)</td>
<td>µg/L</td>
<td>9.7</td>
<td>HH</td>
<td>4,487</td>
<td>8,974*</td>
<td>Tox</td>
</tr>
<tr>
<td>Bromoform</td>
<td>µg/L</td>
<td>33</td>
<td>HH</td>
<td>2,900</td>
<td>5,800</td>
<td>Tox</td>
</tr>
<tr>
<td>Cadmium, total</td>
<td>µg/L</td>
<td>-</td>
<td>Formular equation</td>
<td>Formula equation</td>
<td>Tox</td>
<td></td>
</tr>
</tbody>
</table>

\[ \text{Cadmum}\text{-total} \] The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

\[ \text{The CS in µg/L shall not exceed: } \exp. \left(0.7852[\ln(\text{total hardness mg/L})]-3.490\right) \]

\[ \text{The MS in µg/L shall not exceed: } \exp.\left(1.128[\ln(\text{total hardness mg/L})]\right) \]

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The FAV in mg/L shall not exceed: \( \exp \left( 1.128 \times \ln(\text{total hardness mg/L}) \right) - 3.1349 \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parentheses.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total cadmium standards in \( \mu g/L \) for three five hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>6S</td>
<td>1.6</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>MS</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>FAV</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Cadmium, total

Carbon tetra-chloride (c) \( \mu g/L \) 1.9 1750* 3500*

Chlordane (c) \( \mu g/L \) 0.073 1200* 2400*

Chloride \( \mu g/L \) 230 860 1770

Chlorine, total \( \mu g/L \) 11 19 38

Chlorine standard applies to conditions of continuous exposure, where continuous exposure refers to chlorinated effluents that are discharged for more than a total of two hours in any 24-hour period.

Substance, Characteristic, or Pollutant (Class 2A)

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2A)</th>
<th>Units</th>
<th>CS</th>
<th>Basis for CS</th>
<th>MS</th>
<th>FAV</th>
<th>Basis for MS, FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorobenzene (Monochlorobenzene)</td>
<td>( \mu g/L )</td>
<td>20</td>
<td>HE</td>
<td>423</td>
<td>846</td>
<td>( \text{Tox} )</td>
</tr>
<tr>
<td>Chloroform (c)</td>
<td>( \mu g/L )</td>
<td>53</td>
<td>HE</td>
<td>1,392</td>
<td>2,784</td>
<td>( \text{Tox} )</td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>( \mu g/L )</td>
<td>0.041</td>
<td>( \text{Tox} )</td>
<td>0.003</td>
<td>0.17</td>
<td>( \text{Tox} )</td>
</tr>
<tr>
<td>Chromium +3, total</td>
<td>( \mu g/L )</td>
<td>53</td>
<td>HE</td>
<td>1,392</td>
<td>2,784</td>
<td>( \text{Tox} )</td>
</tr>
</tbody>
</table>

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Chromium +3 total, The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

The CS in µg/L shall not exceed: exp.(0.819[ln(total hardness mg/L)] + 1.561)

The MS in µg/L shall not exceed: exp.(0.819[ln(total hardness mg/L)] + 3.688)

The FAV in µg/L shall not exceed: exp.(0.819[ln(total hardness mg/L)] + 4.380)

Where: exp. is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total chromium +3 standards in µg/L for three to five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>117</td>
<td>207</td>
<td>365</td>
</tr>
<tr>
<td>MS</td>
<td>964</td>
<td>1,737</td>
<td>3,064</td>
</tr>
<tr>
<td>FAV</td>
<td>1,966</td>
<td>3,469</td>
<td>6,120</td>
</tr>
</tbody>
</table>

TH in mg/L

<table>
<thead>
<tr>
<th>Chromium +3 total</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS µg/L</td>
<td>117</td>
<td>207</td>
<td>365</td>
<td>509</td>
<td>644</td>
</tr>
<tr>
<td>MS µg/L</td>
<td>964</td>
<td>1,737</td>
<td>3,064</td>
<td>4,270</td>
<td>5,405</td>
</tr>
<tr>
<td>FAV µg/L</td>
<td>1,966</td>
<td>3,469</td>
<td>6,120</td>
<td>8,530</td>
<td>10,797</td>
</tr>
</tbody>
</table>

Chromium +6, total cobalt, total, color value

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Copper, total µg/L</td>
</tr>
</tbody>
</table>

Copper total: The CS, MS, and FAV vary with total hardness

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and are calculated using the following equations:

The CS in µg/L shall not exceed: \( \exp(0.620[\ln(\text{total hardness mg/L})]-0.570) \)

The MS in µg/L shall not exceed: \( \exp(0.9422[\ln(\text{total hardness mg/L})]-1.464) \)

The FAV in µg/L shall not exceed: \( \exp(0.9422[\ln(\text{total hardness mg/L})]-0.7703) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total copper standards in µg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>6±4</td>
<td>9±8</td>
<td>±15</td>
</tr>
<tr>
<td>MS</td>
<td>9±2</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>FAV</td>
<td>18</td>
<td>35</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper, total: CS µg/L</td>
<td>6.4</td>
<td>9.8</td>
<td>15</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>MS µg/L</td>
<td>9.2</td>
<td>18</td>
<td>34</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>FAV µg/L</td>
<td>18</td>
<td>35</td>
<td>68</td>
<td>100</td>
<td>131</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance, Units</th>
<th>Dissolved-oxygen mg/L</th>
<th>7±9-as-a-daily-minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>This-dissolved-oxygen-standard requires-compliance-with-the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard-58-percent-of-the-day-at-which-the-flow-of-the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>receiving-water-in-equal-to-the-lowest-weekly-flow-with-a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>once-in-ten-year-recurrence-interval-(78±8)±.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance, Units</th>
<th>CS Basis</th>
<th>MS Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved by Revisor</td>
<td>___________</td>
<td></td>
</tr>
</tbody>
</table>
### Characteristic, or Pollutant (Class 2A)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>for CS</th>
<th>for MS, FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endosulfan</td>
<td>µg/L</td>
<td>0.0076 HH</td>
</tr>
<tr>
<td>Endrin</td>
<td>µg/L</td>
<td>0.0039 HH</td>
</tr>
<tr>
<td>Escherichia</td>
<td>See</td>
<td>See HH</td>
</tr>
<tr>
<td>(E.) Coli</td>
<td>below</td>
<td>below</td>
</tr>
</tbody>
</table>

Not to 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 1,250 organisms per 100 milliliters. The standard applies only between April 1 and October 31.

| Ethylbenzene   | µg/L  | 68 | Tox< | 1,859 3,717 Tox< |

Eutrophication standards for Class 2A lakes and reservoirs. See definitions in part 7050.0150, subpart 4, and ecoregion map in part 7050.0150.

**Designated lake trout lakes in all ecoregions (lake trout lakes support natural populations of lake trout, Salvelinus namaycush):**

<table>
<thead>
<tr>
<th>Phosphorus, total</th>
<th>µg/L</th>
<th>12</th>
<th>NA</th>
<th>--</th>
<th>--</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorophyll-a</td>
<td>µg/L</td>
<td>3</td>
<td>NA</td>
<td>--</td>
<td>--</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>No less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
<td>NA</td>
</tr>
<tr>
<td>transparency</td>
<td>than 4.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Designated trout lakes in all ecoregions, except lake trout lakes:**

<table>
<thead>
<tr>
<th>Phosphorus, total</th>
<th>µg/L</th>
<th>20</th>
<th>NA</th>
<th>--</th>
<th>--</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorophyll-a</td>
<td>µg/L</td>
<td>6</td>
<td>NA</td>
<td>--</td>
<td>--</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>No less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
<td>NA</td>
</tr>
<tr>
<td>transparency</td>
<td>than 2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional narrative eutrophication standards for Class 2A lakes and reservoirs are found under subpart 2a.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoranthene</td>
<td>µg/L 1.9 Tox&lt; 3.5 6.9 Tox&lt;</td>
</tr>
</tbody>
</table>

wq-rule-1-10

Approved by Revisor
<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance, Units CS Basis</td>
</tr>
<tr>
<td>Lead, total</td>
</tr>
</tbody>
</table>

**Head-to-Total**: The CS, MS, and PAV vary with total hardness and are calculated using the following equations:

The CS in ug/L shall not exceed: \( \exp(1.273 \ln(\text{total hardness mg/L}) - 4.705) \)

The MS in ug/L shall not exceed: \( \exp(1.273 \ln(\text{total hardness mg/L}) - 1.460) \)

The PAV in ug/L shall not exceed: \( \exp(1.273 \ln(\text{total hardness mg/L}) - 0.7643) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total lead standards in mg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards CS</td>
<td>1.3</td>
<td>3.2</td>
<td>7.7</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>MS</td>
<td>34</td>
<td>82</td>
<td>197</td>
<td>331</td>
<td>477</td>
</tr>
<tr>
<td>PAV</td>
<td>68</td>
<td>164</td>
<td>396</td>
<td>663</td>
<td>956</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead, total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS ug/L</td>
<td>1.3</td>
<td>3.2</td>
<td>7.7</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>MS ug/L</td>
<td>34</td>
<td>82</td>
<td>197</td>
<td>331</td>
<td>477</td>
</tr>
<tr>
<td>PAV ug/L</td>
<td>68</td>
<td>164</td>
<td>396</td>
<td>663</td>
<td>956</td>
</tr>
<tr>
<td>Lindane (c) ug/L</td>
<td>0.0087</td>
<td>HH</td>
<td>1.0*</td>
<td>2.0*</td>
<td>Tox&lt;sup&gt;-&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

---

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Mercury, total 

in water  

mg/kg 0.2  

in edible fish tissue  

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2A)</th>
<th>Units</th>
<th>CS</th>
<th>Basis for CS</th>
<th>MS</th>
<th>FAV</th>
<th>Basis for MS, FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride (c) (Dichloromethane)</td>
<td>µg/L</td>
<td>23</td>
<td>TOX</td>
<td>273</td>
<td>543</td>
<td>TOX</td>
</tr>
<tr>
<td>Metolachlor</td>
<td>µg/L</td>
<td>67</td>
<td>65</td>
<td>TOX</td>
<td>HH</td>
<td>409</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>µg/L</td>
<td>67</td>
<td>65</td>
<td>TOX</td>
<td>HH</td>
<td>409</td>
</tr>
<tr>
<td>Nickel, total</td>
<td>µg/L</td>
<td>67</td>
<td>65</td>
<td>TOX</td>
<td>HH</td>
<td>409</td>
</tr>
</tbody>
</table>

Nickel - total The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

The CS shall not exceed the human health-based standard of 297 µg/L. For waters with total hardness values less than 212 mg/L, the CS in µg/L is toxicity-based and shall not exceed: exp(0.846[ln(total hardness mg/L)]+1.1645)

The MS in µg/L shall not exceed: exp(0.846[ln(total hardness mg/L)]+3.3612)

The FAV in µg/L shall not exceed: exp(0.846[ln(total hardness mg/L)]+4.0543)

Where: exp. is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total nickel standards in µg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-----</td>
<td>-----</td>
</tr>
</tbody>
</table>
Daily minimum. This dissolved oxygen standard requires compliance with the standard 50 percent of the days at which the flow of the receiving water is equal to the 70th.

Parathion µg/L 0.013 0.07 0.13
Pentachlorophenol µg/L 0.93

The MS and PAV vary with pH and are calculated using the following equations:

\[ \text{MS in } \mu g/L \text{ shall not exceed: } \exp(1.005[pH] - 4.630) \]
\[ \text{PAV in } \mu g/L \text{ shall not exceed: } \exp(1.005[pH] - 4.1373) \]

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For pH values less than 6.0, 6.0 shall be used to calculate the standard and for pH values greater than 9.0, 9.0 shall be used to calculate the standard.

Example of pentachlorophenol standards in µg/L for three five pH values:

\[
\begin{align*}
\text{pH} & \quad 7.0 & \quad 7.5 & \quad 8.0 \\
\text{Standard} & \quad 0.93 & \quad 0.93 & \quad 0.93 \\
\text{MS} & \quad 9.1 & \quad 15 & \quad 25 \\
\end{align*}
\]

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<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class aA)</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>PAV</th>
<th>Basis for CS</th>
<th>for MS, PAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentachlorophenol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS µg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td>0.93</td>
<td>8.0</td>
<td>0.93</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0</td>
<td>0.93</td>
<td>8.0</td>
<td>0.93</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>0.93</td>
<td>8.0</td>
<td>0.93</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0</td>
<td>0.93</td>
<td>8.0</td>
<td>0.93</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5</td>
<td>0.93</td>
<td>8.0</td>
<td>0.93</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenanthrene, Phenol</td>
<td>µg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.6</td>
<td>32</td>
<td>7.0</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>2,214</td>
<td>7.0</td>
<td>4,428</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polychlorinated biphenyls, total (c)</td>
<td>ng/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.014</td>
<td>1,000*</td>
<td>7.0</td>
<td>2,000*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Radioactive materials NA See below NA See below NA See below


Selenium, total µg/L 5.0 Tox= 20 40

Silver, total µg/L 0.12 Tox= Formula formula Tox= equation equation

Silver, total The MS and PAV vary with total hardness and are calculated using the following equations:

The MS shall not exceed: $\exp(1.720[\ln(\text{total hardness mg/L})]-7.2155)$

The PAV in µg/L shall not exceed: $\exp(1.720[\ln(\text{total hardness mg/L})]-6.520)$ provided that the MS and PAV shall be no-less-than-0.12 µg/L

Where: $\exp.$ is the natural antilogarithm (base e) of the
expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of silver standards in mg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td>MS</td>
<td>0.6</td>
<td>2.0</td>
<td>6.7</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>PAV</td>
<td>1.2</td>
<td>4.1</td>
<td>13</td>
<td>27</td>
<td>44</td>
</tr>
</tbody>
</table>

Temperature

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2A)</th>
<th>Units Basis for CS</th>
<th>Basis for MS, PAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,2,2 - Tetrachloroethane (c)</td>
<td>1.1</td>
<td>ms</td>
</tr>
<tr>
<td>Tetrachloroethylene (c)</td>
<td>3.8</td>
<td>428*</td>
</tr>
<tr>
<td>Thallium, total</td>
<td>0.26</td>
<td>64</td>
</tr>
<tr>
<td>Toluene</td>
<td>253</td>
<td>1,352</td>
</tr>
<tr>
<td>Toxaphene (c)</td>
<td>0.31</td>
<td>730*</td>
</tr>
<tr>
<td>1,1,1 - Trichloroethane</td>
<td>3.29</td>
<td>2,957</td>
</tr>
<tr>
<td>1,1,2 - Trichloroethylene (c)</td>
<td>25</td>
<td>6,988*</td>
</tr>
<tr>
<td>2,4,6 - Trichlorophenol</td>
<td>2.0</td>
<td>102</td>
</tr>
<tr>
<td>Turbidity value</td>
<td>NTU 10</td>
<td>None</td>
</tr>
</tbody>
</table>

Temperature °C or No-material-increase

<table>
<thead>
<tr>
<th>Substance</th>
<th>°C or No-material-increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,2,2</td>
<td>1,127* 2,253*</td>
</tr>
<tr>
<td>Tetrachloroethane (c)</td>
<td></td>
</tr>
<tr>
<td>Tetrachloroethylene (c)</td>
<td>428* 857*</td>
</tr>
<tr>
<td>Thallium, total</td>
<td>64 128 Tox*</td>
</tr>
<tr>
<td>Toluene</td>
<td>1,352 2,703 Tox*</td>
</tr>
<tr>
<td>Toxaphene (c)</td>
<td>730* 1,500* Tox*</td>
</tr>
<tr>
<td>1,1,1 - Trichloroethane</td>
<td>2,957 5,913 Tox*</td>
</tr>
<tr>
<td>1,1,2 - Trichloroethylene (c)</td>
<td>6,988* 13,976* Tox*</td>
</tr>
<tr>
<td>2,4,6 - Trichlorophenol</td>
<td>102 203 Tox*</td>
</tr>
<tr>
<td>Turbidity value</td>
<td>NTU 10 None None NA</td>
</tr>
</tbody>
</table>

Approved by Revisor
Vinyl chloride (c) \( \mu g/L \) 0.17 HH None None NA

Xylene, total m,p,o \( \mu g/L \) 166 Tox- 1,407 2,814 Tox-

Zinc, total \( \mu g/L \) Formula Tox- Formula Tox-
equation equation equation

\( \text{Zinc-total} \) The CS, MS, and FAV vary with total hardness
and are calculated using the following equations:

The CS in \( \mu g/L \) shall not exceed: \( \exp(0.8473 \ln(\text{total hardness mg/L}) + 0.7615) \)

The MS in \( \mu g/L \) shall not exceed: \( \exp(0.8473 \ln(\text{total hardness mg/L}) + 0.8604) \)

The FAV in \( \mu g/L \) shall not exceed: \( \exp(0.8473 \ln(\text{total hardness mg/L}) + 1.5535) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the
expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be
used to calculate the standard and for hardness values
greater than 400 mg/L, 400 mg/L shall be used to calculate
the standard.

Example of zinc standards in \( \mu g/L \) for three five total
hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS (6)</td>
<td>59</td>
<td>106</td>
<td>191</td>
</tr>
<tr>
<td>Standard MS (65)</td>
<td>65</td>
<td>117</td>
<td>211</td>
</tr>
<tr>
<td>Standard FAV (130)</td>
<td>130</td>
<td>234</td>
<td>421</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc, total</td>
<td>59</td>
<td>106</td>
<td>191</td>
<td>269</td>
<td>343</td>
</tr>
<tr>
<td>CS ( \mu g/L )</td>
<td>65</td>
<td>117</td>
<td>211</td>
<td>297</td>
<td>379</td>
</tr>
<tr>
<td>MS ( \mu g/L )</td>
<td>130</td>
<td>234</td>
<td>421</td>
<td>594</td>
<td>756</td>
</tr>
</tbody>
</table>

Subp. 2a. Narrative eutrophication standards for Class 2A lakes and reservoirs.

A. Eutrophication standards are compared to data averaged over the summer season (June through September).

Exceedance of the total phosphorus and either the chlorophyll-a

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or Secchi disk standard is required to indicate a polluted condition.

B. It is the policy of the agency to protect all lakes and reservoirs from the undesirable effects of cultural eutrophication. Lakes and reservoirs with a baseline quality better than the numeric eutrophication standards in subpart 2 must be maintained in that condition through the strict application of all relevant federal, state, and local requirements governing nondegradation, the discharge of nutrients from point and nonpoint sources, and the protection of lake or reservoir resources, including, but not limited to:

1. the nondegradation requirements in parts 7050.0180 and 7050.0185;
2. the phosphorus effluent limits for point sources, where applicable in chapter 7053;
3. the requirements for feedlots in chapter 7020;
4. the requirements for individual sewage treatment systems in chapter 7080;
5. the requirements for control of stormwater in chapter 7090;
6. county shoreland ordinances; and
7. implementation of mandatory and voluntary best management practices to minimize point and nonpoint sources of nutrients.

C. Lakes and reservoirs with a baseline quality that is poorer than the numeric eutrophication standards in subpart 2
must be considered to be in compliance with the standards if the baseline quality is the result of natural causes. The commissioner shall determine baseline quality and compliance with these standards using summer-average data and the procedures in part 7050.0150, subpart 5. "Natural causes" is defined in part 7050.0150, subpart 4, item N.

D. When applied to reservoirs, the eutrophication standards in this subpart and subpart 2 may be modified on a site-specific basis to account for characteristics unique to reservoirs that can affect trophic status, such as water temperature, variations in hydraulic residence time, watershed size, and the fact that reservoirs may receive drainage from more than one ecoregion. Information supporting a site-specific standard can be provided by the commissioner or by any person outside the agency. The commissioner shall evaluate all data in support of a modified standard and determine whether a change in the standard for a specific reservoir is justified. Any total phosphorus 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.

Subp. 3. Class 2Bd waters. The quality of Class 2Bd surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life and their habitats. These waters shall be suitable for aquatic recreation
of all kinds, including bathing, for which the waters may be usable. This class of surface waters are also protected as a source of drinking water. The applicable standards are given below with substances considered carcinogenic followed by a (c).

The basic columns to the right of the chronic standards and to the right of the acute standards indicate whether the chronic and acute standards, respectively, are based on the protection of the aquatic community from adverse toxic effects (Tox) or the protection of human consumers of drinking water and sport-caught fish (HH). "NA" means not applicable. -- Subpart 7.

item E, should be referenced for FAV and MS values and "none" noted with an asterisk (*). Abbreviations, acronyms, and symbols are explained in subpart 1.

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class-2 Bd Chronic Standard</th>
<th>Class-2 Bd Acute Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acsanaphthene</td>
<td>Acetochlor</td>
<td>Acrylonitrile (c)</td>
</tr>
<tr>
<td>Acetochlor</td>
<td>Acrylonitrile (c)</td>
<td>Alachlor (c)</td>
</tr>
<tr>
<td>Acrylonitrile (c)</td>
<td>Alachlor (c)</td>
<td>Aluminum, total</td>
</tr>
<tr>
<td>Ammonia un-ionized</td>
<td>Ammonia un-ionized</td>
<td>Ammonia un-ionized</td>
</tr>
</tbody>
</table>

The percent un-ionized ammonia can be calculated for any temperature and pH as described in subpart 2 by using the following equation taken from Emerson, K., R.C. Russo, R.E., Lund, and R.V. Thurston, Aqueous ammonia equilibrium calculations; effect of pH and temperature. Journal of the Fisheries Research Board of Canada 32: 2379-2383 (1975):

\[ f = \frac{1}{(10^{(pK_a-pH)} + 1)} \times 100 \]

where: \( f \) = the percent of total ammonia in the

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un-ionized state

$$pK_a = 0.09 + \frac{2730}{T}$$ (dissociation constant for ammonia)

$$T = \text{temperature in degrees Kelvin}$$

$$(273.16 \text{ K} = 0^\circ \text{Celsius})$$

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2Ed)</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>Basis</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthracene</td>
<td>µg/L</td>
<td>0.035</td>
<td>Tox+</td>
<td>0.32</td>
<td>Tox+</td>
<td>0.63</td>
<td>Tox+</td>
</tr>
<tr>
<td>Antimony, total</td>
<td>µg/L</td>
<td>5.5</td>
<td>HH</td>
<td>90</td>
<td>180</td>
<td>Tox+</td>
<td></td>
</tr>
<tr>
<td>Arsenic, total</td>
<td>µg/L</td>
<td>2.0</td>
<td>HH</td>
<td>350</td>
<td>720</td>
<td>Tox+</td>
<td></td>
</tr>
<tr>
<td>Atrazine (c)</td>
<td>µg/L</td>
<td>3.4</td>
<td>HH</td>
<td>323</td>
<td>645</td>
<td>Tox+</td>
<td></td>
</tr>
<tr>
<td>Benzene (c)</td>
<td>µg/L</td>
<td>6.0</td>
<td>HH</td>
<td>4.487*</td>
<td>8.974*</td>
<td>Tox+</td>
<td></td>
</tr>
<tr>
<td>Bromiform</td>
<td>µg/L</td>
<td>4.1</td>
<td>HH</td>
<td>2.900</td>
<td>5.800</td>
<td>Tox+</td>
<td></td>
</tr>
<tr>
<td>Cadmium, total</td>
<td>µg/L</td>
<td>Formula</td>
<td>Tox+</td>
<td>Formula</td>
<td>Tox+</td>
<td>Formula</td>
<td>Tox+</td>
</tr>
<tr>
<td>Cadmium-total The CS, MS, and FAV vary with total hardness and are calculated using the following equations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The CS in µg/L shall not exceed: \(\exp\{0.7852[\ln(\text{total hardness mg/L})]-3.490\}\)

The MS in µg/L shall not exceed: \(\exp\{1.128[\ln(\text{total hardness mg/L})]-1.685\}\)

The FAV in µg/L shall not exceed: \(\exp\{1.128[\ln(\text{total hardness mg/L})]-0.9919\}\)

Where: \(\exp\) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total cadmium standards in µg/L for three five hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>0-66</td>
<td>1-1</td>
<td>2-8</td>
</tr>
<tr>
<td>MS</td>
<td>35</td>
<td>39</td>
<td>79</td>
</tr>
<tr>
<td>FAV</td>
<td>31</td>
<td>67</td>
<td>74</td>
</tr>
<tr>
<td>TH in mg/L</td>
<td>50</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

116 Approved by Revisor _________
Chlorine standard applies to conditions of continuous exposures, where continuous exposure refers to chlorinated effluents that are discharged for more than a total of two hours in any 24-hour period.

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2Bd)</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorobenzene (Monochlorobenzene)</td>
<td>µg/L</td>
<td>20</td>
<td>HH</td>
<td>423</td>
<td>846</td>
<td>Tox-</td>
</tr>
<tr>
<td>Chloroform (c)</td>
<td>µg/L</td>
<td>53</td>
<td>HH</td>
<td>1,392</td>
<td>2,784</td>
<td>Tox-</td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>µg/L</td>
<td>0.041</td>
<td>Tox-</td>
<td>0.083</td>
<td>0.17</td>
<td>Tox-</td>
</tr>
<tr>
<td>Chromium +3, total</td>
<td>µg/L</td>
<td>43</td>
<td>Form</td>
<td>Formula Tox-</td>
<td>Formula</td>
<td>Form</td>
</tr>
</tbody>
</table>

Chromium +3 - total: The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

- The CS in µg/L shall not exceed: \( \exp(0.819[\ln(\text{total hardness mg/L})]+1.561) \)
- The MS in µg/L shall not exceed: \( \exp(0.819[\ln(\text{total hardness mg/L})]+3.688) \)
- The FAV in µg/L shall not exceed: \( \exp(0.819[\ln(\text{total hardness mg/L})]+4.380) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parentheses.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total chromium +3 standards in µg/L for three five total hardness values:

Approved by Revisor
<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>CS Basis</th>
<th>MS Basis</th>
<th>FAV Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper, total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium +3, total</td>
<td>11</td>
<td>Tox+</td>
<td>15</td>
</tr>
<tr>
<td>Cobalt, total</td>
<td>2.8</td>
<td>HH</td>
<td>436</td>
</tr>
</tbody>
</table>

Example of total copper standards in μg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Standard</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Dissolved-oxygen

<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDT (c)</td>
<td>ng/L</td>
<td>1.7</td>
<td>HH</td>
<td>550*</td>
<td>1,100*</td>
</tr>
<tr>
<td>1,2-Dichloroethane (c)</td>
<td>µg/L</td>
<td>3.8</td>
<td>HH</td>
<td>45,050*</td>
<td>98,100*</td>
</tr>
<tr>
<td>Cyanide, free</td>
<td>µg/L</td>
<td>5.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance, Characteristic, or Pollutant (Class 2Bd)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dissolved-oxygen

<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDT (c)</td>
<td>ng/L</td>
<td>1.7</td>
<td>HH</td>
<td>550*</td>
<td>1,100*</td>
</tr>
<tr>
<td>1,2-Dichloroethane (c)</td>
<td>µg/L</td>
<td>3.8</td>
<td>HH</td>
<td>45,050*</td>
<td>98,100*</td>
</tr>
<tr>
<td>Cyanide, free</td>
<td>µg/L</td>
<td>5.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dissolved-oxygen

<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endosulfan</td>
<td>µg/L</td>
<td>0.029</td>
<td>HH</td>
<td>0.28</td>
<td>0.56</td>
</tr>
<tr>
<td>Endrin</td>
<td>µg/L</td>
<td>0.016</td>
<td>HH</td>
<td>0.090</td>
<td>0.18</td>
</tr>
<tr>
<td>Escherichia (E.)</td>
<td>See</td>
<td>See</td>
<td>HH</td>
<td>See</td>
<td>See</td>
</tr>
</tbody>
</table>

### Dissolved-oxygen

<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endosulfan</td>
<td>µg/L</td>
<td>0.029</td>
<td>HH</td>
<td>0.28</td>
<td>0.56</td>
</tr>
<tr>
<td>Endrin</td>
<td>µg/L</td>
<td>0.016</td>
<td>HH</td>
<td>0.090</td>
<td>0.18</td>
</tr>
<tr>
<td>Escherichia (E.)</td>
<td>See</td>
<td>See</td>
<td>HH</td>
<td>See</td>
<td>See</td>
</tr>
</tbody>
</table>

### Dissolved-oxygen

<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endosulfan</td>
<td>µg/L</td>
<td>0.029</td>
<td>HH</td>
<td>0.28</td>
<td>0.56</td>
</tr>
<tr>
<td>Endrin</td>
<td>µg/L</td>
<td>0.016</td>
<td>HH</td>
<td>0.090</td>
<td>0.18</td>
</tr>
<tr>
<td>Escherichia (E.)</td>
<td>See</td>
<td>See</td>
<td>HH</td>
<td>See</td>
<td>See</td>
</tr>
</tbody>
</table>

Not to 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.
### Eutrophication Standards for Class 2BD Lakes, Shallow Lakes, and Reservoirs

For Eutrophication standards for Class 2BD lakes, shallow lakes, and reservoirs, see definitions in part 7050.0150, subpart 4, and ecoregion map in part 7050.0467.

#### Lakes, Shallow Lakes, and Reservoirs in Northern Lakes and Forest Ecoregion

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>µg/L</td>
<td>30</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>µg/L</td>
<td>9</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less than 2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Lakes and Reservoirs in North Central Hardwood Forest Ecoregion

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>µg/L</td>
<td>40</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>µg/L</td>
<td>14</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less than 1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Lakes and Reservoirs in Western Corn Belt Plains and Northern Glaciated Plains Ecoregions

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>µg/L</td>
<td>65</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>µg/L</td>
<td>22</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less than 0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Shallow Lakes in North Central Hardwood Forest Ecoregion

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>µg/L</td>
<td>60</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>µg/L</td>
<td>20</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less than 1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Shallow Lakes in Western Corn Belt Plains and Northern Glaciated Plains Ecoregions

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant</th>
<th>Units</th>
<th>CS</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>µg/L</td>
<td>90</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
06/18/01  [REVISOR CKM/DI RD3548]

1. Chlorophyll-a  µg/L  30  NA  --  --  NA
2. Secchi disk  meters  Not less  NA  --  --  NA
3. transparency  than 0.7
4. 
5. Additional narrative eutrophication standards for Class 2Bd

6. lakes, shallow lakes, and reservoirs are found under subpart 3a.

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2Bd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoranthene  µg/L  1.9  Tox-  3.5  6.9  Tox-</td>
</tr>
<tr>
<td>HFB chlor (c)  ng/L  0.39  HH  260*  520*  Tox-</td>
</tr>
<tr>
<td>HFB chlor:  ng/L  0.48  HH  270*  530*  Tox-</td>
</tr>
<tr>
<td>epoxide (c)  ng/L  0.24  HH  None  None  Tox-</td>
</tr>
<tr>
<td>Hexachloro- benzene (c)  ng/L  0.24  HH  None  None  Tox-</td>
</tr>
<tr>
<td>Lead, total  µg/L  Formula  Tox-  Formula  Formula  Tox-</td>
</tr>
<tr>
<td>equation  equation  equation</td>
</tr>
</tbody>
</table>

8. Lead, total: The CS, MS, and PAV vary with total hardness and are calculated using the following equations:

9. The CS in µg/L shall not exceed: exp(1.273[ln(total hardness mg/L)]-4.705)

10. The MS in µg/L shall not exceed: exp(1.273[ln(total hardness mg/L)]-1.460)

11. The PAV in µg/L shall not exceed: exp(1.273[ln(total hardness mg/L)]-0.7643)

12. Where: exp. is the natural antilogarithm (base e) of the expression in parenthesis.

13. For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

14. Example of total lead standards in-µg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness-(mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard: CS</td>
<td>1+1</td>
<td>3+2</td>
<td>7+7</td>
</tr>
<tr>
<td>MS</td>
<td>3+3</td>
<td>8+2</td>
<td>19+7</td>
</tr>
<tr>
<td>PAV</td>
<td>60</td>
<td>164</td>
<td>396</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2Bd)</th>
<th>Units</th>
<th>CS</th>
<th>Basis for MS</th>
<th>FAV</th>
<th>Basis for MS, FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury, total in water</td>
<td>mg/L</td>
<td>6.9</td>
<td>HH</td>
<td>2.4*</td>
<td>4.9*</td>
</tr>
<tr>
<td>Mercury, total in edible fish tissue</td>
<td>ppm</td>
<td>0.2</td>
<td>HH</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Methylene chloride (c)</td>
<td>µg/L</td>
<td>46</td>
<td>HH</td>
<td>13,875*</td>
<td>27,749*</td>
</tr>
<tr>
<td>Metolachlor</td>
<td>µg/L</td>
<td>23</td>
<td>Tox</td>
<td>271</td>
<td>543</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>µg/L</td>
<td>81</td>
<td>Tox</td>
<td>409</td>
<td>818</td>
</tr>
<tr>
<td>Nickel, total</td>
<td>µg/L</td>
<td>81</td>
<td>Formula</td>
<td>409</td>
<td>818</td>
</tr>
</tbody>
</table>

Nickel, total: The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

The CS shall not exceed the human health-based standard of 297 µg/L. For waters with total hardness values less than 212 mg/L, the CS in µg/L is toxicity-based and shall not exceed: exp(0.846(ln(total hardness mg/L)) + 1.1645)

The MS in µg/L shall not exceed: exp(0.846(ln(total hardness mg/L)) + 3.3612)

The FAV in µg/L shall not exceed: exp(0.846(ln(total hardness mg/L)) + 4.0543)

where exp. is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate
the standard.

Example of total nickel standards in mg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>68</td>
<td>158</td>
<td>283</td>
</tr>
<tr>
<td>MS</td>
<td>789</td>
<td>1,418</td>
<td>2,549</td>
</tr>
<tr>
<td>FAV</td>
<td>1,578</td>
<td>2,836</td>
<td>5,098</td>
</tr>
</tbody>
</table>

Substance, Characteristic, or Pollutant (Class 2Bd)

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2Bd)</th>
<th>Units</th>
<th>CS, Basis for MS, FAV</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil, Oxygen, dissolved</td>
<td>mg/L</td>
<td>See below</td>
<td></td>
</tr>
</tbody>
</table>

5.0 mg/L as a daily minimum. This dissolved oxygen standard may be modified on a site-specific basis according to part 7050.0220, subpart 7, except that no site-specific standard shall be less than 5 mg/L as a daily average and 4 mg/L as a daily minimum. Compliance with this standard is required 50 percent of the days at which the flow of the receiving water is equal to the 7Q10.

Parathion, Pentachlorophenol

Pentachlorophenol: The MS and FAV vary with pH and are calculated using the following equations:

The CS shall not exceed 1.9

The MS in µg/L shall not exceed: exp.(1.005[pH]-4.830)

The FAV in µg/L shall not exceed: exp.(1.005[pH]-4.1373)

Where: exp. is the natural antilogarithm (base e) of the expression in parenthesis.

For pH values less than 6.0, 6.0 shall be used to calculate
the standard and for pH values greater than 9.0, 9.0 shall be used to calculate the standard.

Example of pentachlorophenol standards in µg/L for three five pH values:

<table>
<thead>
<tr>
<th>pH (µg/L)</th>
<th>7.0</th>
<th>7.5</th>
<th>8.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>MS</td>
<td>9.1</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>FAV</td>
<td>10</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

pH (µg/L) Not-less-than-6.5 nor-greater-than-9.0

<table>
<thead>
<tr>
<th>pH, minimum</th>
<th>6.5</th>
<th>7.0</th>
<th>7.5</th>
<th>8.0</th>
<th>9.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH, maximum</td>
<td>9.0</td>
<td>NA</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>3.6</td>
<td>Tox</td>
<td>32</td>
<td>64</td>
<td>Tox</td>
</tr>
<tr>
<td>Phenol</td>
<td>123</td>
<td>Tox</td>
<td>2,214</td>
<td>4,428</td>
<td>Tox</td>
</tr>
<tr>
<td>Polychlorinated biphenyls, total (µg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Units CS Basis for MS FAV for CS PAV

Selenium, total µg/L 5.0 Tox 20 40 Tox

Silver, total µg/L 1.0 Tox* Formula Formula Tox*

Silver, total The MS and FAV vary with total hardness and

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are calculated using the following equations:

The MS shall not exceed: \( \exp(1.720(\ln(\text{total hardness mg/L}) - 7.2156)) \)

The PAV shall not exceed: \( \exp(1.720(\ln(\text{total hardness mg/L})) - 6.520) \)

Provided that the MS and PAV shall be no less than 78 mg/L.

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total silver standards in mg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PAV</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Temperature:

5°F above natural in streams and 3°F above natural in lakes, based on monthly average of the maximum daily.

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver, total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS µg/L</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>MS µg/L</td>
<td>1.0</td>
<td>2.0</td>
<td>5.7</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>PAV µg/L</td>
<td>1.2</td>
<td>4.1</td>
<td>13</td>
<td>27</td>
<td>44</td>
</tr>
</tbody>
</table>

Approved by Revisor ___________
temperatures, except in no case shall it exceed the daily average temperature of 86°F.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Unit</th>
<th>CS</th>
<th>MS</th>
<th>FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,2,2 Tetrachloroethane</td>
<td>µg/L</td>
<td>1,5</td>
<td>HH</td>
<td>1,127*</td>
</tr>
<tr>
<td>Tetracloroethylene</td>
<td>µg/L</td>
<td>3,8</td>
<td>HH</td>
<td>478*</td>
</tr>
<tr>
<td>Thallium</td>
<td>µg/L</td>
<td>0,28</td>
<td>HH</td>
<td>64</td>
</tr>
<tr>
<td>Toluene</td>
<td>µg/L</td>
<td>253</td>
<td>Tox</td>
<td>1,352</td>
</tr>
<tr>
<td>Toxaphene (c)</td>
<td>ng/L</td>
<td>1,3</td>
<td>HH</td>
<td>730*</td>
</tr>
<tr>
<td>1,1,1 Trichloroethane</td>
<td>µg/L</td>
<td>329</td>
<td>Tox</td>
<td>2,957</td>
</tr>
<tr>
<td>1,1,2 Trichloroethylene</td>
<td>µg/L</td>
<td>25</td>
<td>HH</td>
<td>6,988*</td>
</tr>
<tr>
<td>2,4,6 Trichlorophenol</td>
<td>µg/L</td>
<td>2,0</td>
<td>HH</td>
<td>102</td>
</tr>
<tr>
<td>Turbidity value</td>
<td>NTU</td>
<td>25</td>
<td>NA</td>
<td>None</td>
</tr>
<tr>
<td>Vinyl chloride (c)</td>
<td>µg/L</td>
<td>0,18</td>
<td>HH</td>
<td>None</td>
</tr>
<tr>
<td>Xylene, total m,p,o</td>
<td>µg/L</td>
<td>166</td>
<td>Tox</td>
<td>1,407</td>
</tr>
</tbody>
</table>

Zinc, total µg/L Formula: \[ \exp(0.8473[\ln(\text{total hardness mg/L})]+0.7615) \]

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate.
Example of total zinc standards in μg/L for three total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>68</td>
<td>59</td>
<td>106</td>
<td>143</td>
<td>443</td>
</tr>
<tr>
<td>MS</td>
<td>65</td>
<td>117</td>
<td>211</td>
<td>279</td>
<td>379</td>
</tr>
<tr>
<td>FAV</td>
<td>130</td>
<td>234</td>
<td>421</td>
<td>594</td>
<td>758</td>
</tr>
</tbody>
</table>

Subp. 3a. Narrative eutrophication standards for Class 2Bd lakes, shallow lakes, and reservoirs.

A. Eutrophication standards applicable to lakes, shallow lakes, and reservoirs that lie on the border between two ecoregions or that are in the Red River Valley, Northern Minnesota Wetlands, or Driftless Area Ecoregions must be applied on a case-by-case basis. The commissioner shall use the standards applicable to adjacent ecoregions as a guide.

B. Eutrophication standards are compared to data averaged over the summer season (June through September). Exceedance of the total phosphorus and either the chlorophyll-a or Secchi disk standard is required to indicate a polluted condition.

C. It is the policy of the agency to protect all lakes, shallow lakes, and reservoirs from the undesirable effects of cultural eutrophication. Lakes, shallow lakes, and reservoirs with a baseline quality better than the numeric eutrophication standards in subpart 3 must be maintained in that state.
condition through the strict application of all relevant federal, state, and local requirements governing nondegradation, the discharge of nutrients from point and nonpoint sources, and the protection of lake, shallow lake, and reservoir resources, including, but not limited to:

(1) the nondegradation requirements in parts 7050.0180 and 7050.0185;

(2) the phosphorus effluent limits for point sources, where applicable in chapter 7053;

(3) the requirements for feedlots in chapter 7020;

(4) the requirements for individual sewage treatment systems in chapter 7080;

(5) the requirements for control of stormwater in chapter 7090;

(6) county shoreland ordinances; and

(7) implementation of mandatory and voluntary best management practices to minimize point and nonpoint sources of nutrients.

D. Lakes, shallow lakes, and reservoirs with a baseline quality that is poorer than the numeric eutrophication standards in subpart 3 must be considered to be in compliance with the standards if the baseline quality is the result of natural causes. The commissioner shall determine baseline quality and compliance with these standards using summer-average data and the procedures in part 7050.0150, subpart 5. "Natural causes" is defined in part 7050.0150, subpart 4, item N.
E. When applied to reservoirs, the eutrophication standards in this subpart and subpart 3 may be modified on a site-specific basis to account for characteristics of reservoirs that can affect trophic status, such as water temperature, variations in hydraulic residence time, watershed size, and the fact that reservoirs may receive drainage from more than one ecoregion. Information supporting a site-specific standard can be provided by the commissioner or by any person outside the agency. The commissioner shall evaluate all data in support of a modified standard and determine whether a change in the standard for a specific reservoir is justified. Any total phosphorus 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.

Subp. 4. Class 2B waters. The quality of Class 2B surface waters shall be such as to permit the propagation and maintenance of a healthy community of cool or warm water sport or commercial fish and associated aquatic life, and their habitats. These waters shall be suitable for aquatic recreation of all kinds, including bathing, for which the waters may be usable. This class of surface water is not protected as a source of drinking water. The applicable standards are given below—

Approved by Revisor ________
The percent un-ionized ammonia can be calculated for any temperature and pH as described in subpart 7 by using the following equation taken from Emerson, K., R.C. Russo, R.E. Lund, and R.V. Thurston, Aqueous ammonia equilibrium calculations; effect of pH and temperature. Journal of the Fisheries Research Board of Canada 32: 2379-2383 (1975):

\[ f = \frac{1}{(10^{(pK_a-pH)} + 1)} \times 100 \]

where: 
- \( f \) = the percent of total ammonia in the un-ionized state
- \( pK_a = 0.69 + (2730/T) \) (dissociation constant for ammonia)
- \( T = \) temperature in degrees Kelvin (273.16 degrees Celsius)

<table>
<thead>
<tr>
<th>Substance or Pollutant</th>
<th>Class-2B</th>
<th>Class-2B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chronic</td>
<td>Acutes</td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td>Standards</td>
</tr>
<tr>
<td></td>
<td>Units</td>
<td>CS</td>
</tr>
<tr>
<td>Acenaphthene</td>
<td>µg/L</td>
<td>20</td>
</tr>
<tr>
<td>Acetochlor</td>
<td>µg/L</td>
<td>1.7</td>
</tr>
<tr>
<td>Acrylonitrile (c)</td>
<td>µg/L</td>
<td>0.89</td>
</tr>
<tr>
<td>Alachlor (c)</td>
<td>µg/L</td>
<td>59</td>
</tr>
<tr>
<td>Aluminum, total</td>
<td>µg/L</td>
<td>125</td>
</tr>
<tr>
<td>Ammonia un-ionized</td>
<td>µg/L</td>
<td>40</td>
</tr>
</tbody>
</table>

The percent un-ionized ammonia can be calculated for any temperature and pH as described in subpart 7 by using the following equation taken from Emerson, K., R.C. Russo, R.E. Lund, and R.V. Thurston, Aqueous ammonia equilibrium calculations; effect of pH and temperature. Journal of the Fisheries Research Board of Canada 32: 2379-2383 (1975):

\[ f = \frac{1}{(10^{(pK_a-pH)} + 1)} \times 100 \]

where: 
- \( f \) = the percent of total ammonia in the un-ionized state
- \( pK_a = 0.69 + (2730/T) \) (dissociation constant for ammonia)
- \( T = \) temperature in degrees Kelvin (273.16°C)
06/18/07

Benzene (c)  µg/L  914  Text  4,487  3,974  Tox-
Bromoform  µg/L  98  HH  2,300  5,800  Tox-

Substance, Characteristic, or Pollutant

Benzene  µg/L  466  HH  2,300  5,800  Tox-

Cadmium, total  µg/L  Formula  Tox-
equation

Cadmium—total The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

The CS in µg/L shall not exceed: \( \exp \{0.785(\ln(\text{total hardness mg/L}) - 3.49) \} \)

The MS in µg/L shall not exceed: \( \exp \{1.128(\ln(\text{total hardness mg/L}) - 1.685) \} \)

The FAV in µg/L shall not exceed: \( \exp \{1.128(\ln(\text{total hardness mg/L}) - 0.9919) \} \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total cadmium standards in-µg/L for three five hardness values:

<table>
<thead>
<tr>
<th>Hardness—(mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard— CS</td>
<td>0.56</td>
<td>1.1</td>
<td>2.0</td>
</tr>
<tr>
<td>MS</td>
<td>33</td>
<td>73</td>
<td>116</td>
</tr>
<tr>
<td>FAV</td>
<td>67</td>
<td>146</td>
<td>231</td>
</tr>
</tbody>
</table>

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total cadmium standards in-µg/L for three five hardness values:

<table>
<thead>
<tr>
<th>CS µg/L</th>
<th>0.66</th>
<th>1.1</th>
<th>2.0</th>
<th>2.7</th>
<th>3.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS µg/L</td>
<td>15</td>
<td>33</td>
<td>73</td>
<td>116</td>
<td>160</td>
</tr>
<tr>
<td>FAV µg/L</td>
<td>31</td>
<td>67</td>
<td>146</td>
<td>231</td>
<td>319</td>
</tr>
</tbody>
</table>

Carbon tetra-chloride (c)  µg/L  5.9  HH  1,750*  3,500*  Tox-
Chlordane (c)  ng/L  0.29  HH  1,200*  2,400*  Tox-
Chloride  mg/L  230  Tox  860  1,720  Tox-
Chlorine standard applies to conditions of continuous exposure, where continuous exposure refers to chlorinated effluents that are discharged for more than a total of two hours in any 24-hour period.

Chlorine, total \( \mu g/L \) 11 Tox 19 38 Tox
residual

The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

The CS in \( \mu g/L \) shall not exceed: \( \exp(0.819[\ln(\text{total hardness mg/L})+1.561]) \)

The MS in \( \mu g/L \) shall not exceed: \( \exp(0.819[\ln(\text{total hardness mg/L})+3.688]) \)

The FAV in \( \mu g/L \) shall not exceed: \( \exp(0.819[\ln(\text{total hardness mg/L})+4.380]) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total chromium +3 standards in \( \mu g/L \) for three total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>±67</td>
<td>207</td>
<td>365</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>±73</td>
<td>3064</td>
<td>3864</td>
<td></td>
</tr>
<tr>
<td>FAV</td>
<td>±966</td>
<td>3469</td>
<td>6426</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substance, Characteristic, or Pollutant</td>
<td>Units</td>
<td>CS Basis</td>
<td>MS Basis</td>
<td>FAV Basis</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>Chromium +3, total</td>
<td>µg/L</td>
<td>117</td>
<td>207</td>
<td>365</td>
<td>509</td>
</tr>
<tr>
<td>Chromium +6, total</td>
<td>µg/L</td>
<td>984</td>
<td>1,737</td>
<td>3,064</td>
<td>4,270</td>
</tr>
<tr>
<td>Cobalt, total</td>
<td>µg/L</td>
<td>1,966</td>
<td>3,469</td>
<td>6,120</td>
<td>8,530</td>
</tr>
<tr>
<td>Substance, Total</td>
<td>µg/L</td>
<td>11</td>
<td>Tox+ 16</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Cobalt, total</td>
<td>µg/L</td>
<td>5.0</td>
<td>Tox+ 436</td>
<td>872</td>
<td></td>
</tr>
<tr>
<td>Substance, Total</td>
<td>µg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper, total</td>
<td>µg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula Tox+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula Tox+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula Tox+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formula Tox+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper, total</td>
<td>µg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total hardness</td>
<td>mg/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The CS in µg/L shall not exceed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp(0.6200[ln(total hardness mg/L)]-0.570)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The MS in µg/L shall not exceed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp(0.9422[ln(total hardness mg/L)]-1.464)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The FAV in µg/L shall not exceed:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>exp(0.9422[ln(total hardness mg/L)]-0.7703)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Example of total copper standards in µg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>6.4</td>
<td>9.8</td>
<td>15</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Standard MS</td>
<td>9.2</td>
<td>18</td>
<td>34</td>
<td>50</td>
<td>65</td>
</tr>
<tr>
<td>Standard FAV</td>
<td>18</td>
<td>35</td>
<td>68</td>
<td>100</td>
<td>131</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TH in mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>200</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>400</td>
</tr>
</tbody>
</table>

Copper, total

<p>| CS µg/L   | 6.4 | 9.8  | 15   | 19   | 23   |
| MS µg/L   | 9.2 | 18   | 34   | 50   | 65   |
| FAV µg/L  | 18  | 35   | 68   | 100  | 131  |</p>
<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>Basis</th>
<th>MS</th>
<th>FAV</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanide, free</td>
<td>µg/L</td>
<td></td>
<td>5.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDT (c)</td>
<td>mg/L</td>
<td>HH</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2-Dichloro-ethane (c)</td>
<td>µg/L</td>
<td>HH</td>
<td>190</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dieldrin (c)</td>
<td>ng/L</td>
<td>HH</td>
<td>0.026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di-2-ethylhexyl phthalate (c)</td>
<td>µg/L</td>
<td>HH</td>
<td>2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Di-n-octyl phthalate</td>
<td>µg/L</td>
<td></td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dissolved oxygen mg/L** 5.0 as a daily minimum

This dissolved oxygen standard may be modified on a site-specific basis according to Subpart 87 except that no site-specific standard shall be less than 5 mg/L as a daily average and 4 mg/L as a daily minimum. Compliance with this standard is required 50 percent of the days at which the flow of the receiving water is equal to the lowest weekly flow with a once-in-a-year recurrence interval (7Q10). This standard applies to all Class 2B waters except for those portions of the Mississippi River from the outlet of the metro wastewater treatment works in Saint Paul (River Mile 835) to the lock and dam No. 2 at Hastings (River Mile 815). For this reach of the Mississippi River the standard is not less than 5 mg/L as a daily average from April 1 through November 30, and not less than 4 mg/L at other times.

**Endosulfan** µg/L 0.031 HH 0.28 0.56

**Endrin** µg/L 0.016 HH 0.090 0.18

**Escherichia coli** See below HH See below

Not to 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.

**Ethylbenzene** µg/L 68

**Fecal coliform organisms** Not to exceed 286 organisms per 100 milliliters as a geometric mean of not less than five samples in any calendar month nor shall more than ten percent of all samples taken during any calendar month individually exceed 2,717.
Eutrophication standards for Class 2B lakes, shallow lakes, and reservoirs. See definitions in part 7050.0150, subpart 4, and ecoregion map in part 7050.0467.

### Lakes, Shallow Lakes, and Reservoirs in Northern Lakes and Forest Ecoregions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Value</th>
<th>NA</th>
<th>NA</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>ug/L</td>
<td>30</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>ug/L</td>
<td>9</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transparency</td>
<td></td>
<td>than 2.0</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### Lakes and Reservoirs in North Central Hardwood Forest Ecoregion

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Value</th>
<th>NA</th>
<th>NA</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>ug/L</td>
<td>40</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>ug/L</td>
<td>14</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transparency</td>
<td></td>
<td>than 1.4</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### Lakes and Reservoirs in Western Corn Belt Plains and Northern Glaciated Plains Ecoregions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Value</th>
<th>NA</th>
<th>NA</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>ug/L</td>
<td>65</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>ug/L</td>
<td>22</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transparency</td>
<td></td>
<td>than 0.9</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### Shallow Lakes in North Central Hardwood Forest Ecoregion

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Value</th>
<th>NA</th>
<th>NA</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>ug/L</td>
<td>60</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>ug/L</td>
<td>20</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transparency</td>
<td></td>
<td>than 1.0</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### Shallow Lakes in Western Corn Belt Plains and Northern Glaciated Plains Ecoregions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard</th>
<th>Value</th>
<th>NA</th>
<th>NA</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus, total</td>
<td>ug/L</td>
<td>90</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Chlorophyll-a</td>
<td>ug/L</td>
<td>30</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Secchi disk</td>
<td>meters</td>
<td>Not less</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Transparency</td>
<td></td>
<td>than 0.7</td>
<td>NA</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Additional narrative eutrophication standards for Class 2B
Fluoranthene

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2B)</th>
<th>Units</th>
<th>CS Basis</th>
<th>MS Basis</th>
<th>FAV Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoranthene</td>
<td>µg/L</td>
<td>1.9</td>
<td>3.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Tox*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

The CS in µg/L shall not exceed: \( \exp(1.273\ln(\text{total hardness mg/L}) - 4.705) \)

The MS in µg/L shall not exceed: \( \exp(1.273\ln(\text{total hardness mg/L}) - 1.460) \)

The FAV in µg/L shall not exceed: \( \exp(1.273\ln(\text{total hardness mg/L}) - 0.7643) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total lead standards in µg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>1.3</td>
<td>3.2</td>
<td>7.7</td>
</tr>
<tr>
<td>MS</td>
<td>14</td>
<td>82</td>
<td>197</td>
</tr>
<tr>
<td>FAV</td>
<td>68</td>
<td>164</td>
<td>396</td>
</tr>
</tbody>
</table>

TH in mg/L

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead, total</td>
<td>1.3</td>
<td>3.2</td>
<td>7.7</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>CS µg/L</td>
<td>34</td>
<td>82</td>
<td>197</td>
<td>331</td>
<td>477</td>
</tr>
<tr>
<td>Substance, or Pollutant</td>
<td>Units</td>
<td>CS Basis for MS</td>
<td>FAV Basis for MS, FAV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------</td>
<td>-----------------</td>
<td>-----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lindane (c)</td>
<td>µg/L</td>
<td>0.036 HH</td>
<td>Tox-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Hexachlorocyclo-hexane, gamma-)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury, total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in water</td>
<td>µg/L</td>
<td>0.0069 HH</td>
<td>2.4*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury, total</td>
<td></td>
<td></td>
<td>4.9*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in edible fish tissue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methylene chloride (c)</td>
<td>µg/L</td>
<td>1.940 HH</td>
<td>13.875</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Dichloromethane)</td>
<td></td>
<td></td>
<td>27.749</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metolachlor</td>
<td>µg/L</td>
<td>23 Tox</td>
<td>271</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naphthalene total</td>
<td>µg/L</td>
<td>81 Tox</td>
<td>409</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel, total</td>
<td>µg/L</td>
<td>Formula Tox</td>
<td>818</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Formula Tox</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mercury - The CS, MS, and FAV vary with total hardness and are calculated using the following equations:

- The CS in µg/L shall not exceed: \( \exp(0.846[\ln(\text{total hardness mg/L})+1.1645]) \)
- The MS in µg/L shall not exceed: \( \exp(0.846[\ln(\text{total hardness mg/L})+3.3612]) \)
- The FAV in µg/L shall not exceed: \( \exp(0.846[\ln(\text{total hardness mg/L})+4.0543]) \)

Where: \( \exp \) is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total nickel standards in µg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>±00</th>
<th>±00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approved by Revisor _____
5.0 mg/L as a daily minimum. This dissolved oxygen standard may be modified on a site-specific basis according to part 7050.0220, subpart 7, except that no site-specific standard shall be less than 5 mg/L as a daily average and 4 mg/L as a daily minimum. Compliance with this standard is required 50 percent of the days at which the flow of the receiving water is equal to the 70.0. This standard applies to all Class 2B waters except for those portions of the Mississippi River from the outfall of the Metro Wastewater Treatment Works in Saint Paul (River Mile 835) to Lock and Dam No. 2 at Hastings (River Mile 815). For this reach of the Mississippi River, the standard is not less than 5 mg/L as a daily average from April 1 through November 30, and not less than 4 mg/L at other times.

The CS, MS, and FAV vary with pH and are calculated using the following equations:

For waters with pH values greater than 6.95, the CS shall not exceed the human health-based standard of 5.5 µg/L.

For waters with pH values less than 6.96, the CS shall not exceed the toxicity-based standard of exp.(1.005[pH]-4.830)

The MS shall not exceed: exp.(1.005[pH]-4.1373)
Where: $\exp$ is the natural antilogarithm (base e) of the expression in parenthesis.

For pH values less than 6.0, 6.0 shall be used to calculate the standard and for pH values greater than 9.0, 9.0 shall be used to calculate the standard.

Example of pentachlorophenol standards in-μg/L for three five pH values:

<table>
<thead>
<tr>
<th>pH (μg/L)</th>
<th>7.0</th>
<th>7.5</th>
<th>8.0</th>
<th>8.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>CS</td>
<td>MS</td>
<td>FAV</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>6.0</td>
<td>9.1</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>7.0</td>
<td>11</td>
<td>18</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>7.5</td>
<td>15</td>
<td>30</td>
<td>50</td>
<td>82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>pH su</th>
<th>6.5</th>
<th>7.0</th>
<th>7.5</th>
<th>8.0</th>
<th>8.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentachlorophenol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS μg/L</td>
<td>3.5</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>NS μg/L</td>
<td>5.5</td>
<td>9.1</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>FAV μg/L</td>
<td>11</td>
<td>18</td>
<td>30</td>
<td>50</td>
<td>82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance, Characteristic, or Pollutant (Class 2B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
</tr>
<tr>
<td>pH, minimum</td>
</tr>
<tr>
<td>pH, maximum</td>
</tr>
<tr>
<td>Phenanthrene</td>
</tr>
<tr>
<td>Phenol</td>
</tr>
<tr>
<td>Polychlorinated biphenyls, total (c)</td>
</tr>
<tr>
<td>Radioactive materials</td>
</tr>
</tbody>
</table>

Seelenium, total μg/L | 5.0 | Tox | 20 | 40 | Tox

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wq-rule-1-10
Silver, total  μg/L  1.0  Tox. Formula  Formula  Tox.
equation  equation

Silver-total: The MS and FAV vary with total hardness and are calculated using the following equations:

The MS shall not exceed:  \[ \exp (1.720 \ln (\text{total hardness mg/L}) - 7.2156) \]

The FAV shall not exceed:  \[ \exp (1.720 \ln (\text{total hardness mg/L}) - 6.520) \]

Provided that the MS and FAV shall be no less than 1.0 μg/L.

Where: exp. is the natural antilogarithm (base e) of the expression in parenthesis.

For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total silver standards in μg/L for three five total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>FAV</td>
<td>1.2</td>
<td>4.0</td>
<td>6.7</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver, total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS μg/L</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>MS μg/L</td>
<td>1.0</td>
<td>2.0</td>
<td>6.7</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td>FAV μg/L</td>
<td>1.2</td>
<td>4.1</td>
<td>13</td>
<td>27</td>
<td>44</td>
</tr>
</tbody>
</table>

Substance, Characteristic, or Pollutant (Class 2B)

Units  CS  Basis  MS  FAV  Basis  for  MS  FAV

Temperature  °F  See  NA  --  --  NA

140

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5°F above natural in streams and 3°F above natural in lakes, based on monthly average of the maximum daily temperatures, except in no case shall it exceed the daily average temperature of 85°F.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Units</th>
<th>Formula for CS, MS, and FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,2,2 Tetrachloroethane</td>
<td>µg/L</td>
<td>13 HH 1.127 2.253 Tox-</td>
</tr>
<tr>
<td>Tetrachloroethylene</td>
<td>µg/L</td>
<td>8.9 HH 428 857 Tox-</td>
</tr>
<tr>
<td>Thallium</td>
<td>µg/L</td>
<td>0.56 HH 64 128 Tox-</td>
</tr>
<tr>
<td>Toluene</td>
<td>µg/L</td>
<td>253 Tox- 1,352 2,703 Tox-</td>
</tr>
<tr>
<td>Toxaphene (c)</td>
<td>mg/L</td>
<td>1.3 HH 730* 1,500* Tox-</td>
</tr>
<tr>
<td>1,1,1 Trichloroethane</td>
<td>µg/L</td>
<td>329 Tox- 2,957 5,913 Tox-</td>
</tr>
<tr>
<td>1,1,2 Trichloroethylene (c)</td>
<td>µg/L</td>
<td>120 HH 6,988 13,976 Tox-</td>
</tr>
<tr>
<td>2,4,6 Trichlorophenol</td>
<td>µg/L</td>
<td>2.0 HH 102 203 Tox-</td>
</tr>
<tr>
<td>Turbidity value</td>
<td>NTU</td>
<td>25 NA None None NA</td>
</tr>
<tr>
<td>Vinyl chloride (c)</td>
<td>µg/L</td>
<td>9.2 HH None None NA</td>
</tr>
<tr>
<td>Xylene, total</td>
<td>mg/L</td>
<td>156 Tox- 1,407 2,814 Tox-</td>
</tr>
<tr>
<td>Zinc, total</td>
<td>µg/L</td>
<td>0.8473[ln(total hardness mg/L)]+0.7615</td>
</tr>
</tbody>
</table>

The CS in µg/L shall not exceed: \( \exp(0.8473[\ln(\text{total hardness mg/L})]+0.7615) \)

The NS in µg/L shall not exceed: \( \exp(0.8473[\ln(\text{total hardness mg/L})]+0.8604) \)

The PAV in µg/L shall not exceed: \( \exp(0.8473[\ln(\text{total hardness mg/L})]+1.5536) \)

where: \( \exp(\cdot) \) is the natural antilogarithm (base e) of the expression in parenthesis.
For hardness values less than 10 mg/L, 10 mg/L shall be used to calculate the standard and for hardness values greater than 400 mg/L, 400 mg/L shall be used to calculate the standard.

Example of total zinc standards in mg/L for three total hardness values:

<table>
<thead>
<tr>
<th>Hardness (mg/L)</th>
<th>50</th>
<th>100</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CS</td>
<td>59</td>
<td>106</td>
<td>191</td>
</tr>
<tr>
<td>MS</td>
<td>65</td>
<td>117</td>
<td>211</td>
</tr>
<tr>
<td>PAV</td>
<td>130</td>
<td>234</td>
<td>421</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TH in mg/L</th>
<th>50</th>
<th>100</th>
<th>200</th>
<th>300</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc, total</td>
<td>59</td>
<td>106</td>
<td>191</td>
<td>269</td>
<td>343</td>
</tr>
<tr>
<td>CS µg/L</td>
<td>65</td>
<td>117</td>
<td>211</td>
<td>297</td>
<td>379</td>
</tr>
<tr>
<td>MS µg/L</td>
<td>130</td>
<td>234</td>
<td>421</td>
<td>594</td>
<td>758</td>
</tr>
</tbody>
</table>

Subp. 4a. Narrative eutrophication standards for Class 2B lakes, shallow lakes, and reservoirs.

A. Eutrophication standards applicable to lakes, shallow lakes, and reservoirs that lie on the border between two ecoregions or that are in the Red River Valley, Northern Minnesota Wetlands, or Driftless Area Ecoregions must be applied on a case-by-case basis. The commissioner shall use the standards applicable to adjacent ecoregions as a guide.

B. Eutrophication standards are compared to data averaged over the summer season (June through September). Exceedance of the total phosphorus and either the chlorophyll-α or Secchi disk standard is required to indicate a polluted condition.

C. It is the policy of the agency to protect all lakes, shallow lakes, and reservoirs from the undesirable effects of cultural eutrophication. Lakes, shallow lakes, and
reservoirs with a baseline quality better than the numeric eutrophication standards in subpart 4 must be maintained in that condition through the strict application of all relevant federal, state, and local requirements governing nondegradation, the discharge of nutrients from point and nonpoint sources, and the protection of lake, shallow lake, and reservoir resources, including, but not limited to:

- (1) the nondegradation requirements in parts 7050.0180 and 7050.0185;
- (2) the phosphorus effluent limits for point sources, where applicable in chapter 7053;
- (3) the requirements for feedlots in chapter 7020;
- (4) the requirements for individual sewage treatment systems in chapter 7080;
- (5) the requirements for control of stormwater in chapter 7090;
- (6) county shoreland ordinances; and
- (7) implementation of mandatory and voluntary best management practices to minimize point and nonpoint sources of nutrients.

D. Lakes, shallow lakes, and reservoirs with a baseline quality that is poorer than the numeric eutrophication standards in subpart 4 must be considered to be in compliance with the standards if the baseline quality is the result of natural causes. The commissioner shall determine baseline quality and compliance with these standards using summer-average
data and the procedures in part 7050.0150, subpart 5. "Natural causes" is defined in part 7050.0150, subpart 4, item N.

E. When applied to reservoirs, the eutrophication standards in this subpart and subpart 4 may be modified on a site-specific basis to account for characteristics of reservoirs that can affect trophic status, such as water temperature, variations in hydraulic residence time, watershed size, and the fact that reservoirs may receive drainage from more than one ecoregion. Information supporting a site-specific standard can be provided by the commissioner or by any person outside the agency. The commissioner shall evaluate all data in support of a modified standard and determine whether a change in the standard for a specific reservoir is justified. Any total phosphorus 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.

Subp. 5. Class 2C waters. The quality of Class 2C surface waters shall be such as to permit the propagation and maintenance of a healthy community of indigenous fish and associated aquatic life, and their habitats. These waters shall be suitable for boating and other forms of aquatic recreation for which the waters may be usable. The standards for Class 2B waters listed in subparts 4 and 4a shall apply to these waters except as listed below:

Substance or Characteristic, or Pollutant
Escherichia (E.) coli. Not to 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.

Dissolved Oxygen, dissolved. 5 mg/L as a daily minimum. This dissolved oxygen standard may be modified on a site-specific basis according to part 7050.0220, subpart 9 7, except that no site-specific standard shall be less than 5 mg/L as a daily average and 4 mg/L as a daily minimum. Compliance with this standard is required 50 percent of the days at which the flow of the receiving water is equal to the lowest- weekly-flow-with-a-one-in-ten-year-recurrence interval—(7010). This dissolved oxygen standard applies to all Class 2C waters except for those portions of the Mississippi River from the outlet of the metro wastewater treatment works in Saint Paul (River Mile 835) to Lock and Dam No. 2 at Hastings (River Mile 815) and except for the reach of the Minnesota River from the outlet of the Blue Lake wastewater treatment works (River Mile 21) to the mouth at Port Snelling. For this reach of the Mississippi River the standard is not less than 5 mg/L as a daily average from April 1 through November 30, and not less than 4 mg/L at other times. For the specified reach of the Minnesota River the standard shall be not less than 5 mg/L as a daily average year-round.

Temperature. 5°F above natural in streams and 3°F above natural in lakes, based on monthly average of the maximum daily temperature, except in no case shall it exceed the daily average temperature of 90°F.

Subp. 6. Class 2D waters; wetlands.

A. The quality of Class 2D wetlands shall be such as to permit the propagation and maintenance of a healthy community of aquatic and terrestrial species indigenous to wetlands, and their habitats. Wetlands also add to the biological diversity of the landscape. These waters shall be suitable for boating and other forms of aquatic recreation for which the wetland may be usables. The standards for Class 2B waters listed under subpart 4 shall apply to these waters except as listed below:
Subject to, Characteristic, or Pollutant
Subclass of, Characteristic, or Pollutant
Dissolved Oxygen, dissolved
If background is less than 5.0 mg/L as a daily minimum, maintain background
pH
Maintain background
Temperature
Maintain background

*B. "Maintain background," as used in this subpart, means the concentration of the water quality substance or characteristic substances, characteristics, or pollutants shall not deviate from the range of natural background concentrations or conditions such that there is a potential significant adverse impact to the designated uses.

C. Activities in wetlands which involve the normal farm practices of planting with annually seeded crops or the utilization of a crop rotation seeding of pasture grasses or legume, including the recommended applications of fertilizer and pesticides, are excluded from the standards in this subpart and the wetland standards in parts 7050.0224, subpart 4; 7050.0225, subpart 2; and 7050.0227. All other activities in these wetlands must meet water quality standards.

Subp. 7. Additional standards; Class 2 waters. The following additional standards and requirements apply to all Class 2 waters.

A. No sewage, industrial waste, or other wastes from point or nonpoint sources shall be discharged into any of the waters of this category so as to cause any material change in any other substances or characteristics, or pollutants which may impair the quality of the waters of the state or the aquatic
biota of any of the classes in subparts 2 to 6 or in any manner render them unsuitable or objectionable for fishing, fish culture, or recreational uses. Additional selective limits or changes in the discharge bases may be imposed on the basis of local needs.

B. To prevent acutely toxic conditions,
concentrations of toxic pollutants from point or nonpoint sources must not exceed the FAV as a one-day average at the point of discharge or in the surface water consistent with parts 7050.0210, subpart 5, item D; 7050.0215, subpart 1; 7053.0225, subpart 6; and 7050.0245, subpart 1.

If a discharge is composed of a mixture of more than one chemical, and the chemicals have the same mode of toxic action, the commissioner has the option to apply an additive model to determine the toxicity of the mixture using the following formula equation:

\[
\frac{C_1}{FAV_1} + \frac{C_2}{FAV_2} + \ldots + \frac{C_n}{FAV_n} \text{ equals a value of one or more, an acutely toxic condition is indicated}
\]

where: \(C_1, \ldots, C_n\) is the concentration of the first to the \(n^{th}\) toxicant.

\(FAV_1, \ldots, FAV_n\) is the FAV for the first to the \(n^{th}\) toxicant.

[For text of item C, see M.R.]

D. Concentrations of carcinogenic chemicals from point or nonpoint sources, singly or in mixtures, should not
exceed a risk level of one chance in 100,000 in surface waters. Carcinogenic chemicals will be considered additive in their effect according to the following formula equation unless an alternative model is supported by available scientific evidence. The additive formula equation applies to chemicals that have a human health-based standard calculated with a cancer potency factor.

\[
\frac{C_1}{CC_1} + \frac{C_2}{CC_2} + \ldots + \frac{C_n}{CC_n} = \text{value of one or more,}
\]

where: \( C_1 \ldots C_n \) is the concentration of the first to the \( n \)th carcinogen,
\( CC_1 \ldots CC_n \) is the drinking water plus fish consumption criterion (dWEE CCdf) or fish consumption criterion (fWEE CCf) for the first to \( n \)th carcinogen.

2. The provisions of this item apply to maximum standards (MS), final acute values (FAV), and double dashes (--) in this part and part 7050.0220 marked with an asterisk (*). For carcinogenic or highly bioaccumulative chemicals with BCFs greater than 5,000 or log \( K_{ow} \) values greater than 5.19, the human health-based chronic standard (CS) may be two or more orders of magnitude smaller than the acute toxicity-based MS. If the commissioner finds that a very large MS and FAV, relative to the CS for such pollutants is not protective of the public health, the MS and FAV shall be reduced according to the following guidelines:

If the ratio of the MS to the CS is greater than 100, the
CS times 100 should be substituted for the applicable MS, and
the CS times 200 should be substituted for the applicable FAV.
Any effluent limitation limit derived using the procedures of
this item shall only be required after the discharger has been
given notice of the specific proposed effluent limitations
limits and an opportunity to request a hearing as provided in
part 7000.1800. The-relevant-MS-and-FAV-values,-or-if-there-is
no-MS-or-FAV,-the-word-"none,-"are-marked-by-an-asterisk-(®)-in
subparts-2-to-4-and-part-7850.0220.

Subp. 8. [See repealer.]

Subp. 9. Conversion factors for dissolved metal standards.

<table>
<thead>
<tr>
<th>Metal</th>
<th>Chronic-standard Conversion Factor</th>
<th>Maximum-standard-and Conversion Factors for CS</th>
<th>Metal</th>
<th>Chronic-standard Conversion Factor</th>
<th>Maximum-standard-and Conversion Factors for MS and FAV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>0.909</td>
<td>0.946</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium</td>
<td>0.860</td>
<td>0.316</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>0.960</td>
<td>0.950</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>0.791</td>
<td>0.791</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>1.0</td>
<td>0.850</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>0.997</td>
<td>0.998</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silver</td>
<td>0.850</td>
<td>0.850</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>0.986</td>
<td>0.978</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Conversion factors for cadmium and lead are hardness (TH)
dependent. The values factors shown in the table above are
for a total hardness of 100 mg/L (as-CaCO3) only. The
hardness-dependent-conversion-factors-for-cadmium-are
calculated-using-the-following-formula: Conversion factors
for cadmium and lead for other hardness values shall be
calculated using the equations included in the table. The
dissolved standard is the total standard times the
conversion factor.

**Chronic-standard** ← 1.0±672±{in-total-hardness} ↓

**Metals**

**Conversion Factors**

**Maximum Standard and Conversion Factors**

*Conversion factors for cadmium and lead are hardness (TH)
dependent. The values factors shown in the table above are
for a total hardness of 100 mg/L (as-CaCO3) only. The
hardness-dependent-conversion-factors-for-cadmium-are
calculated-using-the-following-formula: Conversion factors
for cadmium and lead for other hardness values shall be
calculated using the equations included in the table. The
dissolved standard is the total standard times the
conversion factor.

**Chronic-standard** ← 1.0±672±{in-total-hardness} ↓

**Metals**

**Conversion Factors**

**Maximum Standard and Conversion Factors**

*Conversion factors for cadmium and lead are hardness (TH)
dependent. The values factors shown in the table above are
for a total hardness of 100 mg/L (as-CaCO3) only. The
hardness-dependent-conversion-factors-for-cadmium-are
calculated-using-the-following-formula: Conversion factors
for cadmium and lead for other hardness values shall be
calculated using the equations included in the table. The
dissolved standard is the total standard times the
conversion factor.

**Chronic-standard** ← 1.0±672±{in-total-hardness} ↓

**Approved by Revisor _______________**
7050.0223 SPECIFIC WATER QUALITY STANDARDS GP-QUALITY- AND PURITY FOR CLASS 3 WATERS OF THE STATE; INDUSTRIAL CONSUMPTION.

Subpart 1. General. The numerical numeric and narrative water quality standards in this part prescribe the qualities or properties of the waters of the state that are necessary for the industrial consumption designated public uses and benefits. If the standards in this part are exceeded in waters of the state that have the Class 3 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses.

Subp. 2. Class 3A waters; industrial consumption. The quality of Class 3A waters of the state shall be such as to permit their use without chemical treatment, except softening for groundwater, for most industrial purposes, except food processing and related uses, for which a high quality of water is required. The quality shall be generally comparable to Class 3B waters for domestic consumption, except for the following. The following standards shall not be exceeded in the waters of the state:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 3A Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorides (Cl)</td>
<td>50 milligrams-per-liter mg/L</td>
</tr>
</tbody>
</table>
Subp. 3. Class 3B waters. The quality of Class 3B waters of the state shall be such as to permit their use for general industrial purposes, except for food processing, with only a moderate degree of treatment. The following standards shall not be exceeded in the waters of the state:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 3B Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorides (Cl)</td>
<td>100 mg/L</td>
</tr>
<tr>
<td>Hardness, Ca + Mg as CaCO₃</td>
<td>250 mg/L</td>
</tr>
<tr>
<td>pH, minimum value</td>
<td>6.0 -- 8.5</td>
</tr>
<tr>
<td>pH, maximum value</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Subp. 4. Class 3C waters. The quality of Class 3C waters of the state shall be such as to permit their use for industrial cooling and materials transport without a high degree of treatment being necessary to avoid severe fouling, corrosion, scaling, or other unsatisfactory conditions. The following standards shall not be exceeded in the waters of the state:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 3C Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorides (Cl)</td>
<td>250 mg/L</td>
</tr>
<tr>
<td>Hardness, Ca + Mg as CaCO₃</td>
<td>500 mg/L</td>
</tr>
<tr>
<td>pH, minimum value</td>
<td>6.0 -- 9.0</td>
</tr>
<tr>
<td>pH, maximum value</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Subp. 5. Class 3D waters, wetlands. The quality of Class 3D wetlands shall be such as to permit their use for general industrial purposes, except for food processing, with only a
The following standards apply:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 3D Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorides (Cl)</td>
<td>Maintain background</td>
</tr>
<tr>
<td>Hardness, Ca + Mg as CaCO₃</td>
<td>Maintain background</td>
</tr>
<tr>
<td>pH</td>
<td>Maintain background</td>
</tr>
</tbody>
</table>

For the purposes of this subpart, "maintain background" means the concentration of the water quality substance or characteristic, or pollutant shall not deviate from the range of natural background concentrations or conditions such that there is a potential significant adverse impact to the designated uses.

[For text of subp 6, see M.R.]
part are exceeded in waters of the state that have the Class 4 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated use.

Subp. 2. Class 4A waters. The quality of Class 4A waters of the state shall be such as to permit their use for irrigation without significant damage or adverse effects upon any crops or vegetation usually grown in the waters or area, including truck garden crops. The following standards shall be used as a guide in determining the suitability of the waters for such uses, together with the recommendations contained in Handbook 60 published by the Salinity Laboratory of the United States Department of Agriculture, and any revisions, amendments, or supplements to it:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 4A Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicarbonates (HCO₃)</td>
<td>5 milliequivalents per liter</td>
</tr>
<tr>
<td>Boron (B)</td>
<td>0.5 milligram-per-liter mg/L</td>
</tr>
<tr>
<td>pH, minimum value</td>
<td>6.0 --8.5</td>
</tr>
<tr>
<td>pH, maximum value</td>
<td>8.5</td>
</tr>
<tr>
<td>Specific conductance</td>
<td>1,000 micromhos per centimeter at 25°C</td>
</tr>
<tr>
<td>Total dissolved salts</td>
<td>700 milligrams-per-liter mg/L</td>
</tr>
<tr>
<td>Sodium (Na)</td>
<td>60% of total cations as milliequivalents per liter</td>
</tr>
<tr>
<td>Sulfates (SO₄)</td>
<td>10 milligrams-per-liter mg/L, applicable to water used for production of wild rice during periods when the rice may be susceptible to damage by high sulfate levels.</td>
</tr>
<tr>
<td>Radioactive materials</td>
<td>Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.</td>
</tr>
</tbody>
</table>

Subp. 3. Class 4B waters. The quality of Class 4B waters...
of the state shall be such as to permit their use by livestock
and wildlife without inhibition or injurious effects. The
standards for substances or characteristics, or pollutants
given below shall not be exceeded in the waters of the state:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 4B Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH, minimum value</td>
<td>6.0 -- 9.0</td>
</tr>
<tr>
<td>pH, maximum value</td>
<td>9.0</td>
</tr>
<tr>
<td>Total salinity</td>
<td>1,000 milligrams-per-liter mg/L</td>
</tr>
<tr>
<td>Radioactive materials</td>
<td>Not to exceed the lowest concentrations permitted to be discharged to an uncontrolled environment as prescribed by the appropriate authority having control over their use.</td>
</tr>
<tr>
<td>Toxic substances</td>
<td>None at levels harmful either directly or indirectly.</td>
</tr>
</tbody>
</table>

Additional selective limits may be imposed for any specific waters of the state as needed.

Subp. 4. Class 4C waters; wetlands. The quality of Class 4C wetlands shall be such as to permit their use for irrigation and by wildlife and livestock without inhibition or injurious effects and be suitable for erosion control, groundwater recharge, low flow augmentation, stormwater retention, and stream sedimentation. The standards for Classes 4A and 4B waters shall apply to these waters except as listed below:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 4C Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>Maintain background</td>
</tr>
<tr>
<td>Settleable solids</td>
<td>Shall not be allowed in concentrations sufficient to create the potential for significant adverse impacts on one or more designated uses.</td>
</tr>
</tbody>
</table>

For the purposes of this subpart, "maintain background"
means the concentration of the water quality substance or, characteristic, or pollutant shall not deviate from the range of natural background concentrations or conditions such that there is a potential significant adverse impact to the designated uses.

7050.0225 SPECIFIC WATER QUALITY STANDARDS OF QUALITY AND PURITY FOR CLASS 5 WATERS OF THE STATE; AESTHETIC ENJOYMENT AND NAVIGATION.

Subpart 1. General. The numerical and narrative water quality standards in this part prescribe the qualities or properties of the waters of the state that are necessary for the aesthetic enjoyment and navigation designated public uses and benefits. If the standards in this part are exceeded in waters of the state that have the Class 5 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses.

Subp. 2. Class 5 waters; aesthetic enjoyment and navigation. The quality of Class 5 waters of the state shall be such as to be suitable for aesthetic enjoyment of scenery, to avoid any interference with navigation or damaging effects on property. The following standards shall not be exceeded in the waters of the state:

Substance or, Characteristic, Class 5 Standard

<table>
<thead>
<tr>
<th>Substance or, Characteristic, Class 5 Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>For-nonwetlands</td>
</tr>
<tr>
<td>pH-value</td>
</tr>
<tr>
<td>Hydrogen-sulfide-as-S</td>
</tr>
<tr>
<td>0.82-milligram-per-liter</td>
</tr>
<tr>
<td>For-wetlands</td>
</tr>
<tr>
<td>pH-value</td>
</tr>
<tr>
<td>Maintain-background</td>
</tr>
</tbody>
</table>
For the purposes of this subpart, "maintain background" means the concentration of the water quality substance or characteristic, or pollutant shall not deviate from the range of natural background concentrations or conditions such that there is a potential significant adverse impact to the designated uses. Additional selective limits may be imposed for any specific waters of the state as needed.

Subpart 1. General. The numerical and narrative water quality standards in this part prescribe the qualities or properties of the waters of the state that are necessary for other designated public uses and benefits. If the standards in this part are exceeded in waters of the state that have the Class 6 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses. [For text of subp. 2, see M.R.]

Subpart 1. General. The numerical and narrative
water quality standards in this part prescribe the qualities or
properties of the waters of the state that have limited resource
value designated public uses and benefits. If the standards in
this part are exceeded in waters of the state that have the
Class 7 designation, it is considered indicative of a polluted
condition which is actually or potentially deleterious, harmful,
detrimental, or injurious with respect to the designated uses.

Subp. 2. Class 7 waters; limited resource value waters.
The quality of Class 7 waters of the state shall be such as to
protect aesthetic qualities, secondary body contact use, and
groundwater for use as a potable water supply. Standards of for
substances or characteristics, or pollutants given below shall
not be exceeded in the waters:

<table>
<thead>
<tr>
<th>Substance or Characteristic</th>
<th>Class 7 Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fecal coliform-organisms</td>
<td>Not-to-exceed-1y000-organisms-per</td>
</tr>
<tr>
<td></td>
<td>100-milliliters-in-any-calendar</td>
</tr>
<tr>
<td></td>
<td>month-as-determined-by-a</td>
</tr>
<tr>
<td></td>
<td>geometric-mean-of-a-minimum-of</td>
</tr>
<tr>
<td></td>
<td>five-samples-nor-shall-more-than</td>
</tr>
<tr>
<td></td>
<td>ten-percent-of-all-samples</td>
</tr>
<tr>
<td></td>
<td>taken-during-any-calendar-month</td>
</tr>
<tr>
<td></td>
<td>individually-exceed-27000</td>
</tr>
<tr>
<td></td>
<td>organisms-per-100-milliliters.</td>
</tr>
<tr>
<td></td>
<td>The-standard-applies-only-between</td>
</tr>
<tr>
<td></td>
<td>May 1 and October 31.</td>
</tr>
</tbody>
</table>

| Escherichia (E.) coli      | Not to 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. |

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wq-rule-1-10
pH-value

Not-less-than-6.8-or-greater-than-9.0

Dissolved Oxygen

At concentrations which will avoid odors or putrid conditions in the receiving water or at concentrations at not less than 1 mg/L (daily average) provided that measurable concentrations are present at all times.

pH, minimum value

6.0

pH, maximum value

9.0

Toxic pollutants

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

7050.0400 PURPOSE BENEFICIAL USE CLASSIFICATIONS FOR SURFACE WATERS; SCOPE.

Parts 7050.0405 to 7050.0470 classify all surface waters within or bordering Minnesota and designate appropriate beneficial uses for these waters. The use classifications are defined in part 7050.0200.

7050.0420 TROUT WATERS.

Trout lakes identified in part 6264.0050, subpart 2, as amended through September-14-June-1999, are classified as trout waters and are listed under part 7050.0470. Trout streams and their tributaries within the sections specified that are identified in part 6264.0050, subpart 4, as amended through September-14-June-2004, are classified as trout waters. Trout streams are listed in part 7050.0470. Other lakes that are classified as trout waters are listed in part 7050.0470. All waters listed in part 7050.0470 as Class
1B, 2A, and 3B are also classified as Class 3e, 4A, 4B, 5, and 6 waters.

7050.0425 UNLISTED WETLANDS.

Those waters of the state that are wetlands as defined by in part 7050.0400–7050.0410, subpart la, and that are not listed in part 7050.0470 are classified as Class 2D, 3D, 4C, 5, and 6 waters.

7050.0430 UNLISTED WATERS.

All surface waters of the state that are not listed in part 7050.0470 and that are not wetlands as defined under in part 7050.0400–7050.0410, subpart la, are hereby classified as Class 2B, 3B 3C, 4A, 4B, 5, and 6 waters.

7050.0440 OTHER CLASSIFICATIONS SUPERSEDED.

Parts 7050.0400 to 7050.0470 supersede any other previous classifications and any classifications in other rules including parts 7050.0400–7050.0450.

7050.0450 MULTICLASSIFICATIONS.

All surface waters of the state are classified in more than one class and all the water quality standards for each of the classes apply. If the water quality standards for particular parameters for the various classes are different, the more restrictive of the standards apply.

7050.0460 WATERS SPECIFICALLY CLASSIFIED; EXPLANATION OF LISTINGS IN PART 7050.0470.

Subpart 1. Explanation of listings. The waters of the
state listed in part 7050.0470 are classified as specified. The
specific stretch of watercourse or the location of a waterbody
water body is described by township, range, and section,
abbreviated-as-T-T-R-R-S-S-respectively. Any community listed
in part 7050.0470 is the community nearest the water classified,
and is included solely to assist in identifying the water. Most
waters of the state are not specifically listed in part
7050.0470. See parts 7050.0425 and 7050.0430 for the
classifications of waters not listed.

Outstanding-resource-value-waters-are-listed-in-part
7050.0470-and-are-denoted-by-an-asterisk-(*)-preceding-the-name
of-the-water-resource.—Following-the-name-is-the-effective-date
the-water-resource-was-designated-as-an-outstanding-resource
value-water-and-a-letter-code-that-corresponds-to-the-applicable
discharge-restrictions-in-part-7058.01807-subpart-3-or-6.—The
letter-code-P-corresponds-to-the-prohibited-discharges-provision
in-part-7058.01807-subpart-3.—The-letter-code-R-corresponds-to

Subp. 2. Outstanding international waters. The waters
listed in part 7050.0470, subpart 1, that are not designated as
outstanding resource value waters or classified as Class 7
waters are designated as outstanding international resource
waters under part 7052.0300, subpart 3. Unlisted waters
classified in part 7050.0430 and unlisted wetlands classified in
part 7050.0425 that are located in the Lake Superior Basin are
also designated as outstanding international resource waters
under part 7052.0300, subpart 3.
Waters-listed-in-part-7050.0470-that-are-classified-as
Class-2Bd-are-Class-2B-waters-also-classified-for-domestic
consumption-purposes---Applicable-standards-for-Class-2Bd-waters
are-listed-in-part-7050.0222-subpart-3.
Waters-designated-as-wild-rice-waters-in-part-7050.0470-
subpart-17-are-identified-by-the-letters-WR-appearing-in
brackets-following-the-name-of-the-water.

Subp. 3. Abbreviations and symbols. The listings in part
7050.0470 include the following abbreviations and symbols:
T., R., S. means township, range, and section, respectively.
An asterisk (*) preceding the name of the water body means
the water body is an outstanding resource value water.

[month/day/year/letter code] following the name of the
outstanding resource value water in brackets is the effective
date the water resource was designated as an outstanding
resource value water. The letter code (P or R) indicates the
applicable discharge restrictions in part 7050.0180, subpart 3
or 6. The letter code P corresponds to the prohibited
discharges provision in part 7050.0180, subpart 3. The letter
code R corresponds to the restricted discharges provision in
part 7050.0180, subpart 6.

[WR] following the name of the water body means the water
body is designated as a wild rice water in part 7050.0470,
subpart 1.

Class 2Bd waters are Class 2B waters also protected for
domestic consumption purposes (Class 1). Applicable standards
for Class 2Bd waters are listed in part 7050.0222, subparts 3
1 and 3a.

2 7050.0467 MAP: MINNESOTA ECOREGIONS.
CLASSIFICATIONS FOR SURFACE WATERS IN MAJOR SURFACE WATER DRAINAGE BASINS.

Subpart 1. Lake Superior Basin. The water use classifications for the listed waters in the Lake Superior Basin are as identified in items A7-By-and to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

1. Ahlenius Creek, (T.53, R.14, S.9, 10): 1B, 2A, 3B;


3. Anderson Creek, Carlton County, (T.46, R.17, S.11, 14, 15, 22, 26, 27): 1B, 2A, 3B;

4. Anderson Creek, St. Louis County, (T.49, R.15, S.16, 17, 18; T.49, R.16, S.12, 13): 1B, 2A, 3B;

5. Barker Creek, (T.60, R.3W, S.5, 6, 7, 8; T.60, R.4W, S.3, 9, 10, 11, 12; T.61, R.4W, S.34, 35): 1B, 2A, 3B;


7. Bear Trap Creek (Beartrap Creek), (T.51, R.16, S.30; T.51, R.17, S.16, 21, 22, 23, 25, 26, 27, 28): 1B, 2A, 3B;

8. Beaver Dam Creek (Beaverdam Creek), (T.63, R.35, S.2, 3, 4, 5; T.64, R.3E, S.32, 33, 34, 35): 1B, 2A, 3B;

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(18) Beaver River (includes Kit Creek), (T.55, R.8, S.2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17; T.55, R.9, S.1, 2; T.56, R.8, S.31; T.56, R.9, S.4, 5, 6, 8, 9, 16, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 32, 33, 34, 35, 36; T.57, R.9, S.20, 32, 33): 1B, 2A, 3B;

(19) Beaver River, East Branch (includes Hen Creek), (T.55, R.8, S.2; T.56, R.8, S.4, 5, 6, 8, 9, 15, 16, 21, 22, 25, 26, 27, 35, 36; T.57, R.8, S.7, 18, 19, 30, 31, 32; T.57, R.9, S.2, 3, 11, 12, 13, 14, 15, 23, 24, 25, 26, 36): 1B, 2A, 3B;

[For text of subitems (20) to (26), see M.R.]

(27) Breda Creek (see Berry Creek);

[For text of subitem (28), see M.R.]

(29) Brule River (excluding trout waters and waters within Boundary Waters Canoe Area Wilderness), (T.62, T.63, 64, R.1W, 1E, 2E7-3B): 1B, 2Bd, 3B 3C;


(31) Budd Creek (Bud Creek), (T.55, R.9, S.7, 17, 18, 20, 21): 1B, 2A, 3B;

[For text of subitems (32) to (38), see M.R.]

(39) Caribou River, (T.58, R.6, S.1, 2, 11, 13, 14, 15, 22, 23, 24, 25, 26, 35; T.59y-R.5W7-S-t97-28y-29y-30y; T.59, R.6, S.23, 24, 25, 26, 35, 36): 1B, 2A, 3B.
[For text of subitems (40) to (42), see M.R.]

(43) *Cascade River, North Branch [11/5/84P]

(T.62, R.2W, S.3, 10): 1B, 2A, 3B;

(44) Cascade River, North Branch (those waters
outside the Boundary Waters Canoe Area Wilderness), (T.62, R.2W,
S.10): 1B, 2A, 3B;

†44† (45) Castle Danger Creek (Campers), (T.54,
R.9, S.30, 31, 32): 1B, 2A, 3B;

†45† (46) Cedar Creek, Lake County, (T.56, R.8,
S.13, 14, 23, 24, 26): 1B, 2A, 3B;

†46† (47) Cedar Creek, Cook County, (T.59, R.5W,
S.2; T.60, R.5W, S.14, 22, 23, 25, 26, 35, 36): 1B, 2A, 3B;

†47† (48) Cemetery Creek, (T.51, R.17, S.4, 5, 9):
1B, 2A, 3B;

†48† (49) Chellberg Creek (Chellberg Creek),
(T.51, R.16, S.7; T.51, R.17, S.1, 2, 3, 10, 12): 1B, 2A, 3B;

†49† (50) Chester Creek, (T.50, R.14, S.7, 8, 9,
14, 15, 16, 23): 1B, 2A, 3B;

†50† (51) Chester Creek, East Branch, (T.50,
R.14, S.4, 5, 9, 15, 16): 1B, 2A, 3B;

†51† (52) Chicken Creek, (T.52, R.16, S.5, 7, 8,
18, 19; T.52, R.17, S.13, 24, 25; T.53, R.16, S.32): 1B, 2A,
3B;

†52† (53) Clear Creek, Carlton County, (T.46,
R.17, S.9, 10, 11, 12, 16, 17, 20, 29): 1B, 2A, 3B;

†53† (54) Clear Creek, Carlton County, (T.47,
R.15, S.7; T.47, R.16, S.1, 2, 3, 4, 12; T.48, R.16, 8.33): 1B,
1 2A, 3B;

†54† (55) Cliff Creek, (T.61, R. 2E, S. 3, 4, 5, 9, 10; T.62, R. 2E, S. 29, 30, 31, 32): 1B, 2A, 3B;

†55† (56) Cloudy Spring Creek, (T.57, R. 9, S. 5, 6, 7, 18; T.57, R. 10, S. 12, 13, 24): 1B, 2A, 3B;


†57† (58) Coolidge Creek, (T.55, R. 14, S. 19, 29, 30; T.55, R. 15, S. 25, 26, 35, 36): 1B, 2A, 3B;

†58† (59) Cranberry Creek, (T.58, R. 13): 2C;


†60† (61) Crow Creek, (T.53, R. 10, S. 1, 2; T.54, 10, S.15, 22, 23, 26, 35): 1B, 2A, 3B;

†61† (62) Crown Creek, (T.57, R. 8, S. 2, 3, 4, 5, 9, 10, 11; T.58, R. 8, S. 5, 6, 7, 18, 19, 20, 29, 30, 31, 32, 33; T.58, R. 9, S. 1, 12, 13, 14, 24, 36; T.59, R. 8, S. 32): 1B, 2A, 3B;

†62† (63) Crystal Creek, (T.48, R. 16, S. 6; T.48, R.17, S.1): 1B, 2A, 3B;

†63† (64) Cutface Creek (Good Harbor Creek), (T.61, R. 1W, S. 27, 28, 29, 34): 1B, 2A, 3B;

†64† (55) Dago Creek, (T.54, R. 9, S.10, 19; T.54, R.10, S.2, 11, 12, 13; T.55, R.10, S.27, 34, 35): 1B, 2A, 3B;

†65† (66) Deer Creek, (T.47, R.16, S. 19, 20, 28,
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Notes</th>
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<tr>
<td>1</td>
<td>Deer Yard Creek (Spruce Creek), (T.60, R.2W, S.4, 5, 6, 7, 8, 9, 10, 15, 16, 17; T.61, R.2W, S.32)</td>
<td>1B, 2A, 3B</td>
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<td>2</td>
<td>Devil Track River, (T.61, R.1E, S.1, 2, 3, 10, 11, 12, 13; T.62, R.1E, S.26, 31, 32, 33, 34, 35, 36)</td>
<td>1B, 2A, 3B</td>
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<td>Devil Track River, Little, (T.61, R.1E, S.4, 5, 6, 7, 8, 9, 10; T.61, R.1W, S.1, 2, 11, 12)</td>
<td>1B, 2A, 3B</td>
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<td>Dragon Creek, (T.57, R.6, S.8, 9, 16, 17, 21)</td>
<td>1B, 2A, 3B</td>
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<td>5</td>
<td>Durfee Creek, (T.61, R.2E, S.5, 6, 8; T.62, R.1E, S.25, 36; T.62, R.2E, S.31)</td>
<td>1B, 2A, 3B</td>
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<td>6</td>
<td>Dutchess Slough Creek (Dutch Slough), (T.50, R.17, S.4, 9, 10, 13, 14, 15, 24)</td>
<td>1B, 2A, 3B</td>
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<td>Egge Creek, (T.57, R.7, S.2, 3, 4, 11)</td>
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<td>Elbow Creek, Cook County, (T.62, R.1E, S.3, 4, 9, 10, 15, 22, 27, 34; T.63, R.1E, S.33, 34)</td>
<td>1B, 2A, 3B</td>
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<td>9</td>
<td>Elbow Creek, Eveleth, (T.57, R.17, S.6, 11, T.54, R.1D, S.8, 16, 17, 21, 27, 28, 34)</td>
<td>1B, 2A, 3B</td>
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1. Farquhar Creek, (T.62, R.4E, S.2, 11;
   T.63, R.4E, S.34, 35): 1B, 2A, 3B;
2. Fiddle Creek, (T.64, R.1W, S.34): 1B, 2A, 3B;
3. Fiddle Creek, (T.63, R.1W, S.2, 3, 10;
   T.64, R.1W, S.35): 1B, 2A, 3B;
4. Flute Reed River, (T.62, R.3E, S.1, 2, 3, 10, 11, 12, 13, 14, 15; T.62, R.4E, S.17, 18, 19, 20; T.63, 9 R.3E, S.26, 34, 35, 36): 1B, 2A, 3B;
5. (82) Fond du Lac Creek (Squaw), (T.49, R.17, S.9, 16, 17, 18, 19, 20, 21): 1B, 2A, 3B;
6. Fox Farm Creek, (T.62, R.1E, S.19, 30): 1B, 2A, 3B;
11. Gooseberry River, (T.54, R.9, S.18, 19, 20, 21, 22, 27; T.54, R.10, S.4, 5, 6, 8, 9, 10, 11, 12, 13, T.55, R.10, S.4, 9, 16, 17, 20, 29, 30, 31, 32; T.56, R.10, S.33): 1B, 2A, 3B;
1. S.6; T.54, R.11, S.1; T.55, R.10, S.31; T.55, R.11, S.34, 35, 36; 1B, 2A, 3B;
2. 88; (90) Grand Portage Creek, (T.63, R.5E, S.1; T.63, R.6E, S.4, 5, 6; T.64, R.6E, S.31, 32, 33); 1B, 2A, 3B;
3. 89; (91) Greenwood River, (T.63, R.2E, S.1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24; T.63, R.3E, S.6; T.64, R.2E, S.34; T.64, R.3E, S.31); 1B, 2A, 3B;
4. 90; (92) Bay Creek, (T.49, R.16, S.3, 4, 9, 10, 15; T.50, R.16, S.20, 21, 28, 29, 32, 33); 1B, 2A, 3B;
5. 91; (93) Heartbreak Creek, (T.59, R.4W, S.18, 19; T.59, R.5W, S.2, 11, 12, 13; T.60, R.5W, S.27, 28, 33, 34, 35); 1B, 2A, 3B;
6. 92; (94) Hellwig Creek, (T.52, R.17, S.3, 10, 14, 15, 23, 26; T.53, R.16, S.16, 18, 19, 20, 30; T.53, R.17, S.13, 14, 23, 24, 25, 26, 34, 35); 1B, 2A, 3B;
7. 93; (95) Rockamin Creek, (T.57, R.7, S.17, 18, 19; T.57, R.8, S.13, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33); 1B, 2A, 3B;
8. 94; (96) Hollow Rock Creek, (T.63, R.5E, S.9, 10, 11, 14, 15, 16, 23, 24, 25); 1B, 2A, 3B;
9. 95; (97) Honeymoon Creek (Spring Creek), (T.61, R.4W, S.28, 31, 32, 33); 1B, 2A, 3B;
10. 96; (98) Hornby Junction Creek (Whiteface River, South Branch), (T.55, R.13, S.5, 6, 7; T.56, R.13, S.28, 32, 33); 1B, 2A, 3B;
11. 97; (99) Horn Creek, (T.67, R.4W); 1B, 2Bd, 3B
12. 3C;
13. 169

Approved by Revisor __________________
1. t98t (100) Houghtaling Creek, (T.59, R.6, S.2, 3, 4, 5, 6; T.60, R.6, S.25, 32, 33, 35, 36): 1B, 2A, 3B;
2. t99t (101) Humphrey Creek, (T.54, R.14, S.23, 26, 27, 33, 34): 1B, 2A, 3B;
3. t100t (102) Hunter Creek (Huntera Creek), (T.46, R.18, S.2, 11, 12, 13; T.47, R.18, S.34, 35): 1B, 2A, 3B;
4. t101t (103) Indian Camp Creek, (T.60, R.2W, S.3, 10, 11; T.61, R2W, S.34): 1B, 2A, 3B;
5. t102t (104) Indian Creek, (T.55, R.12, S.3; T.56, R.12, S.14, 22, 23, 27, 34): 1B, 2A, 3B;
6. t103t (105) Irish Creek, (T.63, R.3E, S.6, 9, 10, 13, 14, 15, 23, 24, 25, 26; T.63, R.4E, S.17, 18, 19): 1B, 2A, 3B;
7. t104t (106) Joe Martin Creek (Martin Branch), (T.50, R.18, S.3, 4, 5, 7, 8; T.50, R.19, S.12): 1B, 2A, 3B;
8. t105t (107) Johnson Creek, (T.50, R.17, S.3, 10, 11, 14; T.51, R.17, S.34): 1B, 2A, 3B;
9. t106t (108) Johnson Creek, (T.55, R.12, S.35, 36): 1B, 2A, 3B;
10. t107t (109) Jonvick Creek, (T.60, R.2W, S.7, 19; T.60, R.3W, S.12, 13, 14, 24): 1B, 2A, 3B;
11. t108t (110) Junco Creek, (T.62, R.1W, S.1, 2, 9, 10, 11, 12, 13, 14, 15, 16, 21, 28; T.62, R.1E, S.6, 7; T.63, R.1E, S.20, 29, 30, 31; T.63, R.1W, S.24, 25, 35): 1B, 2A, 3B;
12. t109t (111) Kadunce Creek (Kadunce River), (T.61, R.2E, S.2; T.62, R.2E, S.9, 10, 12, 13, 14, 15, 16, 32, 23, 24, 26, 35): 1B, 2A, 3B;

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1 (112) Keene Creek, (T.49, R.14, S.18; T.49, R.15, S.1, 12, 13; T.50, R.15, S.24, 25, 36): 1B, 2A, 3B;

2 (113) Kehtel Creek, (T.51, R.15, S.8, 17, 18, 19, 20): 1B, 2A, 3B;

3 (114) Kimball Creek, (T.61, R.2E, S.3, 4, 10; T.62, R.2E, S.7, 16, 17, 18, 19, 20, 21, 28, 29, 33, 34):

4 1B, 2A, 3B;

5 (115) Kingsbury Creek, (T.49, R.15, S.4, 9, 10, 11, 13, 14; T.50, R.15, S.33, 34): 1B, 2A, 3B;

6 (116) Kinney Creek, (T.57, R.10, S.15, 21, 22, 28, 33): 1B, 2A, 3B;

7 (117) Knife River, (T.52, R.11, S.4, 5, 8, 9, 17, 18, 19, 31; T.53, R.11, S.4, 5, 7, 8, 17, 18, 20, 29, 32, 33; T.54, R.11, S.20, 29, 38, 32; T.52, R.12, S.24, 25, 36):

8 1B, 2A, 3B;


12 (121) Knife River, West Branch, (T.52, R.11, S.5, 6, 8; T.52, R.12, S.1; T.53, R.12, S.2, 3, 10, 15, 16, 22, 23, 27, 28, 34, 35, 36; T.54, R.12, S.35, 36): 1B, 2A, 3B;

13 (122) Koski Creek, (T.61, R.4W, S.5, 8;
1  T.62, R.4W, S.31, 32: 1B, 2A, 3B;
2  (123) Lavi Creek, (T.52, R.15, S.21, 28): 1B, 2A, 3B;
3  (124) Leskinen Creek,
4  (T.57, R.7, S.15, 21, 22, 28): 1B, 2A, 3B;
5  (125) Lester River, (T.50, R.13, S.4, 5, 6, 7, 8, 16, 17, 18, 19, 20, 21, 28, 33, 32, 33;
7  (127) Lullaby Creek, (T.63, R.1E, S.4, 5, 8, 9): 1B, 2A, 3B;
8  (128) Manganika Creek, Virginia, (T.58, R.17, S.19; T.58, R.18, S.24): 7;
9  (129) Manitou River (Moose Creek), (T.57, R.6, S.3, 4, 10, 11; T.58, R.6, S.4, 5, 6, 7, 8, 16, 17, 18, 20, 21, 28, 29, 32, 33, 34): 1B, 2A, 3B;
10  (130) Manitou River, Little, (T.57, R.6, S.2; T.58, R.6, S.34, 35): 1B, 2A, 3B;
11  (131) Manitou River, North Branch (Balsam Creek), (T.58, R.6, S.6; T.58, R.7, S.1, 2; T.59, R.6, S.31;
12  T.59, R.7, S.15, 16, 18, 19, 20, 21, 22, 25, 26, 27, 28, 33, 34, 35, 36; T.59, R.8, S.1, 2, 12, 13, 24, 25, 26): 1B, 2A, 3B;
13  (132) Manitou River, South Branch (Junction Creek), (T.58, R.6, S.6; T.58, R.7, S.1, 4, 5, 6, 7, 8, 9, 10,
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1 11, 12, 16, 17, 18: T.58, R.8, S.1; T.59, R.7, S.29, 30, 31, 32, 33; 1B, 2A, 3B;

2 193† (133) Marais River, Little, (T.57, R.6, S.5, 8, 16, 17, 21): 1B, 2A, 3B;

3 203† (134) Mark Creek, (T.61, R.2W, S.1, 2, 3, 4, 5, 6, 9): 1B, 2A, 3B;

4 213† (135) Marshall Creek, (T.52, R.15, S.10, 15): 1B, 2A, 3B;

5 223† (136) Martin Creek, (T.50, R.6, S.2, 3, 11); 1B, 2A, 3B;

6 233† (137) McCarthy Creek, (T.53, R.11, S.18; T.53, R.12, S.12, 13): 1B, 2A, 3B;

7 243† (138) Midway River (Rock Run), (T.49, R.15, S.5, 6; T.49, R.16, S.1, 12, 13, 14, 15, 21, 22; T.50, R.15, S.7, 8, 14, 15, 16, 17, 20, 21, 22, 23, 28, 29, 32, 33): 1B, 2A, 3B;

8 253† (139) Mile Post Forty-Three Creek (Fortythree Creek, East and West Branch), (T.56, R.8, S.2, 3, 9; 10, 11, 13, 14, 15): 1B, 2A, 3B;

9 263† (140) Miller Creek, (T.49, R.14, S.4; T.49, R.15, S.6, 18, 19, 29, 30, 32, 33; T.50, R.15, S.12, 13; T.51, R.14, S.31, 32): 1B, 2A, 3B;

10 273† (141) Mink Creek, (T.54, R.9, S.4, 5, 9; T.55, R.9, S.30, 31, 32; T.55, R.10, S.25, 26, 36): 1B, 2A, 3B;

11 283† (142) Mission Creek, (T.49, R.15, S.5, 6; T.49, R.16, S.25, 26, 36): 1B, 2A, 3B;

12 293† (143) Mississippi Creek, (T.61, R.2W, S.1, S.5, 17 Approve by Revisor

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1 2, 3; T.61, R.3W, S.1; T.62, R.2W, S.31, 32, 33, 34, 35, 36;
3 4 Mississippi Creek, Little, (T.62, R.2W, S.20, 21, 26, 29, 32, 33, 34, 35): 1B, 2A, 3B;
8 9 (146) Monk Creek, (T.61, R.1E, S.6, 7; T.62, R.1E, S.31; T.62, R.1W, S.36): 1B, 2A, 3B;
12 13 (148) Moose Creek, (T.59, R.6, S.31, 32, 33, 34): 1B, 2A, 3B;
14 15 (149) Mud Creek, Carlton County, (T.47, R.15, 8.18; T.47, R.16, S.5, 6, 8, 9, 10, 11, 13, 14, 15, 16): 1B, 2A, 3B;
17 18 (150) Mud Creek, St. Louis County, (T.54, R.12, S.20, 21, 22, 29, 30): 1B, 2A, 3B;
19 20 (151) Mud Creek, Cook County, (T.62, R.1E, S.8, 9, 16, 17, 21, 22): 1B, 2A, 3B;
21 22 (152) Mud Creek, Little, (T.57, R.11, S.11, 12, 14, 22, 23): 1B, 2A, 3B;
25 26 (154) Murphy Creek (Maki Creek), (T.56, R.11, S.4, 5, 8, 17, 18, 19; T.57, R.10, S.4, 7, 8, 9, 10; T.57, R.11, S.13, 21, 22, 23, 24, 26, 27, 28, 33, 34): 1B, 2A, 3B;

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1. Myhri Creek, (T.62, R.3E, S.23, 24, 26): 1B, 2A, 3B;
2. Nemadji Creek, (T.46, R.17, S.7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 22): 1B, 2A, 3B;
3. Nemadji River, North Fork (Nemadji River), (T.46, R.17, S.1, 2, 3, 5, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 31, 32, 33, 34, 35, 36): 1B, 2A, 3B;
4. Nemadji River, South Fork, (T.46, R.16, S.4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 31, 32, 33, 34, 35, 36): 1B, 2A, 3B;
5. Nestor Creek (Nester Creek), (T.61, R.1W, S.4, 5, 6, 7, R.2W, S.1, T.62, R.1W, S.31, 32, 33): 1B, 2A, 3B;
6. Net River, (T.45, R.16, S.5, T.45, R.17, S.1, 2, 3, 4, 5, 6, 7, 8, 9, 17, 20, 21, 29, 31, 32, 33, 34): 1B, 2A, 3B;
8. Nicadoo Creek (Nicado Creek), (T.56, R.7, S.7, T.56, R.8, S.1, 12, T.57, R.8, S.27, 35, 36): 1B, 2A, 3B;
10. Oliver Creek (Silver), (T.57, R.7, 175

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wq-rule-1-10
1 S.5, 6; T.57, R.8, S.1; T.58, R.7, 8.31, 32): 1B, 2A, 3B;  
married (165) Onion Creek (Onion River and West  
3 Branch Onion River), (T.59, R.4W, S.1, 2, 3, 4, 12; T.60, R.4W,  
4 S.24, 25, 26, 35, 36): 1B, 2A, 3B;  
married (166) Otter Creek, Big (Otter Creek),  
6 (T.48, R.16, S.7; T.49, R.17, S.3, 4, 10, 11, 12; T.49, R.17,  
7 S.19, 20, 26, 27, 28, 29, 30, 32, 33, 34, 35; T.49, R.18, 8.25,  
8 26): 1B, 2A, 3B;  
married (167) Otter Creek, Little, (T.48, R.17,  
10 S.7, 10, 15, 16, 17, 18; T.48, R.18, 8.11, 12, 13, 14): 1B, 2A,  
11 3B;  
married (168) Palisade Creek, (T.56, R.7, S.16, 17,  
13 18, 19, 20, 21, 22; T.56, R.8, S.24): 1B, 2A, 3B;  
married (169) Pancake Creek, (T.54, R.22, S.20, 28,  
15 29, 32, 33): 1B, 2A, 3B;  
married (170) Pancake Creek, (T.60, R.4W, S.17, 18;  
17 T.60, R.5W, S.11, 13, 14): 1B, 2A, 3B;  
married (171) Pecore Creek, (T.61, R.4W, S.19, 20,  
19 21): 1B, 2A, 3B;  
married (172) Peters Creek, (T.54, R.22, S.22, 23,  
21 27, 28): 1B, 2A, 3B;  
married (173) Pigeon River (South of Fowl Lake  
23 outlet to Pigeon Bay of Lake Superior): 1B, 2Bd, 3A;  
married (174) Pike Lake Creek, (T.61, R.2W, S.10,  
25 11, 15): 1B, 2A, 3B;  
married (175) Pine Mountain Creek (Palis Creek),  
27 (T.63, R.1E, S.23, 26, 27, 28, 33): 1B, 2A, 3B;
(176) Pine River (White Pine River), (T.50, R.16, S.4, 8, 9, 15, 16, 17, 18, 19, 20, 21, 29, 30, 32; T.50, R.17, S.23, 24, 26): 1B, 2A, 3B;
(179) Poplar River (Missouri Creek), (T.60, R.3W, S.3, 4, 5, 6, 8, 9, 10, 15, 16, 17, 19, 20, 21, 28, 33; T.61, R.3W, S.30, 31; T.61, R.4W, S.10, 13, 14, 15, 22, 23, 25, 26, 36): 1B, 2A, 3B;
(180) Portage Brook, (T.64, R.3E, S.24, 25, 26, 27, 28, 29, 32, 33, 34; T.64, R.4E, S.19, 20): 1B, 2A, 3B;
(181) Railroad Creek, (T.50, R.17, S.1, 11, 12, 14): 1B, 2A, 3B;
(183) Red Rock Creek, (T.63, R.5E, S.21, 22, 26, 27, 28, 35): 1B, 2A, 3B;
(185) Rock Creek, (T.47, R.16, S.7, 17, 18, 20, 21, 22, 23, 24; T.47, R.17, S.12): 1B, 2A, 3B;
(186) Rock Cut Creek, (T.58, R.6, S.18, 19, 20, T.58, R.7, S.13): 1B, 2A, 3B;

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Rosebush Creek (False River), (T.61, R.1W, S.13, 23, 24, 25; T.61, R.1E, S.18): 1B, 2A, 3B;

Ross Creek, (T.52, R.13, S.1, 2, 3, 4, 5; T.53, R.13, S.33): 1B, 2A, 3B;

Ryan Creek, (T.55, R.14, S.14, 15, 22): 1B, 2A, 3B;


Sargent Creek, (T.48, R.15, S.4, 5, 9, 10; T.49, R.15, S.28, 29, 32): 1B, 2A, 3B;


Sawmill Creek, (T.57, R.6, S.18; T.57, R.7, S.12, 13, 22, 23, 24, 26, 27, 34): 1B, 2A, 3B;

Scanlon Creek, (T.49, R.16, S.30; T.49, R.17, S.25): 1B, 2A, 3B;

Schmidt Creek, (T.51, R.12, S.17): 1B, 2A, 3B;

Schoolhouse Creek, (T.58, R.7, S.35, 36): 1B, 2A, 3B;

Section 16 Creek, (T.58, R.5W, S.16): 1B, 2A, 3B;
(200) Section 36 Creek, (T.46, R.16, S.1):

1, 11, 12, 13; T.47, R.16, S.16; 1B, 2A, 3B;

(201) Silver Creek, Carlton County, (T.48, R.16, S.15, 16, 17, 21, 28-29; 1B, 2A, 3B;

(202) Silver Creek, Lake County, (T.53, R.10, S.6, 7, 16, 17, 18, 21; T.53, R.11, S.1; T.54, R.10, S.18, 19, 30; T.54, R.11, S.11, 12, 13, 25, 36; 1B, 2A, 3B;

(203) Silver Creek, Big (Silver Creek), Carlton County, (T.46, R.17, S.14, 23, 24, 25, 36; 1B, 2A, 3B;

(204) Silver Creek, East Branch, (T.53, R.10, S.5, 8, 9, 16, 21; 1B, 2A, 3B;

(205) Sixmile Creek, (T.60, R.4W, S.13, 14, 15, 22, 23, 27, 28, 33; 1B, 2A, 3B;

(206) Skunk Creek, Lake County, (T.54, R.9, S.4, 9, 16, 17, 20; T.55, R.9, S.19, 29, 30, 31, 33; T.55, R.10, 13, 14, 24; 1B, 2A, 3B;

(207) Skunk Creek, Carlton County, (T.46, R.17, S.4, 5, 6; T.47, R.17, S.31, 33, 34, 35, 36; T.47, R.18, S.36); 1B, 2A, 3B;

(208) Spider Creek, (T.52, R.18, S.19, 20, 21, 22, 27, 28, 29, 30; T.52, R.19, S.9, 10, 13, 14, 15, 24; 1B, 2A, 3B;

(209) Split Rock River, (T.54, R.8, S.5, 7; T.54, R.9, S.1, 2, 12; T.55, R.9, S.26, 28, 34, 35, 36); 1B, 2A, 3B;

(210) Split Rock River, East Branch, (T.55, R.9, S.4, 5, 6, 9, 10, 14, 15, 22, 23, 24, 25, 26; T.56, R.9,
06/18/07 [REVISOR] L.M/DI RD3548

1 S.30, 31, 32; T.56, R.10, S.1, 11, 12, 13, 14, 24, 25): 1B, 2A, 3B;
2
3 Split Rock River, West Branch, (T.55,
4 R.9, S.6, 7, 9, 16, 17, 21, 22, 26, 27, 28; T.55, R.10, S.1;
5 T.56, R.10, S.22, 26, 27, 33, 34, 35, 36): 1B, 2A, 3B;
6
7 Spring Creek, Carlton County, (T.46, R.17, S.3, 4, 5, 6): 1B, 2A, 3B;
8
9 Spring Creek, St. Louis County, (T.54, R.12, S.1, 2): 1B, 2A, 3B;
10
11 Squaw Creek, (T.49, R.12, S.9, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27): 1B, 2A, 3B;
12
13 Stanley Creek, (T.52, R.11, S.18, 19, 20, 29): T.52, R.12, S.4, 5, 6, 9, 10, 11, 12, 13): 1B, 2A, 3B;
14
15 State Line Creek, (T.46, R.15, S.6, 7, 18, 19, 30, 31; T.46, R.16, S.12, 13, 24, 25, 36; T.47, R.15, S.30, 31): 1B, 2A, 3B;
16
17 Stewart Creek, (T.49, R.15, S.21, 22, 26, 27): 1B, 2A, 3B;
18
19 Stewart River, (T.53, R.10, S.18, 19, 20, 29; T.53, R.11, S.2, 3, 10, 11, 13, 14, 15; T.54, R.11, S.3, 4, 10, 15, 22, 26, 27, 34, 35): 1B, 2A, 3B;
20
21 Stewart River, (T.55, R.11, S.7; T.55, R.12, S.12, 13): 1B, 2A, 3B;
22
24
25 Stickle Creek, (T.63, R.1W, S.1, 2, 11, 12, 14): 1B, 2A, 3B;
26

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(221) Stone Creek, (T.61, R.2E, S.2, 3; T.62, R.2E, S.21, 22, 27, 34, 35): 1B, 2A, 3B;

(222) Stony Creek (Stony Creek or Rock Creek), Lake County, (T.55, R.9, S.30; T.55, R.10, S.20, 23, 24, 25, 27): 1B, 2A, 3B;

(223) Stony Brook, Carlton County, (T.46, R.17, S.10, 11, 15, 16, 21): 1B, 2A, 3B;

(224) Stony Creek, Little, Cook County, (T.63, R.2E, S.4, 5, 9; T.54, R.2E, S.31, 32, 33): 1B, 2A, 3B;

(225) Stream Number 3D, (T.54, R.8, S.5, 6; T.55, R.8, 5.19, 3D, 31): 1B, 2A, 3B;

(226) Stumble Creek, (T.59, R.5W, S.16, 21, 22, 26, 27, 28): 1B, 2A, 3B;

(227) Stump River (Lower Stump River), (T.64 R.4E, S.10; T.64, R.3E, S.8, 9, 13, 14, 15, 16, 17, 21, 22, 23, 24): 1B, 2A, 3B;

(228) Sucker River (Big Sucker Creek), (T.51, R.12, S.3, 4, 10; T.52, R.12, S.18, 19, 29, 30, 31, 32, 33; T.52, R.13, S.1, 12, 13, 24, 25; T.53, R.12, S.19, 20, 30, 31; T.53, R.13, S.24, 25, 36): 1B, 2A, 3B;

(229) Sucker River, Little, (T.51, R.12, S.2, 3): 1B, 2A, 3B;

(230) Sugar Loaf Creek, (T.58, R.5W, S.17, 19, 20, 29): 1B, 2A, 3B;

(231) Sullivan Creek, (T.56, R.11, S.1, 2, 10, 11, 15; T.57, R.10, S.19, 30; T.57, R.11, S.24, 25, 36):
1B, 2A, 3B;
2 1B, 2A, 3B;
3 (232) Sundling Creek, (T.61, R.1W, S.10, 11, 14, 15, 16, 17, 18; T.61, R.2W, S.13): 1B, 2A, 3B;
5 (234) Swamper Creek, (T.64, R.1E, S.20, 29, 32): 1B, 2A, 3B;
6 (235) Swan Creek, East, (T.56, R.20, S.3, 4, 5, 10, 11): 1B, 2A, 3B;
7 (236) Swan Creek, Little, (T.56, R.19, S.17, 19, 20, 30; T.56, R.20, S.25, 26, 35): 1B, 2A, 3B;
8 (237) Swan River, East (Barber Creek), (T.55, R.19, S.18, 19, 30, 31; T.55, R.20, S.1, 2, 12, 13; T.56, R.20, S.2, 3, 11, 14, 23, 26, 27, 35; T.57, R.20, S.28, 33, 34): 1B, 2A, 3B;
9 (238) Swan River, West (excluding trout waters), (T.55, 56, R.20, 21): 2C;
10 (239) Swanson Creek, (T.61, R.4W, S.6, 7, 8; T.61, R.5W, S.1): 1B, 2A, 3B;
12 (241) Talmadge Creek (Talmadge River), (T.51, R.12, S.19; T.51, R.13, S.9, 10, 13, 14, 15, 24): 1B, 2A, 3B;
13 (242) Temperance River, (T.59, R.4W, S.5, 6, 7, 8, 18, 19, 30, 31, 32; T.60, R.4W, S.5, 6, 7, 8, 17, 20,
Temperance River (excluding trout waters), (T.59, R.6W, S.1; T.61, R.4W): 1B, 2A, 3B;

Thirty-nine Creek, Big, (T.56, R.8, S.19, 30, 31; T.56, R.9, S.17, 2, 3, 3, 11, 12, 13, 14, 15, 22, 23, 24, 25; T.57, R.9, S.22, 26, 27, 35, 36): 1B, 2A, 3B;

Thirty-nine Creek, Little, (T.56, R.8, S.6, 7, 8, 17, 18, 19, 20, 29, 30; T.56, R.9, S.1, 12): 1B, 2A, 3B;

Thompson Creek, (T.62, R.1W, S.17, 19, 20; T.62, R.2W, S.24): 1B, 2A, 3B;

Tikkanen Creek, (T.57, R.7, S.5, 6, 8, 16, 17): 1B, 2A, 3B;

Timber Creek, (T.62, R.1E, S.1; T.63, R.1E, S.25, 36; T.63, R.2E, S.31): 1B, 2A, 3B;

Tischer Creek (Congdon Creek/Hartley), (T.50, R.14, S.2, 3, 4, 10, 11, 13, 14; T.51, R.14, S.29, 33, 34): 1B, 2A, 3B;


Tower Creek, St. Louis County, (T.55, R.14, S.8, 9, 17, 18, 19; T.55, R.15, S.24, 25, 26): 1B, 2A, 3B;

Tower Creek, Lake County, (T.57, R.7, S.9): 1B, 2A, 3B;

Trappers Creek, (T.56, R.11, S.2, 3, 4);
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1 9, 10, 16, 17, 19, 20; T.57, R.11, S.35: 1B, 2A, 3B;
2 2A, 3B;
3 (254) Trout Brook, (T.54, R.22, S.1): 1B, 2A, 3B;
4 (255) Twin Points Creek, (T.54, R.9, S.10, 11, 13, 14): 1B, 2A, 3B;
6 (255) Ustad Creek, (T.51, R.15, S.21, 22, 26, 27, 28): 1B, 2A, 3B;
7 (258) Unnamed (Deer) Creek, (T.47, R.16, 19, 29, 30; T.47, R.17, S.13, 14, 24): 1B, 2A, 3B;
8 (259) Unnamed Creek, Carlton County, (T.47, R.17, S.28, 29, 33, 34, 35): 1B, 2A, 3B;
9 (260) Unnamed Creek, Carlton County, (T.47, R.17, S.31, 32, 33, 34): 1B, 2A, 3B;
10 (261) Unnamed Creek, (T.55, R.8, S.20, 21, 29, 32, 33): 1B, 2A, 3B;
11 (262) Unnamed Creek, Meadowlands, (T.53, R.19, S.22, 23): 7;
12 (263) Unnamed Creek, (S-17-6), (T.53, R.11, S.30, 31, 32; T.53, R.12, S.25): 1B, 2A, 3B;
13 (264) Unnamed Creek, (S-17-9), (T.53, R.11, S.5; T.54, R.11, S.20, 29, 30, 32): 1B, 2A, 3B;
15 (266) Us-kab-wan-ka (Rush), (T.52, R.16, 36, 37, 38, 39, 40, 41): 1B, 2A, 3B;
Dti/ll1/D7 [REVISOR 1 1...,1II/ RD3548

1 S.2, 11, 14, 23; T.53, R.15, S. 5, 6; T.53, R.16, S.1, 11, 12,
2 14, 15, 22, 23, 27, 34, 35; T.54, R.15, S.23, 24, 26, 27, 32,
3 33, 34); 1B, 2A, 3B;
4 (266) Wanless Creek, (T.60, R.6, S.27, 33,
5 34, 35, 36); 1B, 2A, 3B;
6 (268) Whiteface River, South Branch, (see Hornby
7 Junction Creek);:

8 (269) Whyte Creek, (T.57, R.10, S.1, 2, 11,
9 14, 23, 25, 27, 34); 1B, 2A, 3B;
10 (270) Woods Creek, (T.61, R.1E, S.1, 12,
11 13; T.62, R.1E, S.35, 36); 1B, 2A, 3B;
12 (271) Wyman Creek, (T.58, R.14, S.3, 4;
13 T.59, R.14, S.11, 13, 14, 23, 24, 26, 27, 34, 35); 1B, 2A, 3B;
14 and
15 (272) *All other streams in the Boundary
16 Waters Canoe Area Wilderness [11/5/84P]: 1B, 2Bd, 3B.

B. Lakes:

18 (1) *Alder Lake, 16-0114-00, [11/5/84P] (T.64,
19 R.1E): 1B, 2A, 3B;
20 (2) *Alton Lake, 16-0622-00, [11/5/84P] (T.62,
21 63, R.4, 5): 1B, 2A, 3B;
22 (3) Artichoke Lake, 69-0623-00, [WR] (T.52, R.17,
23 8.17, 18, 19, 20): 2B, 3B;
24 (4) Bath Lake, 16-0164-00, (T.62, R.1W, S.5, 6;
25 T.63, R.1W, S.31, 32): 1B, 2A, 3B;
26 (5) Bean Lake (Lower Twin), 38-0409-00, (T.56,
27 R.6W, S.25, 26): 1B, 2A, 3B;
(6) Bear Lake (Upper-Twin)—(T.56R-R.8W-S.25S):

(7) Bearskin Lake, East, 16-0146-00, (T.64, R.1E, 1W): 1B, 2A, 3B;

(8) *Bearskin Lake, West, 16-0226-00, [3/7/88R] (T.64, 65, R.1): 1B, 2A, 3B;


(10) Benson Lake, 38-0018-00, (T.58, R.6W, S.29S):

(11) *Birch Lake, 16-0247-00, [3/7/88R] (T.65, R.1, 2): 1B, 2A, 3B;


(14) Bogus Lake, 16-0050-00, (T.62, R.2E, S.12): 1B, 2A, 3B;

(15) Bone Lake, 38-0065-00, (T.61, R.6W, S.13, 14): 1B, 2A, 3B;

(16) Bow Lake, 16-0211-00, (T.64, R.1W, S.15):

(17) Boys Lake, 16-0044-00, (T.62, R.2E, S.5, 8): 1B, 2A, 3B;


(19) Briar Lake, 69-0128-00, (T.53, R.13W,
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1 S.14, 15, 23): 1B, 2A, 3B;

2 \*19\* (20) *Brule Lake, 16-0348-00, [11/5/84P]
3 (T.53, R.2, 3): 1B, 2A, 3B;

4 \*20\* (21) Cabin Lake, 38-0260-00, [WR] (T.59,
5 R.7, S.13, 14, 23, 24): 2B, 3B;

6 \*21\* (22) Canton Mine Pit Lake,
7 69-1294-00, (T.58, R.16, S.2, 3): 1C, 2Bd, 3B 3C;

8 \*22\* (23) Caribou Lake, 16-0360-00, [WR] (T.60,
9 R.3W, S.1, 2, 11, 12; T.61, R.3W, S.35, 36): 2B, 3B;

10 \*23\* (24) Carrot Lake, 16-0071-00, (T.64, R.2E,
11 S.17): 1B, 2A, 3B;

12 \*24\* (25) Cedar Lake, 69-0431-00, (T.58, R.15W,
13 S.20): 1B, 2A, 3B;

14 \*25\* (26) Chester Lake, 69-0033-00, (T.64, R.3E,
15 S.32, 33): 1B, 2A, 3B;

16 \*26\* (27) Christine Lake, 16-0373-00, [WR] (T.61,

18 \*27\* (28) Clearwater Lake (Clear Lake),

20 \*28\* (29) *Clearwater Lake (Emby

22 \*29\* (30) Colby Lake, 69-0249-00, (T.50, R.14):
23 1B, 2Bd, 3B 3C;

24 \*30\* (31) *Cone Lake, 16-0412-00, [North,
25 11/5/84P] (T.63, 64, R.3): 1B, 2A, 3B;

26 \*31\* (32) Corona Lake, 09-0048-00, (T.48, R.19W,
27 S.11, 12): 1B, 2A, 3B;
1 (33) Corsica Mine Pit Lake,
2 (T.58, R.16, S.18): 1C, 2BD, 3B 3C;
3 (34) Crosscut Lake, 3B-0257-00, (T.59, R.7W, S.7, 1B): 1B, 2A, 3B;
5 (T.64, R.1E, 2E): 1B, 2A, 3B;
6 (36) Daniels Lake, 16-0150-00, [11/5/84P]
7 (T.65, R.1E, 1W): 1B, 2A, 3B;
8 (37) Davis Lake, 16-0435-00, [11/5/84P]
9 (T.64, R.3): 1B, 2A, 3B;
10 (38) Devilfish Lake, 16-0029-00, (T.64, R.3E): 1B, 2A, 3B;
11 (39) Divide (Towhey) Lake,
12 3B-0256-00, (T.59, R.7W, S.7, 8): 1B, 2A, 3B;
13 (40) Duke Lake, 16-0111-00, (T.63, R.1E, S.30): 1B, 2A, 3B;
14 (41) Duncan Lake, 16-0232-00, [11/5/84P]
15 (T.65, R.1): 1B, 2A, 3B;
16 (42) Dunn Lake, 16-0245-00, [11/5/84P]
17 (T.65, R.1, 2): 1B, 2A, 3B;
18 (43) East Lake, 3B-0020-00, (T.59, R.6W, S.1, 2): 1B, 2A, 3B;
19 (44) Echo Lake, 3B-0028-00, [3/7/88R]
20 (T.59, R.6, S.14, 15, 22, 23): 1B, 2A, 3B;
21 (45) Elbow Lake, Little, 69-1329-00, (T.57,
R.18W, S.9, T.16, R.16): 1B, 2A, 3B;

(46) Embarrass Mine Pit (Sabin Lake or Lake Mine), 69-0429-00, (T.58, R.15W, S.5, 6): 1B, 2A, 3B;

(47) Esther Lake, 16-0023-00, (T.63, R.3E, S.6; T.64, R.3E, S.31): 1B, 2A, 3B;

(48) *Fan Lake (West Lily), 16-0084-00,

(49) Feather Lake, 16-0905-00, (T.51, R.5W, S.35): 1B, 2A, 3B;

(50) Flour Lake, 16-0147-00, (T.64, R.1E, S.1W): 1B, 2A, 3E;

(51) Fourmile Lake, 16-0639-00, [WR] (T.60, R.5W, S.4, 8, 9, 10, 16, 17): 2B, 3B;

(52) Fowl Lake, North, 16-0036-00, (T.64, R.2E): 1B, 2Bd, 3A;

(53) Fowl Lake, South, 16-0034-00, (T.64, R.3E): 1B, 2Bd, 3A;

(54) Fraser Mine Pit Lake, (T.58, R.20, S.23): 1C, 2Bd, 3B, until the city of Chisholm no longer uses Fraser Mine Pit Lake as a water supply source for its public water system, and then the classification is identified in part 7050.0430;

(55) *Gadwall Lake (Gadwell Lake), 16-0060-00,


1. R.2: 1B, 2A, 3B;
7. (62) Jim Lake (Jerry Lake), 16-0135-00, (T.64, R.1E): 1B, 2A, 3B;
9. (64) Junco Lake, 16-0159-00, (T.62, R.1W, S.11, 12, 13): 1B, 2A, 3B;
12. (67) Leo Lake, 16-0198-00, (T.64, R.1W, S.4, 5): 1B, 2A, 3B;
(70) Lima Lake, 16-0226-00, (T.64, R.1W, S.35): 1B, 2A, 3B;
(71) *Lizzie Lake, 16-0199-00, [11/5/04P]
(T.64, R.1W, S.7, 10): 1B, 2A, 3B;
(73) Loft Lake, 16-0031-00, (T.64, R.3E, S.21): 1B, 2A, 3B;
(74) Long Lake, 69-0044-00, [WR] (T.57, R.12, S.4, 5; T.58, R.12, S.32, 33): 2B, 3B;
(75) Margaret Lake, 16-0896-00, (T.64, R.3E, S.27, 28, 33): 1B, 2A, 3B;
(77) McFarland Lake, 16-0027-00, (T.64, R.3E): 1B, 2A, 3B;
(78) Mesabi (Miasabe) Mountain Mine Pit Lake, 69-1292-00, (T.58, R.17, S.0): 1C, 2Bd, 3C;
(79) Mink Lake, 16-0046-00, (T.62, R.2E, S.8): 1B, 2A, 3B;
(81) *Misquah Lake, 16-0225-00, [11/5/04P]
(T.64, R.1): 1B, 2A, 3B;
(82) Mesabi Mountain Mine Pit Lake, (T.58, R.17, S.0): 1B, 2A, 3B;
4 (85) Morton Mine Pit Lake, 69-1310-00, (T.57, R.21, S.10, 11, 14): 1C, 2Bd, 3B 3C;
7 (88) Muckwa Lake, 16-0105-00, (T.63, R.1E, S.21, 28): 1B, 2A, 3B;
9 (90) Musquash Lake, 16-0104-00, (T.63, R.1E, S.20, 29): 1B, 2A, 3B;
10 (91) Normanna Lake, 69-0122-00, (T.52, R.13W, S.7, 8): 1B, 2A, 3B;
12 (93) Olga Lake, 16-0024-00, (T.63, R.3E, S.6; T.64, R.3E, S.31): 1B, 2A, 3B;
13 (94) Olson Lake, 16-0158-00, (T.62, R.1W, S.9, 16): 1B, 2A, 3B;
14 (95) *Onega Lake (Omega Lake), 16-0353-00,
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1 [11/5/84P] (T.64, R.2, 3): 1B, 2A, 3B;

2 (95) Otto Lake, Lower (South Otto), 16-0323-00, [11/5/84P] (T.64, R.2): 1B, 2A, 3B;

3 (96) Pancore (Lost) Lake, 16-0475-00, (T.61, R.4W, S.22, 27): 1B, 2A, 3B;


8 (101) Pine Lake, 16-0194-00, (T.63, R.1W, S.35, 36): 1B, 2A, 3B;

9 (102) Pine Mountain Lake, 16-0108-00, (T.63, R.1E, S.26, 27, 34, 35): 1B, 2A, 3B;

10 (103) Poplar Lake, 16-0239-00, (T.64N, R.2E): 1B, 2A, 3B;


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wq-rule-1-10
1  {107} (109) *Rose Lake, 16-0230-00, [11/5/84P]
2  (T.65, R.1): 1B, 2A, 3B;
3  {108} (110) Round Island Lake, 38-0417-00 [WR]
4  (T.59, R.8, S.12): 2B, 3B;
6  {110} (112) St. James Mine Pit,
7  69-0428-00, (T.58, R.15W, S.3, 4): 1B-2A-3B 1C, 2Bd, 3C;
8  {111} (113) Saint Mary's Lake, 69-0651-00, (T.57, R.17, S.9, 16, 17): 1C, 2Bd, 3B 3C;
9  {112} (114) *Sawbill Lake, 16-0496-00, [11/5/84P]
10  (T.62, 63, R.4): 1B, 2Bd, 3B;
11  {113} (115) Section 8 Lake, 38-0258-00, (T.59, R.7W, S.8): 1B, 2A, 3B;
12  {114} (116) Seven Beaver Lake, 69-0002-00, [WR]
13  (T.58, R.11, 12): 2B, 3A;
14  {115} (117) Shady, North, Lake,
15  16-0076-00, (T.64, R.2E, S.21, 22): 1B, 2A, 3B;
16  {116} (118) Shoe Lake, 16-0080-00, (T.64, 2E, S.30): 1B, 2A, 3R;
17  {117} (119) Sled Lake, 16-0897-00, (T.63, R.1W, S.3): 1R, 2A, 3B;
18  {118} (120) *Sock Lake, 16-0335-00, [11/5/84P]
19  (T.65, R.2W, S.26): 1B, 2A, 3B;
20  {119} (121) Sonju Lake, 38-0248-00, (T.58, R.7W, S.27, 28): 1B, 2A, 3B;
21  {120} (122) *South Lake, 16-0244-00, [11/5/84P]
06/18/07

1 (T.65, R.1, 2): 1B, 2A, 3B;
   \( \text{t} \text{t} \text{t} \text{t} \) (123) Spring Hole Lake, 69-1372-00, (T.55, R.14W, S.14): 1B, 2A, 3B;
2 \( \text{t} \text{t} \text{t} \text{t} \) (123) -Squaw Lake, (T.63, R.38W, S.67, T.64, R.38W, S.31: T.65, R.2): IB, 2A, 3B;
3 \( \text{t} \text{t} \text{t} \text{t} \) (124) *State Lake, 16-0293-00, [11/5/04P] (T.63, 64, R.2): 1B, 2A, 3B;
4 \( \text{t} \text{t} \text{t} \text{t} \) (125) Steer Lake, 38-0920-00, (T.60, R.6W, S.32): 1B, 2A, 3B;
5 \( \text{t} \text{t} \text{t} \text{t} \) (126) Stone Lake, 69-0686-00, [WR] (T.55, R.17, S.6; T.55, R.18, S.1; T.56, R.17, S.31; T.56, R.18, S.36): 2B, 3B;
6 \( \text{t} \text{t} \text{t} \text{t} \) (127) Stone Lake (Skibo Lake), 69-0046-00, [WR] (T.58, R.12, S.17, 19, 20): 2B, 3B;
7 \( \text{t} \text{t} \text{t} \text{t} \) (128) Stone Lake (Murphy Lake or Tommila Lake), 69-0035-00, [WR] (T.56, R.12, S.13, 24): 2B, 3B;
8 \( \text{t} \text{t} \text{t} \text{t} \) (129) *Superior, Lake, excluding the portions identified in subitem \( \text{t} \text{t} \text{t} \text{t} \) (128) 16-0001-00, [11/5/04P] (T.49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, R.14W-7E): 1B, 2A, 3A;
9 \( \text{t} \text{t} \text{t} \text{t} \) (130) *Superior, Lake, 16-0001-00, [3/9/98P] (those portions of Lake Superior north of latitude 47 degrees, 57 minutes, 13 seconds, east of Hat Point, south of the Minnesota-Ontario boundary, and west of the Minnesota-Michigan boundary): 1B, 2A, 3A;
10 \( \text{t} \text{t} \text{t} \text{t} \) (131) Swamp River (Reservoir), 16-0901-00, [WR] (T.63, R.4E, S.4; T.64, R.4E, S.33): 2B, 3B;

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wq-rule-1-10
1  (132) *Swan Lake, 16-0268-00, [11/5/84P]  
2  (T.63, R.2): 1B, 2A, 3B;  
3  (133) Talus Lake, 16-0187-00, (T.63, R.1W,  
4  S.26, 27): 1B, 2A, 3B;  
5  (134) Thompson Lake, 16-0160-00, (T.62,  
6  R.1W, S.19, 20, 29, 30): 1B, 2A, 3B;  
7  (135) Thrasher Lake, 16-0192-00, (T.63,  
8  R.1W, S.31): 1B, 2A, 3B;  
9  (136) Thrush Lake, 16-0191-00, (T.63, R.1W,  
10  S.31): 1B, 2A, 3B;  
11  (137) *Topper Lake, 16-0336-00, [11/5/84P]  
12  (T.65, R.2W, S.27): 1B, 2A, 3B;  
13  (138) *Trout Lake, 16-0049-00, [3/7/88R] (T.62,  
14  R.2E): 1B, 2A, 3B;  
16  (T.63, R.1): 1B, 2A, 3B;  
17  (140) Turnip Lake, 16-0132-00, (T.64, R.1E,  
18  S.24): 1B, 2A, 3B;  
19  (141) Twin Lake, 69-1345-00, (T.50, R.14W, S.28,  
20  33): 1B, 2A, 3B;  
21  (142) *Twin Lake, Upper (Bear Lake), 38-0408-00,  
23  (143) Unnamed Lake, 16-0903-00, (T.63, R.3E,  
24  S.20, 21, 28, 29): 1B, 2A, 3B;  
25  (144) Unnamed Lake, 16-0908-00, (T.63, R.1W,  
26  S.31): 1B, 2A, 3B;
(145) *Unnamed Lake, 16-0237-00, [11/5/84P]

(T.63, R.1, S.19, 30; T.63, R.2, S.24, 25): 1B, 28d, 3B;

(146) *Vale Lake, 16-0061-00, [11/5/84P]

(T.64, R.2E, S.3): 1B, 2A, 3B;

(147) Vaseux Lake (East Lily), see Lily Lakes;

(148) *Vista Lake, 16-0224-00, [11/5/84P]

(T.64, R.1): 1B, 2A, 3B;

(149) *Wanihigan Lake (Trap Lake), 16-0349-00, [11/5/84P] (T.63, 64, R.2, 3): 1B, 2A, 3B;

(150) *Wee Lake, 16-0133-00, [11/5/84P]

(T.62, R.4W, S.13): 1B, 2A, 3B;

(151) *Wench Lake, 16-0398-00, [11/5/84P]

(T.63, R.3W, S.7, 18): 1B, 2A, 3B;

(152) White Pine Lake, 16-0369-00, [WR]


(153) *Winchell Lake, 16-0354-00,


(154) *All other lakes in the Boundary Waters Canoe Area Wilderness [11/5/84P]: 1B, 28d, 3B; and

(155) *All wetlands in the Boundary Waters Canoe Area Wilderness [11/5/84P]: 2D.

[For text of items C and D, see W.R.]

Subp. 2. Lake of the Woods Basin. The water use classifications for the listed waters in Lake of the Woods Basin are as identified in items A7-B7-and to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streama:
1 (1) Angora Creek, (T.61, R.18, S.9, 10, 15, 16, 21, 22): 1B, 2A, 3B;
2 (2) Arrowhead Creek (Trapper Creek), (T.60, R.8, S.3, 10, 11, 13, 14, 15, 22, 23, 26, 27, 28, 34; T.61, R.8, S.14, 15, 21, 22, 27, 28, 34): 1B, 2A, 3B;
3 (3) Ash River (Camp Ninety Creek), (T.66, R.20, S.4, 5, 9; T.67, R.20, S.5, 6, 8, 16, 17, 18, 19, 20, 29, 30, 31, 32; T.67, R.21, S.36; T.66, R.20, S.13, 14, 20, 21, 22, 23, 24, 28, 29, 31, 33; T.68, R.19, S.17, 18; T.68, R.21, S.36): 1B, 2A, 3B;
4 (4) Beaver Creek, (T.62, 63, R.20): 2C;
5 (5) Beauty Creek, (T.67, R.21, S.23, 24, 25, 26): 1B, 2A, 3B;
6 (6) Blackduck River (Black Duck River), (T.66, R.19, S.5, 6, 7, 8, 17; T.66, R.20, S.1; T.67, R.19, S.29, 31, 32; T.67, R.20, S.2, 3, 4, 10, 14, 15, 23, 24, 25, 26, 36; T.68, R.20, S.26, 27, 28, 33, 34): 1B, 2A, 3B;
7 (7) Camp Creek, (T.60, R.8, S.3, 4, 57-77-87 9, 107-167-177-287-297; T.61, R.8, S.27, 28, 33, 34): 1B, 2A, 3B;
8 (8) Camp Creek, West, (T.60, R.8, S.4, 5, 7, 8, 16, 17, 20, 21; T.61, R.8, S.33): 1B, 2A, 3B;
9 (9) Camp Creek, East, (T.60, R.9, S.7, 18; T.60, R.10, S.11, 127-14): 1B, 2A, 3B;
10 (10) Dark River, (T.60, R.19, S.19, 20, 30; T.60, R.20, 10, 11, 12, 13, 24): 1B, 2A, 3B;
11 (11) Dinner Creek, (T.153, R.26, S.4, 9, 10, 198 Approved by Revisor _________
12, 13, 14, 15, 23, 24; T.154, R.26, S.7, 18, 19, 29, 30, 32,
33; T.154, R.27, S.1, 12; T.155, R.26, S.30, 31; T.155, R.27,
S.25, 35, 36): 1B, 2A, 3B;
(12) Dumbbell River, (T.60, R.7, S.3, 4, 5, 7, 8, 9,
10, 16, 18, 19, 20, 28, 29, 31, 32): 1B, 2A, 3B;
(13) Fawn Creek, (T.66, R.20, S.1, 2, 3, 4,
12; T.67, R.20, S.15, 22, 23, 26, 34, 35): 1B, 2A, 3B;
(14) Folly Creek, (T.60, R.7, S.2, 3, 10, 11, 14,
15, 22, 23, 24, 27): 1B, 2A, 3B;
(15) Gardner Brook, (T.63, 64, R.23, 24):
2C;
(16) Grassy Creek, (T.61, R.13, S.6; T.61,
R.14, S.1): 1B, 2A, 3B;
(17) Harrigan Creek, (T.62, R.23, S.10):
1B, 2A, 3B;
(18) Harris Lake Creek, (Harris Creek),
(T.60, R.10, S.6; T.61, R.10, S.19, 30, 31): 1B, 2A, 3B;
(19) Hay Creek, (T.153, R.26, S.4, 8, 9, 17,
20): 1B, 2A, 3B;
(20) Hill Creek, (T.60, R.5, S.19, 30; T.60,
R.9, S.24, 25): 1B, 2A, 3B;
(21) Indian Sioux River, Little, (T.65,
R.15): 1B, 2Bd, 3B;
(22) Inga Creek, (T.60, R.9, S.2, 3; T.61,
R.9, S.14, 22, 23, 27, 34, 35): 1B, 2A, 3B;
(23) *Inga Creek [11/5/B4P] (T.61, R.9,
S.11, 12): 1B, 2A, 3B;
1. **Isabella River, Little**, (T.59, R.8, S.3, 4, 5, 6, 9, 10, 15, 16, 22; T.60, R.8, S.31, 32; T.60, R.9, S.5, 6, 8, 9, 10, 15, 16, 22, 25, 26, 27, 36; T.61, R.9, S.9, 16, 17, 20, 21, 27, 29, 32): 1B, 2A, 3B;


3. **Island River**, (T.51, R.7, 8): 1B, 2B, 3B;

4. **Island River**, (T.61, R.7, 8): 1B, 2B, 3B;

5. **Jack Pine Creek**, (T.50, R.8, S.5, 6, 7, 8, 18; T.61, R.8, S.19, 20, 29, 30, 31, 32): 1B, 2A, 3B;

6. **Johnson Creek**, (T.60, R.18, S.6, 7, 8, 17, 20): 1B, 2A, 3B;

7. **Kawishiwi River**, outside Boundary Waters Canoe Area Wilderness, (Source to Fall Lake): 1B, 2B, 3B;


9. **Longstorff Creek**, (T.62, R.12, S.6, 7; T.63, R.12, S.31): 1B, 2A, 3B;

10. **Lost River**, (T.65, R.19, S.6; T.65, R.20, S.1, 2, 3, 4, 5, 6, 7, 8, 12; T.65, R.21, S.1; T.66, R.20, S.20, 25, 27, 29, 31, 32, 33, 34, 35, 36): 1B, 2A, 3B;

11. **Mary Ann Creek**, (T.58, R.10, S.16, 21): 1B, 2A, 3B;

12. **Mike Kelly Creek**, (Kelly Creek), (T.60, R.11, S.14, 15, 23): 1B, 2A, 3B;

13. **Mitawan Creek**, (T.60, R.9, S.1, 12:}
T.61, R.8, S.10, 19, 31; T.61, R.9, S.12, 13, 24, 25, 36): 1B, 2A, 3B;

$\mathbf{3} \ (36) \ $ Mitawan Creek, [11/5/84P] (T.61, R.8, S.5, 6, 7; T.61, R.9, S.1, 2, 12; T.62, R.9, S.35): 1B, 2A, 3B;

$\mathbf{34} \ (37) \ $ Moose River, St. Louis County, (T.68, R.18, 19): 1B, 2Bd, 3B 3C;

$\mathbf{35} \ (38) \ $ Moose River, outside Boundary Waters Canoe Area Wilderness, (T.65, R.14): 1B, 2Bd, 3B 3C;

$\mathbf{36} \ (39) \ $ Nine Mile Creek (Ninemile Creek), (T.66, R.19, S.4; T.67, R.19, S.7, 8, 10, 19, 20, 21, 27, 28, 29, 33; T.67, R.20, S.12, 13, 14, 23): 1B, 2A, 3B;

$\mathbf{37} \ (40) \ $ Nip Creek, (T.59, R.11, S.3, 4; T.60, R.11, S.21, 22, 27, 28, 34): 1B, 2A, 3B;

$\mathbf{38} \ (41) \ $ Nira Creek, (T.61, R.11, S.22, 23, 27): 1B, 2A, 3B;

$\mathbf{39} \ (42) \ $ Pitt Creek, (T.159, R.32, S.4, 9, 16; T.160, R.32, S.21, 28, 33): 1B, 2A, 3B;

$\mathbf{40} \ (43) \ $ Portage Creek, (T.65, R.21): 2C;

$\mathbf{41} \ (44) \ $ Portage River, (T.65, 667-R+4 R.14, S.24; T.65, R.13, S.19, 20, 28, 29): 1B, 2Bd, 3B 3C;

$\mathbf{42} \ (45) \ $ Rainy River, (Outlet of Rainy Lake to Dam in International Falls): 1B, 2Bd, 3A;

$\mathbf{43} \ (46) \ $ Rainy River, (Dam in International Falls to Railroad Bridge in Baudette): 1C, 2Bd, 3A;

$\mathbf{44} \ (47) \ $ Rainy River, (Railroad Bridge in Baudette to Lake of the Woods): 2B, 3A;

$\mathbf{45} \ (48) \ $ Sand Creek, (T.60, R.21, S.3, 4, 5, 10,
11, 14; T.61, R.20, S.19; T.61, R.21, S.3, 10, 11, 14, 15, 23,
24, 25, 26, 27, 33, 34, 35; T.62, R.21, S.34): 1B, 2A, 3B;

\[46\] (49) Scott Creek, (T.59, R.7, S.4; T.60,
R.7, S.9, 10, 15, 16, 21, 22, 27, 33, 34, 35): 1B, 2A, 3B;

\[47\] (50) Section 30 Creek, (T.63, R.11, S.30;
T.63, R.12, S.24, 25): 1B, 2A, 3B;

1C, 2B, 3B, 3C;

\[49\] (52) Shine Brook (Swine Creek), (T.62, R.25,
S.11, 14, 15, 16): 1B, 2A, 3B;

\[50\] (53) Snake Creek, (T.60, R.10, S.1; T.61,
R.9, S.19, 30, 31; T.61, R.10, S.24, 25, 36): 1B, 2A, 3B;

\[51\] (54) Snake River, (T.60, R.10, S.3; T.61,
R.9, S.18, 19; T.61, R.10, S.23, 24, 26, 27, 34): 1B, 2A, 3B;

\[52\] (55) *Snake River, [11/5/B4P] (T.61, R.9,
S.7; T.61, R.10, S.12): 1B, 2A, 3B;

\[53\] (56) Sphagnum Creek, (T.60, R.9, S.4; T.61,
R.9, S.28, 29, 33): 1B, 2A, 3B;

\[54\] (57) Stoney Brook (Stony Brook), (T.60,
R.22, S.3, 4; T.61, R.22, S.13, 24, 25, 35, 36; T.61, R.21, S.7,
1B): 1B, 2A, 3B;

\[55\] (58) Tomato Creek, (T.151, R.34, S.3, 9, 10;
T.162, R.34, S.35): 1B, 2A, 3B;

\[56\] (59) Tomlinson Creek, (T.60, R.7, S.18, 19,
31; T.60, R.8, S.24, 25, 36): 1B, 2A, 3B;

\[57\] (56)-Tomato-Creek-(T.163-R.34-S.3-9-10);
1. Trout Brook, (T.66, R.26, S.19, 30):
   - 1B, 2A, 3B;

2. Two Rivers, East, (T.61, R.14, S.7, 8):
   - 1B, 2A, 3B;

3. Two Rivers, West, (T.61, R.15, S.6, 7, 8, 9, 14, 15, 16, 17):
   - 1B, 2A, 3B;

4. Unnamed Creek, (T.65, R.19, S.4, 5):
   - 1B, 2A, 3B;

5. Valley River, (T.62, R.23, S.1, 2, 3, 4, 10, 11, 12, 13, 14, 24, 26, 27, 28, 34):
   - 1B, 2A, 3B;

6. Venning Creek, (T.60, R.23, S.1, 2, 11, 12, 13, 14, T.61, R.23, S.35):
   - 1B, 2A, 3B;

7. Victor Creek, (T.60, R.9, S.12, 13):
   - 1B, 2A, 3B;

8. Weiss Creek, (T.59, R.9, S.2, 3, 11, T.60, R.9, S.27, 34):
   - 1B, 2A, 3B;

9. Wenho Creek, (T.58, R.10, S.17, 20, 21, 27, 28, 34):
   - 1B, 2A, 3B;

10. Zippel Creek, West Branch, (T.162, R.33, 34):
    - 2C;

11. *All other streams in the Boundary Waters Canoe Area Wilderness [11/5/84P]:
    - 1B, 2Bd, 3B;

12. *All other streams in the Voyageurs National Park [11/5/84P]:
    - 2B, 3B.
B. Lakes:


(10) *Basswood Lake, 38-0645-00, [11/5/84P]


(13) *Beaver Lake (Elbow Lake), 38-0223-00, [11/5/84P] (T.63, 64, R.6, 7): 1B, 2A, 3B;
(15) Beetle Lake, 38-0551-00, (T.60, R.9W, S.7): 1B, 2A, 3B;
(16) Big Lake, 59-0190-00, (T.64, 65, R.13): 1C, 2A, 3C;
(18) *Brandt Lake (Brant Lake), 16-0600-00, [11/5/84P] (T.65, R.4): 1B, 2A, 3B;
(19) *Burntside Lake, 69-0118-00, [3/7/88R] (T.63, 64, R.12, 13, 14): 1B, 2A, 3B;
(22) *Caribou Lake, 31-0620-00, [3/7/88R] (T.58, R.26): 1B, 2A, 3B;
(24) Cedar Lake, 38-0810-00, (T.63, R.11, 12): 1C, 2Bd, 3B 3C;
(27) *Cherry Lake, 38-0166-00, [11/5/84P] (T.65,
06/18/07


(30) Crab Lake, 16-0357-00, (T.65, R.2, 3): 1B, 2A, 3B;


(38) Dry Lake, 69-0064-00, (T.63, R.12W, S.9): 1B, 2A, 3B;


(40) *Eddy Lake, 38-0187-00, [11/5/84P] (T.65,
1 R.6): 1B, 2A, 3B;
2 (41) Eikela Lake, 38-0677-00, (T.60, R.10W,
3 S.22): 1B, 2A, 3B;
4 (42) Ennis Lake, 38-0634-00, (T.64, R.9W, S.33);
5 1B, 2A, 3B;
6 (43) Erskine Lake, 31-0311-00, (T.61, R.24W, S.2,
7 3): 1B, 2A, 3B;
8 (44) *Ester Lake (Gnig Lake), 38-0207-00,
10 (45) *Eugene Lake, 69-0473-00, [11/5/84P] (T.67,
11 R.15): 1B, 2A, 3B;
12 (46) *Explorer Lake (South Three
14 (47) Extortion Lake, 16-0450-00, (T.65, R.3W,
15 S.31, 32): 1B, 2A, 3B;
16 (48) Fall Lake, 38-0811-00, (T.63, 64, R.11,
17 12): 1B, 2Bd, 3B 3C;
18 (49) Farm Lake, 38-0779-00, (T.62, 63, R.11):
19 1C, 2Bd, 3B 3C;
21 R.15): 1B, 2A, 3B;
22 (51) *Fay Lake, 16-0783-00, [11/5/84P] (T.65,
23 R.5): 1B, 2A, 3B;
24 (52) Fenske Lake, 69-0085-00, (T.64, R.12, S.29,
25 30, 32): 1C, 2Bd, 3C;
26 (53) *Fern Lake, 16-0716-00, [11/5/84P] (T.64,
27 R.5): 1B, 2A, 3B;
1. 59† (54) *Fern Lake, West, 16-0718-00.
3. 54† (55) *Finger Lake, 69-0348-00, [11/5/84P]
4. (T.67, R.14): 1B, 2A, 3B;
5. 55† (56) *Fishdance Lake, 38-0343-00, [11/5/84P]
6. (T.63, R.7): 1B, 2A, 3B;
7. 56† (57) *Frost Lake, 38-0620-00, [11/5/84P]
9. 57† (58) *Fraser Lake, 38-0372-00, [11/5/84P]
10. (T.64, R.7): 1B, 2A, 3B;
11. 58† (59) *French Lake, 16-0755-00, [11/5/84P]
12. (T.64, 65, R.5): 1B, 2A, 3B;
13. 59† (60) *Frost Lake, 16-0571-00, [11/5/84P]
14. (T.64, R.4): 1B, 2A, 3B;
15. 60† (61) *Gabimichigami Lake, 16-0811-00,
17. 61† (62) *Ge-Re-On-Equat Lake, 69-0350-00,
19. 62† (63) *Gijikiki Lake (Cedar
21. 63† (64) *Gillis Lake, 16-0753-00, [11/5/84P]
22. (T.64, 55, R.5): 1B, 2A, 3B;
23. 64† (65) Glacier Pond No. 1, 38-0712-00, (T.63,
25. 65† (66) Glacier Pond No. 2, 38-0712-02, (T.63,
27. 66† (67) *Gordon Lake, 16-0569-00, [11/5/84P]
06/18/07

1 (T.54, R.4): 1B, 2A, 3B;

2 (T.66, R.4, 5): 1C,

3 2Bd, 3C;

4 \textit{[69]} *Gun Lake, 69-0487-00, [11/5/84P]

5 (T.67, 68, R.15): 1B, 2A, 3B;

6 \textit{[70]} *Gunflint Lake, 16-0356-00, [3/7/88R]

7 (T.65, R.2, 3, 4): 1B, 2A, 3B;

8 \textit{[71]} *Gunflint Lake, Little,

9 16-0330-00, (T.55, R.2): 1B, 2Bd, 3B 3C;

10 \textit{[72]} *Gypsy Lake, 38-0565-00, (T.60, R.10W,

11 S.6, 7): 1B, 2A, 3B;

12 \textit{[73]} *Hanson Lake, 69-0189-00, (T.64, R.13W,

13 S.36): 1B, 2A, 3B;

14 \textit{[74]} *Hanson Lake, 38-0286-00, [11/5/84P]

15 (T.65, 66, R.6): 1B, 2A, 3B;

16 \textit{[75]} *High Lake, 69-0071-00, (T.63, R.12W,

17 S.3, 4, 5: T.64, R.12W, S.33, 34): 1B, 2A, 3B;

18 \textit{[76]} *Hogback (Twin or Canal)

19 Lake, 38-0057-01 and 38-0057-02, (T.60, R.6W, S.31): 1B, 2A,

20 3B;

21 \textit{[77]} *Holt Lake, 38-0178-00, [11/5/84P]

22 (T.65, R.6): 1B, 2A, 3B;

23 \textit{[78]} *Howard Lake, 16-0789-00, [11/5/84P]

24 (T.65, R.5): 1B, 2A, 3B;


26 (T.66, 67, R.14): 1B, 2A, 3B;

27 \textit{[80]} *Ira Lake (Slate Lake), 38-0400-00,

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wq-rule-1-10
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06/18/07

[REVISOR] C~M/DI RD3548

1 [11/5/84P] (T.64, R.7, 8): 1B, 2A, 3B;

2 [997] (81) Indian Lake, 38-0140-00, (T.60, R.BW,

3 S.35): 1B, 2A, 3B;

4 [88] (92) *Jacob (Louia) Lake, 69-0077-00,


6 [9±] (93) James (Jammer) Lake, 69-0734-00, (T.60,

7 R.18W, S.27): 1B, 2A, 3B;

8 [82] - *Jap-Lake-{11/5/84P}- (T.65, R.4W7, 5±97

9 T.657-R.5W7-S±247-2AR7-3B7

10 [83] (84) Jasper Lake, 38-0641-00, (T.63, 64,

11 R.9, 10): 1C, 2 Bd, 3B 3C;


13 (T.65, R.5): 1B, 2A, 3B;

14 (85) (86) *Johnson Lake, 69-0691-00, [3/7/88R]

15 (T.67, 68, R.17, 18): 1B, 2A, 3B;

16 [86] (87) Jouppi Lake, 38-0909-00, (T.59, R.8W,

17 S.14, 22, 23): 1B, 2A, 3B;

18 [87] (88) Judd Lake, 38-0615-00, (T.63, R.9W,

19 S.4, 5; T.64, R.9W, S.32, 33): 1B, 2A, 3B;

20 [88] (89) *Kabetogama Lake, 69-0845-00,


22 [99] (90) *Karl Lake, 16-0461-00, [11/5/84P]

23 (T.64, R.3, 4): 1B, 2A, 3B;

24 [90] (91) *Kek Lake, Little, 38-0228-00,


27 (T.64, 55, R.5, 7): 1B, 2A, 3B;

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wq-rule-1-10
   
2. **Lake of the Clouds Lake (Dutton Lake)**, 38-0169-00, [11/5/84P]
   
   
4. **Lake Vermilion**, 69-0378-00, (T.61, 62, 63, R.14, 15, 16, 17, 18): 1C, 2Bd, 3B 3C;
   
5. **Larson Lake**, 31-0317-00, [3/7/88R]
   
   
   
   
9. **Lunar Lake (Moon Lake)**, 38-0168-00, [11/5/84P]
   
10. **Makwa Lake (Bear Lake)**, 38-0147-00, [11/5/84P]
1  (T.64, R.6):  1B, 2A, 3B;
3  (T.64, R.4W, S.4):  1B, 2A, 3B;
5  (T.65, R.2):  1B, 2A, 3B;
6  (108)  *Mayhew Lake, 16-0337-00,  [3/7/88R]
7  (T.66, R.12W, S.26, 27, 28):  1B, 2A, 3B;
8  (109)  *Meditation Lake, 16-0583-00,
9  (110)  *Mesaba Lake, 16-0673-00,  [11/5/84P]
10  (T.63, R.5):  1B, 2A, 3B;
11  (111)  Miner's Mine Pit, 69-1293-00,  (T.63,
12  R.12W, S.26, 27, 28):  1B, 2A, 3B;
13  (112)  *Missing Link Lake, 16-0529-00,
14  (113)  *Missionary Lake (East Three
15  Lake), 38-0398-00,  [11/5/84P]  (T.64, R.7, 8):  1B, 2A, 3B;
16  (114)  *Moose Lake, 38-0544-00,  [11/5/84P]
17  (115)  *Mora Lake, 16-0732-00,  [11/5/84P]
18  (T.64, R.9, 10):  1B, 2Bd, 3B;
20  (T.64, R.5):  1B, 2A, 3B;
22  (T.68, R.17):  1B, 2A, 3B;
23  (118)  *Neglige Lake, 38-0492-00,  [11/5/84P]
24  (T.69, R.17, 18, 19):  1B, 2Bd, 3A;
25  (119)  Nickel (Nichols) Lake,
31-0470-00, (T.59, R.25W, S.12): 1B, 2A, 3B;

†129 (120) Norberg Lake, 69-1312-00, (T.61, R.14W, S.1): 1B, 2A, 3B;

†121 (121) *North Lake, 16-0331-00, [3/7/88R]

†122 (122) North Lake, Little,

16-0329-00, (T.55, R.2): 1B, 2Bd, 3B 3C;


†124 (124) *Ogishkemuncie Lake, 38-0180-00,


†125 (125) *Ojibway Lake (Upper Twin), 38-0640-00, [3/7/88R] (T.63, R.9, 10): 1B, 2A, 3B;

†125 (125) *Owl Lake, 16-0726-00, [11/5/84P]

(T.64, R.5): 1B, 2A, 3B;

†127 (127) *Oyster Lake, 69-0330-00, [11/5/84P]

(T.66, R.14): 1B, 2A, 3B;

(T.66, R.14): 1B, 2A, 3B;


| (129) Peanut Lake, 38-0662-00, (T.60, R.10W, S.5): 1B, 2A, 3B; |

| (130) Pelican Lake, 69-0841-00, (T.64, 65, R.19, 20, 21): 1C, 2Bd, 3B 3C; |


| (132) *Peter Lake, 16-0757-00, [11/5/84P] |

(T.64, 65, R.5): 1B, 2A, 3B;
06/18/07

†±30† (133) Pickerel Lake, 69-0934-00, (T.60, R.21W, S.17): 1B, 2A, 3B;

†±31† (134) Portage Lake, 16-0327-00, (T.64, R.2W, S.3, 4, 5; T.64, R.2W, S.33): 1B, 2A, 3B;

†±32† (135) Portage Lake, 30-0524-00, [11/5/84P]

†±33† (136) Portage Lake, Little, 16-0297-00, (T.64, R.2W, S.3): 1B, 2A, 3B;

†±34† (137) *Powell Lake, 16-0756-00, [11/5/84P]

†±35† (138) *Rabbit Lake, 38-0214-00, [11/5/84P]

†±36† (139) *Rainy Lake, 69-0694-00, [11/5/84P]

†±37† (140) *Raven Lake (Lynx Lake), 38-0113-00, [11/5/84P]

†±38† (141) *Red Rock Lake, 16-0793-00, [11/5/84P]

†±39† (142) Regenbogan Lake, 69-0081-00, (T.64, R.12W, S.18): 1B, 2A, 3B;

†±40† (143) *Rog Lake, 16-0765-00, [11/5/84P]

†±41† (144) *Ruby Lake, Big, 16-0333-00, [11/5/84P]

†±42† (145) *Saganaga Lake, 16-0633-00, [11/5/84P]

†±43† (146) *Saganaga Lake, Little, 16-0890-00,
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1 [11/5/84P] (T.64, R.5, 6): 1B, 2A, 3B;

2 *Sand Point Lake, 69-0617-00,


4 Scarp (Cliff) Lake,

5 38-0058-00, (T.60, R.6W, S.31, 32): 1B, 2A, 3B;

6 *Sea Gull Lake, 16-0629-00,


8 Sema Lake (Coon Lake), 38-0386-00,


10 Shoo-fly Lake, 38-0422-00, (T.59,

11 R.8W, S.1; T.60, R.8W, S.36): 1B, 2A, 3B;

12 *Skull Lake, 38-0624-00, [11/5/84P]

13 (T.64, R.9W, S.14): 1B, 2A, 3B;

14 *Snowbank Lake, 38-0529-00,

15 [11/5/84P] (T.63, 64, R.8, 9): 1B, 2A, 3B;

16 *Spoon Lake (Fames Lake), 38-0388-00,


18 *Spring Lake, 69-0761-00, [3/7/85R]

19 (T.68, R.1B): 1B, 2A, 3B;

20 *Steamhaul Lake, 38-0570-00, (T.60,


22 *Strup Lake, 38-0360-00, [11/5/84P]

23 (T.64, R.7): 1B, 2A, 3B;

24 *Sumpet Lake, 38-0283-00, [11/5/84P]

25 (T.61, R.7): 1B, 2Bd, 3B;

26 *Surber Lake, 16-0343-00, (T.65, R.2W,

27 S.34): 1B, 2A, 3B;

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1  

and (160) *Takucmich Lake, 69-0369-00,  


3  (161) *Terry Lake, 16-0731-00, [11/5/84P]  

4  (T.64, R.5): 1B, 2A, 3B;  

5  (162) *Thomas Lake, 38-0351-00, [11/5/84P]  

6  (T.63, 64, R.7): 1B, 2A, 3B;  


8  (T.67, R.14): 1B, 2A, 3B;  

9  (164) Tofto Lake, 38-0724-00, (T.63, R.10W,  

10  S.2, 3, 10, 11; T.64, R.10W, S.35): 1B, 2A, 3B;  

11  (165) *Topaz Lake (Star Lake), 38-0172-00,  


13  (166) *Town Lake, 16-0458-00, [11/5/84P]  

14  (T.63, 64, R.3, 4): 1B, 2A, 3B;  

15  (167) Trappers Lake, 38-0431-00, (T.60,  

16  R.8W, S.27, 34): 1B, 2A, 3B;  

17  (168) Trip Lake, 16-0451-00, (T.65, R.3W,  

18  S.32): 1B, 2A, 3B;  

19  (169) *Trout Lake, Big, 69-0498-00,  


21  (170) *Trout Lake, Little (Pocket  


23  (171) *Trygg (Twigg) Lake, 69-0389-00,  


25  (172) *Tucker Lake (Trucker  

26  Lake), 16-0417-00, [11/5/84P] (T.64, R.3): 1B, 2Bd, 3B;  

27  (173) *Tucarora Lake, 16-0623-00,
06/18/07

   - (175) *Unnamed Lake, 16-0598-00, [11/5/84P]
   - (176) Unnamed Swamp, Winton, (T.63, R.11, S.19);
   - (177) Vera Lake, 38-0491-00, [11/5/84P]
   - (178) Vermilion, Lake, 69-0378-00, (see Lake Vermilion);
   - (179) Virgin Lake, 16-0719-00, [11/5/84P]
   - (180) West Crab Lake, 69-0220-00, (see Crab Lake);
   - (181) White Iron Lake, 69-0004-00, (T.62, 63, R.11, 12): 1C, 2Bd, 3C;
   - (184) Woods, Lake of the, 39-0002-00, (see Lake of the Woods);
   - (185) Unnamed, (Pearl) Lake, (T.60, R.11W, S.4):
   - 1B, 2A, 3B;
   - 2Bd, 3B;
   - (177) Unnamed Swamp, Winton, (T.63, R.11, S.19);
   - (178) Vermilion, Lake, 69-0378-00, (see Lake Vermilion);
   - (179) Virgin Lake, 16-0719-00, [11/5/84P]
   - (180) West Crab Lake, 69-0220-00, (see Crab Lake);
   - (181) White Iron Lake, 69-0004-00, (T.62, 63, R.11, 12): 1C, 2Bd, 3C;
   - (184) Woods, Lake of the, 39-0002-00, (see Lake of the Woods);

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wq-rule-1-10
Subp. 2. Boundary Waters Canoe Area Wilderness. All other lakes in the Boundary Waters Canoe Area Wilderness [11/5/80] are as identified in items 1B, 2Bd, 3B; and wq-rule-1-10

Subp. 3. Red River of the North Basin. The water use classifications for the listed waters in the Red River of the North Basin are as identified in items A7-B7-C7-and to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

(1) Auganash Creek, (T.144, R.38, S.5; T.145, R.38, S.27, 28, 31, 32, 33): 1B, 2A, 3B;

(2) Bad Boy Creek, (T.144, R.39, S.13, 14, 22, 23, 27, 28, 34): 1B, 2A, 3B;

(3) Badger Creek (Lower Badger Creek or County Ditch No. 11), (T.149, 150, 151, R.42, 43, 44): 2C;

(4) Barnums Creek (Burnham Creek or County Ditch No. 72), (T.148, 149, 150, R.44, 45, 46, 47, 48): 2C;

(5) Battle River, South Branch, (T.151, R.30, S.2, 3, 4, 11): 1B, 2A, 3B;
(6) Bemis Hill Creek (County Ditch No. 9),
(T.161, R.37, S.17, T.39, 20, 29-30); 1B, 2A, 3B;
(7) Bois de Sioux River, (Mud Lake outlet
to Otter Tail River in Breckenridge); 2C;
(8) Brandberg Creek (Brandborg Creek), (T.133,
R.38, S.20, 21, 28, 29, 30); 1B, 2A, 3B;
[For text of subitems (9) to (17), see M.R.]
(18) Elbow Lake Creek (Solid Bottom Creek),
(T.142, R.38, S.6; T.143, R.38, S.31, 32); 1B, 2A, 3B;
[For text of subitems (19) to (22), see M.R.]
(23) Hay Creek (County Ditch No. 7 or County
ditch No. 9), (T.161, 162, ±69, R.37, 38, 39); 2C;
[For text of subitems (24) to (35), see M.R.]
(36) Marsh Creek (Judicial Ditch No. 91), (T.144,
145, 146, R.41, 42, 43); 2C;
[For text of subitems (37) to (39), see M.R.]
(40) Mustinka River, (Old Channel), (T.127, 128,
R.45, 46, 47); 2C;
(41) Mustinka River, West Branch, (T.128, 129,
130, R.45-46, 47);--2C (see Twelve Mile Creek, West
Branch);
(42) Mustinka River Ditch, (T.128, R.45, S.19;
T.129, R.46, S.23, 24; T.129, R.46, S.13, 14); 2C;
(43) Nassett Creek, (T.148, R.38, S.20, 28,
29); 1B, 2A, 3B;
(44) O'Brien Creek, (T.149, R.32, S.2;
T.150, R.32, S.23, 24, 26, 35); 1B, 2A, 3B;
Otter Tail River, (Height of Land Lake to mouth): 1C, 2Bd, 3B 3C;


Rabbit River, (T.130, 131, R.45, 46, 47): 2C;

Rabbit River, South Fork, (T.130, R.45, 46): 2C;

Red Lake River, (Outlet of Lower Red Lake to mouth): 1C, 2Bd, 3B 3C;

Red River of the North, (T.132, R.47, S.6 in Breckenridge to Canadian border): 1C, 2Bd, 3B 3C;

Roy Creek (Roy Lake Creek), (T.144, T.145, 146, R.39): 2C;

Rush Lake Creek, (T.135, R.38, S.23, 26, 27, 28): 1B, 2A, 3B;

Schermerhorn Creek (Shimmelhorn Creek), (T.144, R.39, S.6; T.145, R.39, S.31; T.145, R.40, S.25, 26, 36): 1B, 2A, 3B;

Spring Creek (State Ditch No. 68), (T.145, 146, R.45, 46, 47): 2C;

Spring Creek, (T.142, R.41, 42): 2C;

Spring Creek, (T.149, R.30, S.4, 5, 9, 10): 1B, 2A, 3B;

Spring Lake Creek, (T.140, R.35, S.34, 35): 1B, 2A, 3B;

Story Creek, (T.137, 138, R.45, 46):
1 2C;
2 §57§ (59) Sucker Creek, (T.138, R.40, S.18;
3 T.138, R.41, S.13): 1B, 2A, 3B;
4 §58§ (60) Sucker Creek, (T.160, 161, R.39): 2C;
5 §59§ (61) Tamarac River (Source to the dam in
6 S.5, T.157, R.48 at Stephen), (T.157, 158, R.45, 46, 47, 48):
7 1C, 2Bd, 3B 3C;
8 §60§ (62) Toad River, (T.139, R.38, S.6, 7, 18,
9 19, 30; T.139, R.38, S.30, 31; T.139, R.39, S.25, 36; T.138,
10 R.39, S.25, 36): 1B, 2A, 3B;
11 §61§ (63) Twelve Mile Creek (excluding Class 7
12 segment), (T.126, 127, R.45): 2C;
13 §62§ (64) Twelve Mile Creek (County Ditch No. 1),
14 Donnelly, (T.126, R.43, S.16, 17, 18, 19, 21, 22, 25, 26, 27;
15 T.126, R.44, S.23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33;
16 T.126, R.45, S.25, 26, 27, 28, 36): 7;
17 §63§ (65) Twelve Mile Creek, East Fork, (T.125,
18 126, R.44, 45): 2C;
19 (56) Twelve Mile Creek, West Branch (West Branch
20 Twelvemile Creek), (T.125, 126, 127, 128, R.45, 46): 2C;
21 §64§ (67) Twelve Miles Creek, West Fork, (T.125,
22 126, R.44, R.45): 2C;
23 §65§ (69) Twin Lake Creek, (T.144, 145, R.40): 2C;
24 §66§ (69) Two Rivers, Middle Branch, (Source to
25 Hallock): 1C, 2Bd, 3B 3C;
26 §67§ (70) Two Rivers, South Branch, (T.160, 161,
1 R.41-49): 1C, 2Bd, 3B 3C;
2 +68+ (71) Unnamed Creek, Rothsay, (T.135, R.45, 3 S.21, 22, 23, 25, 26): 7 (see subitem (71));
3 +69+ (72) Unnamed Creek, Shevlin, (T.147, R.36, 5 S.17, 18; T.147, R.37, S.11, 12, 13, 14): 7;
4 +70+ (73) Unnamed Ditch, Audubon, (T.139, R.42, 7 S.4, 9): 7;
5 +71+ (74) Unnamed Ditch, Lake Park, (T.139, R.43, 9 S.4; T.140, R.43, S.33): 7;
6 +72+ (75) Unnamed Ditch, Glyndon, (T.139, R.47, 11 S.1, 2, 12; T.140, R.47, S.35): 7;
7 +73+ (76) Unnamed Ditch, Callaway, (T.140, R.41, 13 S.6; T.140, R.42, S.1, 2, 10, 11): 7;
8 +74+ (77) Unnamed Ditch, Gary, (T.145, R.44, 15 S.22, 27, 34): 7;
9 +75+ (78) Unnamed Ditch, Erskine, (T.149, R.42, 17 S.34, 35): 7;
10 +76+ (79) Unnamed Ditch, Thief River Falls,
11 (T.154, R.43, S.31, 32, 33): 7;
12 +77+ (80) Unnamed Ditch, Warroad, (T.163, R.37, 21 S.19, 20, 21, 22, 23; T.163, R.38, S.19, 20, 21, 22, 23, 24, 25, 26)
14 +78+ Whiskey (81) Whisky Creek, (T.136, 137,
15 R.44, 45, 46): 2C;
16 +79+ Whiskey (82) Whisky Creek, (T.133, 134,
17 R.46, 47, 48): 2C;
18 +80+ White Earth River, (T.142, 143, 144,

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R. 40, 41, 42): 2C;

(8) Willow Creek, New York Mills, (T. 135, R. 38, S. 13, 14, 15, 16, 17, 18): 7; and

(9) Wolverton Creek, (T. 135, 136, 137, R. 48): 2C.

B. Lakes:

(1) Bass Lake, 56-0722-00, (T. 135, R. 42W, S. 10, 11): 1B, 2A, 3B;

(2) Ramaon Lake, 03-0177-00, (T. 139, R. 39W, 36): 1B, 2A, 3B;

(3) Hoot Lake, 56-0782-00, (T. 133, R. 42, 43):

1C, 2Bd, 3C;

(4) Lake Bronson, 35-0003-00, (T. 150, 151, 46): 1C, 2Bd, 3B 3C;

(5) Twin Lake, East, 03-0362-00, (T. 138, 41): 1B, 2A, 3B;

(6) Unnamed Slough, Vergas, (T. 137, R. 40, 18, T. 137, R. 41, S. 13, 24): 7; and


(8) Wright Lake, 56-0783-00, (T. 133, R. 42, 43):

1C, 2Bd, 3C.

[For text of items C and D, see M.R.]

Subp. 4. **Upper Mississippi River Basin (headwaters to the confluence with the St. Croix River).** The water use classifications for the listed waters in the Upper Mississippi River Basin from the headwaters to the confluence with the St.
Croix River are as identified in items A–F and to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

(4) Basswood Creek, (T.141, 142, R.36, 37): 2C;
(5) Battle Brook, (T.35, R.26, 27): 2C;
(6) Battle Creek, (T.120, R.38, R.31): 2C;
(7) Bear Brook, (T.144, 145, R.27): 2C;
(8) Bear Creek, (T.145, R.36): 2C;
(9) Beautiful Creek, (T.127, R.31): 2C;
(10) Beaver Creek, (T.136, 137, R.32, 33): 2C;
(11) Belle Creek (Judicial Ditch No. 18), (T.117, 118, R.32): 2C;
(12) Black Bear Brook, (T.44, R.28, S.7, 8): 1B, 2A, 3B;
(13) Birch Brook (Birch Branch), (T.141, R.25): 2C;
(14) Black Brook, Mille Lacs County, (T.41, 42, R.26): 2C;
(15) Black Brook, (T.42, 43, R.30): 2C;
(16) Blackhoof Creek, (T.46, R.29, S.16): 1B, 2A, 3B;
(17) Blackwater Creek, (T.55, R.26, S.4): 2C;
(18) Blueberry River, (T.138, 139, R.35, 36): 2C;
(19) Bluff Creek, (T.135, 136, R.36, 37): 2C;
(20) Bogus Brook (excluding Class 7 segment),
(T.37, 38, R.25, 26): 2C;
(21) Bogus Brook, Bock, (T.38, R.26, S.13, 14):
7;
(22) Borden Creek, (T.44, R.28, S.8, 9, 17, 20):
1B, 2A, 3B;
(23) Branch No. 3, Lateral 2, East Bethel/Ham
Lake, (T.33, R.23, S.29, 32, along the west side of Minnesota
Highway 65): 7;
(24) Briggs Creek, (T.35, R.29, S.2, 1, 12, 14,
15, 22): 1B, 2A, 3B;
(25) Bruce Creek, (T.53, R.22, S.6, 7; T.53,
1B, 2A, 3B;
(26) Buckman Creek (excluding Class 7
segment), (T.39, 40, R.30, 31): 2C;
(27) Buckman Creek, Buckman, Buckman Coop
Cry., (T.39, R.30, S.4, 5, 6, 9; T.39, R.31, S.1, 2, 10, 11;
T.40, R.30, S.31; T.40, R.31, S.36): 7;
(28) Bungo Creek, (T.137, R.30, S.6; T.137,
R.31, S.1, 11, 12, 14, 21, 22, 23; T.138, R.30, S.31): 1B, 2A,
3B;
(29) Bungoshine Creek (Bungashing Creek),
(T.145, R.32, S.28, 29, 30; T.145, R.33, S.25, 26, 34, 35): 1B,
2A, 3B;
(30) Bunker Hill Brook (Bunker Hill Creek),
(T.38, R.30, S.6; T.38, R.31, S.1, 2, 10, 11): 1B, 2A, 3B;
Call Creek, (T.43, R.28, S.4, 5): 1B, 2A, 3B;

Camp Ripley Brook, (T.132, R.29, S.18, 19; T.132, R.30, S.12, 13-24): 1B, 2A, 3B;

Cat River (Cat Creek), (T.137, R.35, S.4, 9, 10, 11, 12, 13): 1B, 2A, 3B;

Cat River (excluding trout waters), (T.136, 137, R.33, 34-35): 2C;

Cedar Bluff Creek, (T.138, R.31, S.23, 26, 27, 28): 1B, 2A, 3B;

Chase Brook, (T.38, 39, R.27): 2C;

Clearwater Creek, (T.56, 57, R.24, R.25): 2C;

Cold Creek, (T.145, R.33, S.19): 1B, 2A, 3B;

Cold Spring Creek, (T.123, R.30, S.14, 15): 1B, 2A, 3B;

Coon Creek, (T.43, R.29, 30): 2C;

Corey Brook (Cory Brook), (T.135, R.30, S.9, 15, 16, 21, 22, 27): 1B, 2A, 3B;

County Ditch No. 15 (Bear Creek), Bertha, (T.132, R.35, S.2; T.133, R.34, S.7; T.133, R.35, S.12, 13, 24, 25, 26, 35): 7;

County Ditch No. 17, St. Cloud, Bel Clare Estates, (T.124, R.29, S.13, 24, 25): 7;

County Ditch No. 23, Garfield, (T.129, R.38, S.26, 27): 7;

County Ditch No. 28, East Bethel/Ham Lake, (T.32, R.23, S.4, 5, 6; T.33, R.23, S.29, 32 along the east side of Minnesota Highway 65): 7;


County Ditch No. 63, Near Hutchinson, West Lynn Coop Cry., (T.116, R.30, S.19, 20, 21, 28, 33): 7;


Crane Creek (Judicial Ditch No. 1), (excluding Class 7 segment), (T.116, 117, R.26, 27): 2C;

Crane Creek, Winsted, (T.117, R.27, S.14, 20, 21, 22, 23, 24, 25): 7;


Cullen Brook, (T.136, R.28, S.18, 19, 30; T.136, R.29, S.13): 1H, 2A, 3B;

Dabill Brook, (T.137, R.31, S.1, 2, 9, 10, 117-46; T.138, R.31, S.35, 36): 1B, 2A, 3B;

Daggett Brook, (T.143, R.29, 30): 2C;

Duel Creek, (T.129, R.32, S.20): 1B, 2A, 3B;

Eagle Creek, (T.120, R.29): 2C;
Elk River, Little, (T.130, 131, R.30, 31): 2C;
Elk River, South Branch, Little, (T.130, R.30, 31, 32): 2C;
Estes Brook, (T.36, 37, 38, R.27, 28): 2C;
Everton Creek, (T.149, R.30): 2C;
Fairhaven Creek, (T.121, R.28, S.5, 6, 7);
T.122, R.28, S.29, 31, 32): 1B, 2A, 3B;
Farley Creek, (T.147, R.28): 2C;
Farnham Creek, (T.135, R.32, S.5, 6, 7);
T.136, R.32, S.2, 9, 10, 16, 19, 20, 21, 29, 30, 31, 32): 1B, 2A, 3B;
Fawn Creek, (T.134, R.33, S.22, 27, 33, 34): 1B, 2A, 3B;
Pine Creek, (T.135, R.37, S.27, 34):
T.136, R.33, S.22, 27, 33, 34): 1B, 2A, 3B;
Fish Creek, (T.28, R.22): 2C;
Fletcher Creek, (T.42, R.31): 2C;
Foley Brook, (T.141, R.25): 2C;
Frederick Creek, (T.119, R.25, 26):
2C;
Frontenac Creek, (T.144, 145, R.34):
2C;
Gould Creek (Sucker Creek), (T.144, R.36, 37): 1B, 2A, 3B;
(72) Gould Creek (Sucker Creek), (T.144, R.36, 37): 1B, 2A, 3B;
(73) Gould Creek (Sucker Creek), (T.143, R.36): 1B, 2A, 3B;
2C;

+74+ (74) Hanson Brook, (T.40, R.27): 2C;
+72+ (75) Hanson Brook (Three-Mile Threemile),
(T.122, R.28, S.21, 22, 25, 26, 27, 36): 1B, 2A, 3B;
+73+ (76) Hasty Brook, (T.49, R.19, S.18; T.49,
R.20, S.4, 5, 9, 10, 13, 14, 15, 23; T.50, R.20, S.28, 29, 32,
33): 1B, 2A, 3B;
+74+ (77) Bay Creek, Crow Wing County, (T.43, 44,
R.30, 31): 2C;
+75+ (78) Bay Creek, Wadena County, (T.134, R.33,
S.7, 8, 9, 10, 11, 17, 18): 1B, 2A, 3B;
+76+ (79) Bay Creek (Mosquito Creek), (T.135,
R.31, S.8, 9, 15, 17): 1B, 2A, 3B;
+77+ (80) Hazell Creek, (T.127, R.29, 30): 2C;
+78+ (81) Hellkamp Creek (Hellkamp Creek),
(T.140, R.33, S.19; T.140, R.34, S.24): 1B, 2A, 3B;
+79+ (82) Hennepin Creek, (T.144, R.35, S.3, 10,
15, 16, 21; T.145, R.35, S.34): 1H, 2A, 3B;
+80+ (83) Hennepin Creek (excluding trout
erwaters), (T.144, 145, 146, R.34, 35): 2C;
+81+ (84) Hoblin Creek, (T.137, R.30, S.17, 18,
19): 1H, 2A, 3B;
+82+ (85) Indian Creek, (T.141, 142, R.36, 37):
2C;
+83+ (86) Irish Creek, (T.129, R.31): 2C;
+84+ (87) Iron Creek, (T.134, 135, R.31, 32):
2C;
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1. (85) (88) Jewett Creek (Jewitts Creek or County Ditch No. 17), (T.119, R.30, S.31): 2C;
2. (86) (89) Johnson Creek, (T.137, R.28, S.25): 2C;
5. (89) (92) Kabekona River, (T.143, R.32, S.6, 7, 18, 19; T.143, R.33, S.2, 3, 4, 9, 11, 12, 24; T.144, R.33, S.29, 30, 32, 33; T.144, R.34, S.24, 25, 36): 1B, 2A, 3B;
7. (91) (94) Kettle Creek (Kettle River), (T.138, R.35, 36, 37): 2C;
8. (92) (95) Kinzer Creek, (T.123, R.30, S.27, 34): 1B, 2A, 3B;
9. (93) (96) Kitchi Creek, (T.146, 147, R.29, 30): 2C;
10. (94) (97) Kitten Creek, (T.137, R.34, 35): 2C;
12. (96) (99) LaSalle Creek (excluding trout waters), (T.143, T.144, R.35): 2C;

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2C;

†99† (102) Laura Brook, (T.141, R.26): 2C;

†100† (103) Libby Brook, (T.50, R.23, S.5, 5;

†101† (104) Long Brook, Lower South, (T.44, R.30, S.12, 13): 1B, 2A, 3B;

†102† (105) Long Brook, Upper South, (T.44, R.29, S.6, 7): 1B, 2A, 3B;

†103† (106) Long Lake Creek, (T.45, R.25, S.10, 15): 1B, 2A, 3B;

†104† (107) Luxemburg Creek, (T.123, R.28, S.16, 17, 18, 19, 20, 21, 22, 30): 1B, 2A, 3B;

†105† (108) Matuska's Creek, (T.54, R.26, S.35, 36): 1B, 2A, 3B;

†106† (109) Meadow Creek, (T.128, R.30): 2C;

†107† (110) Meyers Creek (Johnson Creek), (T.122, R.28, S.4; T.123, R.28, S.22, 27, 33, 34): 1B, 2A, 3B;

†108† (111) Michaud Brook, (T.140, R.25, S.7, 17, 18): 1B, 2A, 3B;

†109† (112) Mike Drew Brook, (T.38, 39, R.26, 27): 2C;

†110† (113) Mink Creek, Big, (T.41, 42, R.29, 30): 2C;

†111† (114) Mink Creek, Little, (T.40, 41, 32): 2C;

†112† (115) *Mississippi River, [11/5/84R] (From Lake Itasca to Fort Ripley, at the common boundary of Crow Wing

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and Morrison Counties): 2B, 3B 3C;

††3† (116) *Mississippi River, [11/5/04R] (From Fort Ripley, at the common boundary of Crow Wing and Morrison Counties, to the southerly boundary of Morrison County): 1C, 2Bd, 3B 3C;

††4† (117) Mississippi River, (From the southerly boundary of Morrison County to Stearns County State-Aid Highway 7 bridge in Saint Cloud in S.13, T.124, R.28): 1C, 2Bd, 3B 3C;

††5† (118) *Mississippi River, [11/5/04R] (Stearns County State-Aid Highway 7 bridge in Saint Cloud in S.13, T.124, R.28 to the northwestern city limits of Anoka, river mile 873.5): 1C, 2Bd, 3B 3C;

††6† (119) Mississippi River, (From the northwestern city limits of Anoka, river mile 873.5, to the Upper Lock and Dam at Saint Anthony Falls in Minneapolis): 1C, 2Bd, 3B 3C;

††7† (120) Mississippi River, (Outlet of Metro Wastewater Treatment Works in Saint Paul, river mile 835.3, to river mile 830, Rock Island RR Bridge): 2C, 3B 3C;

††8† (121) Morrison Brook, (T.52, R.26, S.4, 9, 10, 14, 15; T.53, R.26, S.7, 8, 10, 19, 29, 30, 32, 33): 1B, 2A, 3B;

††9† (122) Muckey Creek (Wallingford Creek), (T.139, R.33, S.1, 2, 10, 11, 12): 1B, 2A, 3B;

††10† (123) Necktie River (T.145, R.32, S.6, 7, 8, 9, 16; T.145, R.33, S.1): 1B, 2A, 3B;

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(124) Nelson Hay Creek, (T.130, R.31, S.1): 1B, 2A, 3B;
(125) Northby Creek, (T.140, R.27): 2C;
(126) Norway Brook, (T.139, R.30): 2C;
(127) O'Brien Creek, (T.56, 57, R.22): 2C;
(128) O'Neill Brook, (T.38, R.26): 2C;
(129) Oak Ridge Creek (Oak Creek), (T.133, 134, R.36): 2C;
(130) Olson Brook, (T.136, R.30, S.12, 13):
(131) Peterson Creek, (T.134, R.30, S.29);
(132) Pickerel Creek, (T.56, R.22, S.7, 18; T.56, R.23, S.13): 1B, 2A, 3B;
(133) Pigeon River, (T.147, R.27): 2C;
(134) Pike Creek (excluding Class 7 segment), (T.129, R.30): 2C;
(135) Pike Creek, Flensburg, (T.129, R.30, S.17, 18, 19, 20): 7;
(136) Pillager Creek, (T.133, 134, R.30): 2C;
(138) Pioneer Creek, (T.118, R.24): 2C;
(139) Pokegama Creek, (T.54, R.26, S.26, 27, 28): 1B, 2A, 3B;
(140) Pokegama Creek, Little, (T.54, R.26,
06/18/07

S.26, 27, 34, 35): 1B, 2A, 3B;

†141 (141) Pokety (Pickedee Creek), (T.144, R.32, S.29, 30; T.144, R.33, S.24, 25): 1B, 2A, 3B;

†142 (142) Poplar Brook (Martin Creek), (T.135, R.32, S.5, 6; T.136, R.32, S.22, 27, 28, 32, 33): 1B, 2A, 3B;

†143 (143) Prairie Brook, (T.36, R.27): 2C;

†144 (144) Rat Creek, (T.144, 145, R.34): 2C;

†145 (145) Rice Creek, (T.30, 31, 32, R.22, 23, 24): 1C, 2Bd, 3B 3C;

†146 (145) Rice Creek, Sherburne County, (T.35, R.29): 2C;

†147 (147) Robinson Hill Creek, (T.123, R.28, S.4, 9, 10, 15; T.124, R.28, S.31, 32, 33): 1B, 2A, 3B;

†148 (148) Rock Creek, Little (Benton), (T.38, R.31, S.3, 4, 10, 15, 21, 27, 28; T.39, R.30, S.17, 18, 20, 21, 22; T.39, R.31, S.13, 14, 22, 23, 26, 27, 33, 34): 1B, 2A, 3B;

†149 (149) Rogers Brook, (T.134, R.30, S.29, 32): 1B, 2A, 3B;

†150 (150) Rosholt Creek, (T.55, R.23, S.22, 23, 24): 1B, 2A, 3B;

†151 (151) Round Creek, (T.43, R.31, S.14, 15): 1B, 2A, 3B;

†152 (152) Round Prairie Creek (Trout Creek), (T.127, R.33, S.4; T.128, R.33, S.20, 29, 32, 33): 1B, 2A, 3B;

†153 (153) *Rim River, [11/5/84? (From the Ogechie Lake spillway to the northernmost confluence with Lake Onamia): 7B, 3B;

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State Highway 27 bridge in Onamia to Madison and Rice Streets in Anoka: 2B, 3B 3C;

Rum River, (From the 2 State Highway 27 bridge in Onamia to Madison and Rice Streets in Anoka): 2B, 3B 3C;

Sand Creek, Crow Wing County, (T.45, R.30, S.2, 3, 11, 13, 14; T.46, R.30, S.34): 1B, 2A, 3B;


Sauk Creek, Little, (T.127, R.34, S.1; T.128, R.34, S.36): 1B, 2A, 3B;

Schoolcraft Creek, (T.142, R.34, S.5, 7, 8, 17): 1B, 2A, 3B;

Seven Mile Creek, (T.133, 134, R.30, 31): 2C;

Sisseebakwet Creek, (T.54, R.26, S.19, 29, 30): 1B, 2A, 3B;

Six Mile Brook, (T.143, T.144, R.26, 27): 2C;

Skimmerhorn Creek (Skimmerhorn Creek), (T.149, R.30): 2C;

Skunk Creek, (T.144, 145, R.34): 2C;

Skunk River (Co. Dt. No. 37) (Co. Dt. No. 29), Brooten, (T.123, R.35, S.4, 5, 9; T.123, R.35, S.9, 10, 11, 12; T.123, R.34, S.3, 4, 5, 6, 7, 8): 7;

Smart's Creek, (T.126, R.28, S.17, 18, 20): 1B, 2A, 3B;

Smith Creek, (T.53, R.26, S.1, 9, 10, 11, 12, 13, 14, 15; T.54, R.26, S.35, 36): 1B, 2A, 3B;
(167) Smith Creek, Unnamed Tributary, (T.53, R.26, S.11, 12): 1B, 2A, 3B;
(168) Smith Creek, Unnamed Tributary, (T.54, R.26, S.35, 36): 1B, 2A, 3B;
(170) Snowball Creek, (T.56, R.23): 2C;
(171) Split Hand Creek, (T.53, R.24, 25): 2C;
(172) Spring Brook, Stearns County, (T.121, R.28, S.7, T.121, R.29, S.12): 1B, 2A, 3B;
(173) Spring Brook, Crow Wing County, (T.138, R.28, S.27, 34): 1B, 2A, 3B;
(174) Spring Brook (Spring Branch), Cass County, (T.139, R.26, S.3, 10, 11, 14): 1B, 2A, 3B;
(176) Spring Creek, (T.55, R.23, S.25, 26, 27): 1B, 2A, 3B;
(177) Spruce-Creek-(Douglas), (T.131, R.36, S.28, 32, 37-33y-3B, 2A, 3B);
(178) Spruce Creek (Otter-Tail), (T.130, R.36, S.3, 4, 9, 10; T.131, R.36, S.28, 29, 31, 32, 33, 34): 1B, 2A, 3B;
(179) Stag Brook, (T.121, 122, R=3B y R.31): 2C;
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1. \(\text{(179)}\) Stall Creek, (T.143, R.33, S.12, 13, 14): 1B, 2A, 3B;

2. \(\text{(180)}\) Stanchfield Branch, Lower, Braham, (T.37, R.23, S.3, 10, 15, 22): 7;

3. \(\text{(181)}\) Stocking Creek, (T.138, R.34, 35): 2C;


5. \(\text{(183)}\) Stony Brook (Stoney Brook), Foley, (T.36, R.29, S.2, 9, 10, 11, 16; T.37, R.29, S.35, 36): 7;

6. \(\text{(184)}\) Stony Creek (Wabedo Creek), (T.140, R.28): 2C;

7. \(\text{(185)}\) Stony Point Brook, (T.147, R.28, S.22, 27, 34): 2C;

8. \(\text{(186)}\) Straight Creek, Upper, (Straight River), (T.140, R.36, S.6; T.141, R.36, S.30, 31; T.141, R.37, S.24, 25): 1B, 2A, 3B;

9. \(\text{(187)}\) Straight Lake Creek, (T.140, R.36, S.6; T.140, R.37, S.1, 2): 1B, 2A, 3B;

10. \(\text{(188)}\) Straight River, (T.139, R.34, S.7; T.139, R.35, S.8, 5, 6, 9, 10, 11, 12; T.139, R.36, S.1; T.140, R.36, S.28, 29, 33, 34, 35, 36): 1B, 2A, 3B;

11. \(\text{(189)}\) Sucker Brook Creek (Gould Creek), (T.144, R.36, S.27, 28, 29, 30, 32, 33): 1B, 2A, 3B;

12. \(\text{(190)}\) Sucker Creek, Meeker County, (T.118,

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1. **R.30, S.4, 5, 6, 7**: 1B, 2A, 3B; 
   - Sucker-Creek (Soud-Creek) - excluding-trout 

2. **wäters**
   - R.15, R.36
   
3. **(189) Swamp Creek, Big, (T.137, 138, 139, R.32, 33): 2C;**

4. **(190) Swamp Creek, Little, (T.136, 137, R.33): 2C;**

5. **(191) Swan Creek, (T.134, 135, R.32): 2C;**

6. **(192) Swan Creek, Little, (T.135, R.32): 2C;**


8. **(194) Taylor Creek, (T.128, R.31): 2C;**

9. **(195) Ted Brook Creek, (T.120, R.31): 2C;**

10. **(196) Thiel Creek (Teal), (T.121, R.28, S.5, 6, 8): 1B, 2A, 3B;**

11. **(197) Tibbits Brook, (T.33, 34, R.26, 27): 2C;**

12. **(198) Tibbetts Creek (Tibbetts Brook), (T.39, 40, R.27, 28): 2C;**


15. **(201) Two Rivers, South Branch, Albany, (T.125, R.31, S.21, 22, 23): 7;**


17. **(203) Union Creek, (T.134, R.35, S.4, 5, 7, 25);**

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5, 10, 15, 20, 25

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1 8, 16, 19, 30, 31; T.135, R.35, S.27, 28, 35, 34): 1B, 2A, 3B;
   2 {204} (205) Unnamed Creek, Cass County, (T.137, R.31, S.4, 5): 1B, 2A, 3B;
   3 {205} (207) Unnamed Creek, Cass County, (T.139, R.26, S.3, 10): 1B, 2A, 3B;
   4 {206} (208) Unnamed Creek, Calumet, (T.56, R.23, S.21): 7;
   5 {207} (209) Unnamed Creek, Montrose, Hiller Mobile Home Court, (T.119, R.26, S.22, 26, 27, 35): 7;
   6 {208} (210) Unnamed Creek, Rogers, (T.120, R.23, S.15, 16, 22, 23): 7;
   7 {209} (211) Unnamed Creek, Grove City, (T.120, R.32, S.34, 35, 36): 7;
   8 {210} (212) Unnamed Creek, Albertville, (T.121, R.23, S.30; T.121, R.24, S.25, 36): 7;
   9 {211} (213) Unnamed Creek, Eden Valley, Ruhland Feeds, (T.121, R.31, S.2; T.122, R.31, S.35): 7;
   10 {212} (214) Unnamed Creek, Lake Henry, (T.123, R.33, S.11, 14): 7;
   11 {213} (215) Unnamed Creek, Miltona, (T.129, R.36, S.6; T.130, R.36, S.30, 31): 7;
   12 {214} (216) Unnamed Ditch, Braham, (T.37, R.23, S.2, 3): 7;
   15 {217} (219) Unnamed Ditch, Braham, (T.37, R.23, S.2, 3): 7;

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Approved by Revisor ___________
<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>S.31, 32: 7;</td>
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<tr>
<td>3</td>
<td>(220) Unnamed Ditch, Taconite, (T.56, R.24, S.22 SW 1/4): 7;</td>
</tr>
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<td>6</td>
<td>(223) Unnamed Ditch, Winsted, Green Giant, (T.117, R.27, S.10, 11): 7;</td>
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<tr>
<td>7</td>
<td>(224) Unnamed Ditch, Montrose, Hiller Mobile Home Court, (T.119, R.26, S.34, 35): 7;</td>
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<tr>
<td>8</td>
<td>(225) Unnamed Ditch, Kandiyohi, (T.119, R.34, S.10, 15, 21, 22, 26, 29-32): 7;</td>
</tr>
<tr>
<td>9</td>
<td>(226) Unnamed Ditch, Rogers, (T.120, R.23, S.15): 7;</td>
</tr>
<tr>
<td>10</td>
<td>(227) Unnamed Ditch, Belgrade, (T.123, R.34, S.19, 39): 7;</td>
</tr>
<tr>
<td>14</td>
<td>(231) Unnamed Stream, Flensburg, (T.129, R.30, S.19, 30): 7;</td>
</tr>
</tbody>
</table>
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\{230\} (232) Vandell Brook (Vandell Brook), (T.37, 38, R.26): 2C;
\{232\} (234) Wallingford Brook (Wallingford Creek), (T.139, R.33, S.1, 2, 11; T.140, R.33, S.25, 36): 1B, 2A, 3B;
\{233\} (235) Warba Creek, (T.54, R.23, S.13, 14, 15, 21, 22, 23, 24): 1B, 2A, 3B;
\{234\} (236) Welcome Creek, (T.56, 57, R.22): 2C;
\{235\} (237) Whitley's Creek (Whitley Creek), (T.45, R.30, S.16, 17, 20, 21): 1B, 2A, 3B;
\{236\} (238) Whitney Brook, (T.39, R.26, 27): 2C;
\{237\} (239) Willow Creek, Otter Tail County, (T.133, R.38, S.2, 11; T.134, R.38, S.26, 35): 1B, 2A, 3B;
\{238\} (240) Willow Creek, Stearns and Meeker Counties, (T.121, R.29, S.10, 11, 14, 23): 1B, 2A, 3B;
\{240\} (242) Willow River, South Fork, (T.142, R.25): 2C;
\{241\} (243) Wilson Creek, (T.137, R.30): 2C; and
\{242\} (244) Wolf Creek, (T.42, R.30): 2C.

B. Lakes:


Approved by Revisor: ____________
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<tbody>
<tr>
<td>1</td>
<td>(2) Bald Eagle Lake, 62-0002-00, (T.30, 31, R.23, 22):</td>
<td>1C, 2Bd, 3B 3C;</td>
<td></td>
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<td>3</td>
<td>(4) Benedict Lake, 29-0048-00, (T.142, R.32):</td>
<td>1B, 2A, 3B;</td>
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<td>6</td>
<td>(7) *Blue Lake, 01-0181-00, [3/7/88R] (T.46, 47, R.27):</td>
<td>1B, 2A, 3B;</td>
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<td>7</td>
<td>(8) *Blue Lake, 29-0184-00, (3/7/88R] (T.141, R.34):</td>
<td>1B, 2A, 3B;</td>
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<td>9</td>
<td>(10) Cenaiko Lake (Unnamed), 02-0654-00, (T.31, R.24W, S.26):</td>
<td>1B, 2A, 3B;</td>
<td></td>
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<td>10</td>
<td>(11) Centerville Lake, 02-0006-00, (T.31, R.22):</td>
<td>1C, 2Bd, 3B 3C;</td>
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<td>11</td>
<td>(12) Charley Lake, 62-0062-00, (T.30, R.23):</td>
<td>1C, 2Bd, 3B 3C;</td>
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<td>13</td>
<td>(14) Deep Lake, 62-0018-00, (T.30, R.22):</td>
<td>1C, 2Bd, 3B 3C;</td>
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<td>14</td>
<td>(15) Diamond Lake, 11-0396-00, (T.141, R.30W, 3C)</td>
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5.26, 27, 34) 1B, 2A, 3B;
(17) Hay Lake, Lower, 18-0378-00, (T.137, R.28, S.29): 1B, 2A, 3B;
(18) *Kabekona Lake, 29-0075-00, [3/7/88R]
(T.142, 143, R.32, 33): 1B, 2A, 3B;
(19) Kennedy Lake, 31-0137-00, (T.58, R.23): 1B, 2A, 3B;
(20) Kremer Lake, 31-0645-00, (T.58, R.26W, S.33, S.34): 1B, 2A, 3B;
(21) LaSalle Lake, Lower, 29-0309-00, (T.145, R.35): 1B, 2A, 3B;
(22) Loon (Townline) Lake, 01-0024-00, (T.50, R.22W, S.7; T.50, R.23W, S.12, 13): 1B, 2A, 3B;
(23) Lucky Lake, 31-0603-00, (T.57, R.26W, S.14): 1B, 2A, 3B;
(25) Manuel (South Yawkey) Mine
Pit, 18-0435-00, (T.46, R.29W, S.1): 1B, 2A, 3B;
(26) Margaret Lake, 11-0045-00, (T.139, R.26W, S.16): 1B, 2A, 3B;
(28) Martin (Huntington, Feigh) Mine
Pit, 18-0441-00, (T.46, R.29W, S.9, 10, 16): 1B, 2A, 3B;
(29) Moonshine Lake, Little
(Moonshine), 31-0444-00, (T.58, R.25W, S.28, 33): 1B, 2A, 3B;
(30) Newman (Putnam) Lake, 29-0237-00, (T,145,
R.34W, S.10, 11): 1B, 2A, 3B;
(31) Otter Lake, 02-0003-00, (T.30, 31, R.22):
1C, 2Bd, 3B 3C;
(33) Perch Lake, 11-0825-00, (T.139, R.31W,
S.33): 1B, 2A, 3B;
(34) Pleasant Lake, 62-0046-00, (T.30, R.22,
23): 1C, 2Bd, 3B 3C;
(35) Pleasant Lake, 18-0278-00, (T.137, R.27W,
S.19): 1B, 2A, 3B;
(36) *Pokegama Lake, 31-0532-01 and 31-0532-02,
(37) Portsmouth Mine Pit, 18-0437-00, (T.46,
R.29W, S.1, 2, 11): 1B, 2A, 3B;
(38) *Roosevelt Lake, 11-0043-00, [3/7/88R]
(T.138, 139, R.26): 1B, 2A, 3B;
(39) Sagamore Mine Pit, 18-0523-00, (T.46, R.29W,
S.19, T.46, R.30W, S.24): 1B, 2A, 3B;
(40) Section 6 Mine Pit, 18-0667-00, (T.46,
R.29W, S.6): 1B, 2A, 3B;
(41) Snoshoe Mine Pit, 18-0524-00, (T.46, R.25W,
S.17, 18): 1B, 2A, 3B;
(42) Snowshoe (Little Andrus)
Lake, 11-0054-00, (T.139, R.25W, S.29, 30): 1B, 2A, 3B;
(43) Strawberry Lake, 18-0363-00, (T.137, R.26W, S.27, 34): 1B, 2A, 3B;
(44) Sucker Lake, 62-0028-00, (T.30, R.22): 1C, 2Bd, 3B 3C;
(45) Taylor Lake, 01-0109-00, (T.52, R.25W, S.16): 1B, 2A, 3B;
(48) Trout Lake, 31-0216-00, (T.55, 56, R.24): 1B, 2A, 3B;
(49) Trout Lake, Big, 31-0410-00, [3/7/88R]
(T.57, 58, R.25): 1B, 2A, 3B;
(50) Trout Lake, Big, 18-0315-00, [3/7/88R]
(T.137, 138, R.27, 28): 1B, 2A, 3B;
(51) Trout Lake, Little, 31-0394-00, [3/7/88R]
(T.57, R.25): 1B, 2A, 3B;
(56) Vadnais Lake, 62-0038-00, (T.30, R.22): 1C, 2Bd, 3B 3C;
(58) Watab Lake, Big, 73-0102-00, (T.124, R.30): 1B, 2A, 3B;
Subp. 5. Minnesota River Basin. The water use classifications for the listed waters in the Minnesota River Basin are as identified in items A.-B.-C.-D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

(5) Blue Earth River, East Fork, (Brush Creek to mouth): 2C, 3B 3C;

(6) Blue Earth River, West Fork, (Iowa border to mouth): 2C, 3B 3C;

(12) Brush Creek, (Iowa border to mouth): 2C, 3B 3C;

(16) Canby Creek (excluding trout waters), (South Dakota border to mouth): 2C, 3B 3C;

(21) Chippewa River (see also County Ditch No. 60);

(22) Cobb Creek, Freeborn, (T.104, R.23,
1 S.7, 8, 17; T.104, R.24, S.11, 12): 7;
2 +22+ (23) Cobb Creek Ditch, Freeborn, (T.103,
4 +23+ (24) Cobb River (Cobb River, Big), (T.103,
5 104, 105, 106, 107, R.23, 24, 25, 26, 27): 2C;
6 +24+ (25) Cobb River, Little (County Ditch No.
7 8), (T.105, 106, R.23, 24, 25, 26): 2C;
8 +25+ (26) Cottonwood Creek (excluding trout
9 waters), (T.120, 121, 122, R.41, 42): 2C;
10 +26+ (27) Cottonwood Creek, (T.119, R.41, S.4;
11 T.120, R.41, S.21, 28, 33): 1B, 2A, 3B;
12 +27+ (28) County Ditch No. 1, Echo, (T.113, R.38,
13 S.8, 9): 7;
14 +28+ (29) County Ditch No. 4, Arco, (T.110, R.44,
15 S.5; T.111, R.44, S.32, 33): 7;
16 +29+ (30) County Ditch No. 4, Norwood, (T.115,
18 +30+ (31) County Ditch No. 5, Marietta, (T.117,
19 R.45, S.6, 7, 18; T.117, R.46, S.1; T.118, R.46, S.23, 25, 26,
20 36): 7;
21 +31+ (32) County Ditch No. 6 (Judicial Ditch No.
22 11), Janesville, (T.107, R.24, S.4, 8, 9, 17, 18; T.107, R.25,
23 S.13): 7;
24 +32+ (33) County Ditch No. 7, Lowry, (T.126,
25 R.39, S.25, 26): 7;
26 (34) County Ditch No. 8 (see Cobb River, Little);
27 +33+ (35) County Ditch No. 9 (see Hazel Creek);

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County Ditch No. 12 (County Ditch No. 45), Waseca, (T.107, R.23, S.22, 23): 7;

County Ditch No. 12 (Rice Creek), Belview, (T.113, R.36, S.7, 8, 18, 19; T.113, R.37, S.15, 21, 22, 23, 24): 7;


County Ditch No. 15 (see Unnamed Ditch, Madison);

County Ditch No. 22, Montgomery, Green Giant Company, (T.111, R.23, S.4, 9, 10; T.112, R.23, S.33): 7;


County Ditch No. 28, Marietta, (T.118, R.46, S.22, 23, 26): 7;

County Ditch No. 38, Storden, (T.107, R.37, S.28, 29): 7;


County Ditch No. 42, Winthrop, (T.112, R.29, S.6, 7): 7;

County Ditch No. 44, Bricelyn, Owatonna Canning Company, (T.101, R.25, S.7, 8, 16, 17; T.101, R.26, S.1, 12; T.102, R.26, S.36): 7;

County Ditch No. 45, Renville, Southern
1)6/111/1)7 [REVISOR]

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1 Minnesota Beet Sugar Coop, (T.114, R.36, S.5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32): 7;
5 (48) County Ditch No. 45, Branch Lateral 3,
2 Renville, Golden Oval Eggs, (T.115, R.36, S.4, 5, 8): 7;
4 County Ditch No. 46, Willmar, (T.119, R.35, S.19, 20, 29): 7;
8 County Ditch No. 51, Le Center, (T.110, R.24, S.5, 6; T.111, R.24, S.31, 32; T.111, R.25, S.26, 35, 36): 7;
11 County Ditch No. 54, Montgomery,
(45) (49) County Ditch No. 46, Willmar, (T.119, R.35, S.19, 20, 29): 7;
12 (T.112, R.23, S.26, 33, 34, 35): 7;
13 County Ditch No. 55, [see Rush River, North Branch];
16 County Ditch No. 60 (Chippewa River), Millerville, Millerville Coop Cry., (T.130, R.39, S.14, 22, 23, 27, 28, 32, 33): 7;
18 County Ditch No. 61, Kerkhoven
19 Kerkhoven, (T.120, R.37, S.21, 22): 7;
20 County Ditch No. 63, Hanska, (T.108, R.30, S.11, 12, 14, 17, 18, 19, 20, 21, 22, 23, 27, 28): 7;
22 County Ditch No. 66, Bird Island,
26 County Ditch No. 104, Sacred Heart,
27 (T.114, R.38, S.1, 2; T.115, R.37, S.7, 10; T.115, R.38, S.13,

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County Ditch No. 109, Morgan, (T.111, R.34, S.4, 5, 8, 17; T.112, R.34, S.22, 23, 27, 28, 33): 7;
Crow Creek, (T.112, R.35): 2C;
Dry Creek, (T.108, 109, R.36): 2C;
Dry Weather Creek, (T.117, 118, R.39, 40, 41): 2C;
Dry Wood Creek, (T.122, 123, R.42, 43):
Eagle Creek, East Branch, (T.115, R.21, S.18): 1B, 2A, 3B;
Eagle Creek, Main Branch, (T.115, R.21, S.7, 18; T.115, R.22, S.13): 1B, 2A, 3B;
Echo Creek, (T.114, R.37): 2C;
Eight Mile Creek (Judicial Ditch No. 7 or Eightmile Creek), (T.111, 112, 113, R.31): 2C;
Elm Creek, North Fork, (T.104, R.34):
Elm Creek, South Fork, (T.103, R.34):
Emily Creek, (T.118, 119, R.43): 2C;
Fish Creek, (T.123, 124, R.47, 48, 49): 2C;
Five Mile Creek, (T.120, R.44): 2C;
Florida Creek, (South Dakota border to mouth): 2C, 3B 3C;
Foster Creek (County Ditch No. 70): 74
1) (excluding Class 7 segment), (T.102, 103, R.24): 2C;
2) (75) Foster Creek (County Ditch No. 1),
4) (76) Hassel Creek, (T.122, 123, R.38, 39): 2C;
5) (77) Hawk Creek (County Ditch No. 10),
6) Willmar/Pennock, (T.118, R.36, S.2, 3, 8, 10, 15, 16, 17, 18, 19; T.118, R.37, S.5, 6, 7, 8, 9, 14, 15, 16, 18, 19, 23, 24, 30, 31; T.119, R.35, S.19; T.119, R.36, S.24, 25, 26, 35): 7;
7) (78) Hazel Creek (County Ditch No. 9),
8) (T.115, R.39, 40, 41, 42): 2C;
9) (79) High Island Ditch No. 5, Arlington,
10) (T.113, R.27, S.16, 17, 21, 22, 27): 7;
11) (80) Hindeman Creek (Spring Creek), (T.111, R.32, S.19, 20; T.111, R.33, S.24): 1B, 2A, 3B;
12) (81) Iosco Creek, (T.108, R.23): 2C;
13) (82) John's Creek, (T.110, R.32, S.1; T.111, R.31, S.31; T.111, R.32, S.36): 1B, 2A, 3B;
15) (84) Judicial Ditch No. 1A, Lafayette,
16) (T.111, R.27, S.5, 6, 7; T.111, R.28, S.10, 11, 12, 15, 16, 17, 18, 19; T.111, R.29, S.24): 7;
17) (85) Judicial Ditch No. 4, Dawson, Lac qui Parle Oil Coop, (T.117, R.43, S.7, 17, 18, 21 NW1/4; T.117, R.44, S.12): 7;
Judicial Ditch No. 5, Murdock, (T.120, R.38, S.4, 5, 6, 9, 10, 11; T.120, R.39, S.1, 4, 9, 10, 11): 7;

Judicial Ditch No. 6, Hanska, (T.107, R.30, S.4; T.108, R.30, S.28, 33): 7;

(88) Judicial Ditch No. 7 (see Eight Mile Creek);

Judicial Ditch No. 10, (see Wood Lake Creek);

Judicial Ditch No. 10 (Morgan Creek), Hanska, (T.108, R.30, S.1; T.109, R.30, S.35 SE1/4, 36 SW1/4): 7;

Judicial Ditch No. 12, Tyler, (T.109, R.43, S.9, 15, 15, 17, 18): 7;

Judicial Ditch No. 29, Arco, (T.111, R.44, S.21, 28, 33): 7;

Judicial Ditch No. 29, Evan, (T.110, R.33, S.6; T.111, R.33, S.21, 22, 28, 31, 32, 33): 7;

Judicial Ditch No. 29, Branch Lateral, Evan, (T.110, R.33, S.6, 7, 18): 7;

Judicial Ditch No. 30, Sleepy Eye, Del Monte Corporation, (T.109, R.32, S.4, 5, 6; T.110, R.32, S.31): 7;

Judicial Ditch No. 49 (Providence Creek), Amboy, (T.105, R.27, S.18, 19; T.105, R.26, S.13): 7;

Kennaley's Creek, (T.27, R.23, S.18): 7B, 2A, 3B;

Lac qui Parle River, (Lake Hendricks, 

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outlet to Minnesota River): 2C, 3B 3C;

†93† (99) Lac qui Parle River, West Fork, (South Dakota border to mouth): 2C, 3B 3C;

†92† (100) Lateral Ditch C of County Ditch No. 55, Gaylord, (T.112, R.2B, S.2, 3; T.113, R.2B, S.32, 33, 34):

†93† (101) Lazarus Creek, (South Dakota border to Canby Creek): 2C, 3B 3C;

(102) Lazarus Creek (Canby Creek), (T.115, R.45, S.14 to mouth): 2B, 3C;

†94† (103) Le Sueur River, Little, (T.106. R.22): 2C;

†95† (104) Lone Tree Creek, Tracy, (T.109, R.39, S.2, 3, 4, 7, 8, 9; T.110, R.38, S.19, 20, 30; T.110, R.39, S.25, 34, 35, 36): 7;

†96† (105) Long Lake Creek, (T.132, R.41, S.9): 1B, 2A, 3B;

†97† (106) Middle Creek (County Ditch No. 92), (T.113, 114, R.36): 2C;

†98† (107) Mink Creek (Judicial Ditch No. 60), (T.104, R.30, 31): 2C;

†99† (108) Minneopa Creek, Lake Crystal, (T.108, R.28, S.26, 27, 32, 33, 34): 7;

†100† (109) Minnesota River, (Big Stone Lake outlet to the Lac qui Parle dam): 1C, 2Bd, 3B 3C;

†101† (110) *Minnesota River, [11/5/84R] (Lac qui Parle dam to the dam in Granite Falls S.34, T.116, R.39): 1C,
2Bd, 3B 3C;


†103† (112) Minnesota River, (River Mile 22 to mouth): 2C, 3B 3C;

†104† (113) Minnesota River, Little, (South Dakota border crossing to Big Stone Lake): 2C, 3B 3C;

†105† (114) Morgan Creek (Judicial Ditch No. 10) (excluding Class 7 segment), (T.109, R.29, 30): 2C;

†106† (115) Mud Creek, (T.114, R.43, 44, 45): 2C;

†107† (116) Mud Creek, (T.123, R.36, S.28, 29): 1B, 2A, 3B;

†108† (117) Mud Creek (Judicial Ditch No. 19), DeGraff/Murdock, (T.121, R.37, S.31; T.121, R.38, S.18, 19, 20, 28, 29, 33, 34, 35, 36; T.121, R.39, S.11, 12, 13): 7;

†109† (118) Muddy Creek (Mud Creek) (County Ditch No. 2) (County Ditch No. 4), Chokio, (T.124, R.42, S.6, 7, 15, 16, 17, 18, 21, 22, 23; T.124, R.43, S.1, 4, 5, 6, 7, 8; T.124, R.44, S.1, 2, 3, 12; T.125, R.43, S.34, 35, 36): 7;

†118† (119) Palmer Creek (County Ditch No. 68), (T.116, 117, 118, R.39): 2C;

†119† (120) Paul's Creek, (T.110, R.26, S.14, 15): 1B, 2A, 3B;

†120† (121) Pelican Creek, (T.130, R.41, 42): 2C;
Pell Creek, Walnut Grove, (T.109, R.38, S.25, 26, 27, 28): 7;
Perch Creek, (T.104, 105, 106, R.29, 30): 2C;
Redwood River, (T.110, R.42, S.5, 8, 17; T.111, R.42, S.32): 1B, 2A, 3B;
Rice Creek, See County Ditch No. 12;
Rush River, Middle Branch (County Ditch No. 23, County Ditch No. 42B, or County Ditch No. 54), Winthrop, (T.112, R.27, S.16, 19, 20, 21, 30; T.112, R.28, S.18, 19, 20, 21, 22, 25, 26, 27; T.112, R.29, S.7, 8, 9, 13, 14, 15, 16, 17, 18): 7;
Rush River, North Branch, (County Ditch No. 55), Gaylord (T.112, R.27, S.7, 8, 17; T.112, R.28, S.1, 2, 12): 7;
Saint James Creek (excluding Class 7 segment), (T.105, 106, R.31, 32, 33): 2C;
Saint James Creek, Saint James, (T.106, R.31, S.5, 7, 8, 18; T.107, R.31, S.21, 22, 28, 32, 33): 7;
Seven Mile Creek, (T.109, R.27, S.2, 3, 4, 10, 11, 12): 1B, 2A, 3B;
Shakopee Creek, (T.119, 120, R.36, 37, 38, 39, 40): 2C;
Silver Creek (County Ditch No. 3),

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6 [[[134] Smith Creek, (T.113, R.35, 36): 2C;
7 [[[135] South Creek, (T.102, 103, R.28, 29, 30): 2C, 3B 3C;
8 [[[136] Spring Branch Creek, (T.106, R.29, 30): 2C;
9 [[[137] Spring Creek (Judicial Ditch No. 29) (excluding trout waters) (see also Hindeman Creek and Judicial Ditch No. 29), (T.110, 111, R.33, 34): 2C;
10 [[[138] Spring Creek (County Ditch No. 10A), (T.117, 118, R.39, 40): 2C;
11 [[[139] Stony Run, (T.121, 122, R.45, 46): 2C;
12 [[[140] Stony Run Creek (Judicial Ditch No. 21), (T.116, R.40): 2C;
13 [[[141] Three Mile Creek (Threemile Creek), (T.112, R.33): 2C;
14 [[[142] Timms Creek (County Ditch No. 35A), (T.114, 115, R.36): 2C;
15 [[[143] Unnamed #1, (T.27, R.23, S.18; T.27, R.24, S.13): 1B, 2A, 3B;
16 [[[144] Unnamed #4, (T.27, R.24, S.24): 1B, 2A, 3B;
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†138† (147) Unnamed Creek, (T.108, R.28, S.5†
†139† (148) Unnamed Creek, (T.110, R.26, S.10,
†140† (149) Unnamed Creek, (T.108, R.28, S.6;
†141† (150) Unnamed Creek, Green Isle, (T.114,
†142† (151) Unnamed Creek, Lake Town Township,
†143† (152) Unnamed Creek, Pennock, (T.118, R.37,
†144† (153) Unnamed Creek, Murdock, (T.120, R.36,
†145† (154) Unnamed Ditch, Burnsville Freeway
†146† (155) Unnamed Ditch, Bricelyn, Owatonna
†147†-Unnamed-Ditch,-Aiden,-(T.102,-R.23,-S.47,-5†
†148† (156) Unnamed Ditch, Truman, (T.104, R.30,
†149† (157) Unnamed Ditch (County Ditch No. 47),
†150† (158) Unnamed Ditch, Lewisville, (T.105,
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1 R.30, S.3; T.105, R.30, S.14, 23, 26, 34, 35): 7;
2  \{151\} (159) Unnamed Ditch, Waldorf, (T.106, R.24,
3  S.34): 7;
4  \{152\} (160) Unnamed Ditch (County Ditch No. 45),
5  Waseca, (T.107, R.23, S.14, 23): 7;
6  \{153\} (161) Unnamed Ditch, Jeffers, (T.107, R.36,
7  S.21): 7;
8  \{154\} (162) Unnamed Ditch, Storden, (T.107, R.37,
9  S.19, 30): 7;
10 \{155\} (163) Unnamed Ditch, Eagle Lake, (T.108,
12 \{156\} (164) Unnamed Ditch, Walnut Grove, (T.109,
13  R.38, S.20): 7;
14 \{157\} (165) Unnamed Ditch, Tracy, (T.109, R.39, S.
15  7, 18; T.109, R.40, S.13): 7;
16 \{158\} (166) Unnamed Ditch, Wabasso, (T.110, R.36,
17  S.3; T.111, R.36, S.18, 19, 20, 28, 29, 33, 34; T.111, R.37,
18  S.13): 7;
19 \{159\} (167) Unnamed Ditch, Lafayette, (T.111,
20  R.29, S.6, 7, 8; T.111, R.30, S.12): 7;
21 \{160\} (168) Unnamed Ditch, Wabasso, (T.111, R.37,
22  S.13, 24): 7;
23 \{161\} (169) Unnamed Ditch, Montgomery, (T.112,
24  R.23, S.33): 7;
25 \{170\} Unnamed Ditch, Winthrop, (T.112, R.29, S.4,
26  5, 6): 7;
27 \{162\} (171) Unnamed Ditch, Arlington, (T.113,
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1 R.27, S.21): 7;
2 {
3 }{172} Unnamed Ditch, Near Fernando, Round
4 Grove Coop Cry., (T.113, R.30, S.5; T.114, R.29, S.19, 20, 30;
5 T.114, R.30, S.25, 26, 27; 28, 29, 32): 7;
6 ){173} Unnamed Ditch, Green Isle, (T.114,
7 R.26, S. 19; T.114, R.27, S.11, 12, 13, 14, 24): 7;
8 ){174} Unnamed Ditch, New Auburn, (T.114,
9 R.28, S.20): 7;
10 ){175} Unnamed Ditch, Porter, (T.114, R.44,
11 S.21, 28): 7;
12 ){176} Unnamed Ditch, Bongards, Bongards
13 Creameries, (T.115, R.25, S.9, 16): 7;
14 ){177} Unnamed Ditch, Clarkfield, (T.115,
15 R.41, S.16): 7;
16 ){178} Unnamed Ditch, Clarkfield, (T.115,
17 R.41, S.16, 21): 7;
18 ){179} Unnamed Ditch (County Ditch No. 15),
20 ){180} Unnamed Ditch, Pennock, (T.119, R.36,
21 S.2, 3, 4, 9, 10): 7;
22 ){181} Unnamed Ditch, DeGraff, (T.121, R.38,
23 S.19, 29, 30): 7;
24 ){182} Unnamed Ditch, Hancock, (T.122, R.40,
25 S.6; T.122, R.41, S.1, 12; T.123, R.40, S.18, 19, 30, 31; T.123,
26 R.41, S.11, 12): 7;
27 ){183} Unnamed Ditch, Alberta, (T.124, R.43,
28 S.3, 4): 7;

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1. Unnamed Ditch, Farwell, Farwell Coop
11. Whetstone River, (South Dakota border to mouth): 7C, 9B 3C;
Wood Lake Creek, (Judicial Ditch No. 10), (T.113, 114, 115, R.30, 39): 2C;

Yellow Bank River, North Fork, (South Dakota border to mouth): 2C, 3B 3C;

Yellow Bank River, South Fork, (South Dakota border to mouth): 2C, 3B 3C; and

Yellow Medicine River, North Fork, (South Dakota border to mouth): 2C, 3B 3C.

B. Lakes:

(1) Amber Lake, 46-0034-00, (T.102, R.30): 1C, 2Bd, 3B 3C;

(2) Bardwell Lake, 46-0023-00, (T.102, R.30):

(3) Budd Lake, 46-0030-00, (T.102, R.30): 1C, 2Bd, 3B 3C;

(4) Courthouse Lake, 10-0005-00, (T.115, R.23W, S.9): 1B, 2A, 3B;

(5) George Lake, 46-0024-00, (T.102, R.30): 1C, 2Bd, 3B 3C;

(6) Hall Lake, 46-0031-00, (T.102, R.30): 1C, 2Bd, 3B 3C;

(7) Mud Lake, 46-0035-00, (T.102, R.30): 1C, 2Bd, 3B 3C;

(8) One Hundred Acre Slough, Saint James, (T.106, R.31, S.7): 7;

(9) Silver Lake, North, 46-0016-00, (T.101, R.30): 1C, 2Bd, 3B 3C;
(10) Sisseton Lake, 46-0025-00, (T.102, R.30):
1C, 2Bd, 3B 3C;

[For text of subitems (11) to (14), see M.R.]

(15) Unnamed Swamp (Skauby Lake), 17-0035-00,
Storden, (T.107, R.37, S.30): 7;

(16) Unnamed Swamp, Sunburg, Sunburg Coop Cry.,
(T.122, R.36, S.30): 7;

(17) Unnamed Swamp, Lowry, (T.126, R.39, S.35, 36): 7; and

(18) Wilmert Lake, 46-0014-00, (T.101, R.30):
1C, 2Bd, 3B 3C.

[For text of items C and D, see M.R.]

Subp. 6. Saint Croix River Basin. The water use for the
listed waters in the Saint Croix River Basin are as identified
in items A7-B7-and to D. See parts 7050.0425 and 7050.0430 for
the classifications of waters not listed.

A. Streams:

[For text of subitems (1) to (6), see M.R.]

(7) Brown's Creek, (T.30, R.20, S.12-13, 18, 19,
20, 21; T.30, R.21, S.12, 13): 1B, 2A, 3B;

(8) Cons Creek, (T.41, R.17, S.15, 16, 22): 1B,
2A, 3B;

(9) Crooked Creek (East Fork Crooked Creek),
(T.41, R.17, S.6, 7, 18, 19, 20, 29, 30; T.41, R.18, S.11, 12,
13; T.42, R.17, S.31): 1B, 2A, 3B;

[For text of subitems (10) to (14), see M.R.]

(15) Hay Creek, (T.42, 43, 44, R.15, 16): 1B,
(16) Hay Creek, Little, (T.40, R.18, S.8, 9): 1B, 2A, 3B;

(17) *Kettle River, [11/5/84R] (From the north Pine County line to the site of the former dam at Sandstone, at quarter section line between the NW 1/4 and SW 1/4, S.22, T.42, R.20): 2B, 3B 3C;

[For text of subitems (18) and (19), see M.R.]

(20) Larson Creek, (T.44, R.17, S.47 S.5; T.45, R.17, S.29, 32): 1B, 2A, 3B;

(21) Lawrence Creek, (T.33, R.19, S.2, 3, 10): 1B, 2A, 3B;

(22) Lost Creek, (T.40, R.19, S.9, 10, 15): 1B, 2A, 3B;

(23) McCullen Creek (Albrechts Creek or Meekers Creek), (T.42, R.16, S.28, 33): 1B, 2A, 3B;

(24) Mission Creek, (T.40, R.21, S.1, 2; T.41, R.20, S.31; T.41, R.21, S.36): 1B, 2A, 3B;

(25) Mission Creek (excluding trout waters), (T.39, 40, 41, R.20, 21): 1B, 2Bd, 3B 3C;

(26) Moosehorn River (Moose River), (T.48, R.18, S.3, 9, 10, 14, 15, 16, 23, 26, 34, 35): 1B, 2A, 3B;

[For text of subitems (27) and (28), see M.R.]

(29) Rock Creek, (T.37, 38, R.20, 21): 1B, 2Bd, 3B 3C;

(30) Rush Creek, (T.37, R.20, 21): 1B, 2Bd, 3B 3C;
(31) *Saint Croix River, [11/5/84R] (Wisconsin border crossing to Taylors Falls): 1B, 2Bd, 3B 3C;
(33) Sand River (Sand Creek), (T.43, R.18, S.4, 5, 7, 8, 18, 19-24; T.43, R.19, S.24; T.44, R.18, S.33, 34): 1B, 2A, 3B;
(34) Spring Brook (Spring Creek), (T.41, R.20, S.16, 17, 18, 21): 1B, 2A, 3B;
(35) Sunrise River, West Branch (County Ditch No. 13), (T.34, R.21, 22): 1B, 2Bd, 3B 3C;
(36) Tamarack River, Lower, (Bay Creek to mouth): 1B, 2Bd, 3B 3C;
(37) Tamarack River, Upper (Spruce River), (T.41, 42, R.15, 16): 1B, 2Bd, 3B 3C;
(38) Unnamed Creek, (T.33, R.19, S.16, 21, 22): 1B, 2A, 3B;
(39) Unnamed Creek, (T.33, R.19, S.31, 32): 1B, 2A, 3B;
(40) Unnamed Creek, (T.43, R.18, S.2, 3; T.44, R.18, S.35): 1B, 2A, 3B;
(41) Unnamed Ditch, Chisago City, (T.34, R.20, S.19, 29, 30, 31-32): 7;
(43) Unnamed Ditch, Moose Lake, (T.46, R.19, S.30): 7;

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1. **(44)** Unnamed Dry Run, Wahkon, (T.41, R.25, S.3; T.42, R.25, S.29, 32, 33, 34); 7;
2. **(45)** Unnamed Stream (Falls Creek), (T.32, R.19, S.6, 7; T.32, R.20, S.1, 12); 1B, 2A, 3B;
3. **(46)** Unnamed Stream (Gilbertson), (T.32, R.19, S.19); 1B, 2A, 3B;
4. **(47)** Unnamed Stream, Shafer, (T.34, R.19, S.32, 33, 34); 7;
5. **(48)** Unnamed Stream (Willow Brook), (T.31, R.19, S.19); 1B, 2A, 3B;
6. **(49)** Valley Creek (Valley Branch), (T.28, R.20, S.9, 10, 14, 15, 16, 17); 1B, 2A, 3B;
7. **(50)** Wilbur Brook, (T.41, R.17, S.29, 30; T.41, R.18, S.23, 25, 26); 1B, 2A, 3B; and
8. **(51)** Wolf Creek, (T.42, R.18, S.4, 9, 16; T.43, R.18, S.32, 33); 1B, 2A, 3B.

**B. Lakes:**

1. *(Grindstone Lake, 58-0123-00, [3/7/66R]*
2. (T.42, R.21); 1B, 2A, 3B; and
3. **(2)** Unnamed Swamp, Shafer, (T.34, R.19, S.31, 32); 7.

[For text of items C and D, see M.R.]

**Subp. 7. Lower Mississippi River Basin (from the confluence with the St. Croix River to the Iowa border).** The water use classifications for the listed waters in the Lower Mississippi River Basin from the confluence with the St. Croix River to the Iowa border are as identified in items A7-B7-and
E to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

(1) Ahrensfeld Creek, (T.105, R.8, S.8, 9, 16, 17, 19, 20): 1B, 2A, 3B;

(2) Albany Creek, West (excluding trout waters), (T.110, 111, R.12, 13): 2C;

(3) Albany Creek, West, (T.110, R.12, S.28, 29, 30; T.110, R.13, S.23, 24, 25, 26): 1B, 2A, 3B;

(4) Badger Creek, (T.103, R.5, S.9, 16, 21, 22, 27, 28, 34): 1B, 2A, 3B;

(5) Ballpark Creek, (T.102, R.4, S.19, 30; T.102, R.5, S.24): 1B, 2A, 3B;

(6) Bear Creek, (T.107, R.9, S.13, 14, 15, 16, 22): 1B, 2A, 3B;

(7) Bear Creek, North, Spring Grove (T.101, R.7, S.26, 27, 35): 7;

(8) Bear Creek (excluding trout waters), (T.107, R.9, S.17, 20): 2C;

(9) Bear Creek (North Bear Creek) (excluding Class 7 segment), (source to Iowa border): 2C;

(10) Beaver Creek, (T.102, R.6, S.5; T.103, R.6, S.1B, 19, 29, 30, 31, 32): 1B, 2A, 3B;

(11) Beaver Creek, East, (T.102, R.6, S.5, 8, 17): 1B, 2A, 3B;

(12) Beaver Creek, West, (T.102, R.6, S.5, 6, 7, 10, 19, 30; T.102, R.7, S.12, 13, 24, 25, 26): 1B, 2A,
3B;


††† (14) Beaver Creek, (T.101, 102, R.13, 14): 2C;

3C;

†† (15) Bee Creek, (T.101, R.6, S.29, 32, 33): 1B, 2A, 3B;

††† (16) Big Springs Creek, (T.104, R.9, S.21, 22, 26, 27): 1B, 2A, 3B;

†† (17) Borson Spring, (T.105, R.8, R.29, 32, 33): 1B, 2A, 3B;

††† (18) Brush Valley Creek (excluding trout waters), (T.104, R.5): 2C;


†† (20) Bullard Creek, (T.112, R.14, S.1, 2, 3, 10; T.113, R.14, S.36): 1B, 2A, 3B;

† (21) Burns Valley Creek, East Branch, (T.106, R.7, S.3, 10, 15): 1B, 2A, 3B;

† (22) Burns Valley Creek, West Branch, (T.106, R.7, S.3, 4, 9, 16; T.107, R.7, S.34): 1B, 2A, 3B;

† (23) Burns Valley Creek, Main Branch, (T.106, R.7, S.2; T.107, R.7, S.35): 1B, 2A, 3B;

† (24) Butterfield Creek, (T.103, R.4, S.6, 7, 8, 18): 1B, 2A, 3B;

† (25) Camp Creek, (T.101, R.10, S.5, 8, 9; T.102, R.10, S.5, 8, 16, 17, 20, 29, 32): 1B, 2A, 3B;
(23) Camp Hayward Creek, (T.104, R.6, S.31, 32): 1B, 2A, 3B;
(24) Campbell Creek, (T.104, R.6, S.31-32): 1B, 2A, 3B;
(25) Campbell Creek, (T.104, R.6, S.5, 7, 8, 9): 1B, 2A, 3B;
(28) Canfield Creek (see South Branch Creek);
(30) Cannon River, Little, (T.110, R.18, S.1, 10, 11, 12, 15, T.111, R.18, S.13, 24, 25, 36): 1B, 2A, 3B;
(31) Carters Creek (Curtis Creek), Wykoff, (T.103, R.12, S.4, 9, 15, 16, 22): 7;
(32) Cedar Valley Creek (Cedar Creek), (T.105, R.6, S.6; T.106, R.6, S.1, 11, 12, 14, 15, 21, 22, 28, 29, 31, 32): 1B, 2A, 3B;
(33) Chickentown Creek (M-9-10-10-2), (T.102, R.8, S.32, 33): 1B, 2A, 3B;
(34) Chub Creek, North Branch, (T.112, 113, R.19): 2C;
(35) Clear Creek, (T.111, R.14, S.3, 10, 15): 1B, 2A, 3B;
(36) Clear Creek, (T.102, R.4): 2C;
(37) Cold Creek (Cold Spring Brook)
1 (excluding trout waters), (T.110, 111, R.14): 2C;
2 (38) Cold Spring Brook (Cold Creek), (T.110, R.13, S.30, 31; T.110, R.14, S.25, 36): 1B, 2A, 3B;
3 (39) Coolidge Creek, (T.105, R.9, S.23, 26): 1B, 2A, 3B;
4 (40) Corey Creek, (T.105, R.6, S.18, 19; T.105, R.7, S.24, 25, 26, 27, 34): 1B, 2A, 3B;
5 (41) County Ditch No. 15, Kilkenny, (T.110, R.23, S.22, 23): 7;
6 (42) Crane Creek, (T.107, 108, R.20, 21, 22): 2C;
7 (43) Crooked Creek, Main Branch, (T.102, R.4, S.18, 19, 20, 28, 29, 30; T.102, R.5, S.25, 26, 36): 1B, 2A, 3B;
8 (44) Crooked Creek, North Fork, (T.102, R.5, S.17, 20, 21, 22, 23, 26): 1B, 2A, 3B;
9 (45) Crooked Creek, South Fork, (T.102, R.5, S.26, 27, 28): 1B, 2A, 3B;
10 (46) Crystal Creek, (T.102, R.11, S.35, 36): 1B, 2A, 3B;
11 (47) Crystal Creek, (T.103, R.5, S.6, 7, 18, 19; T.103, R.6, S.1, 12): 1B, 2A, 3B;
12 (48) Dakota Creek (excluding trout waters), (T.105, R.5): 2C;
13 (49) Dakota Creek, (T.105, R.4, S.7; T.105, R.5, S.1, 2, 3, 11, 12): 1B, 2A, 3B;
14 (50) Daley Creek, (T.103, R.7, S.4, 5, 8;...
5 10 15
20 25 30

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1 T.104, R.7, S.33): 1B, 2A, 3B;

2 (46) (51) Diamond Creek, (T.103, R.8, S.18, 19);

3 T.103, R.9, S.10, 11, 13, 14, 24): 1B, 2A, 3B;

4 (47) (52) Dry Creek, (T.105, R.12, 13): 2C;

5 (46) (53) Duschee Creek, (T.102, R.10, 8, 1;

6 T.103, R.10, S.23, 24, 25, 26, 36): 1B, 2A, 3B;

7 (49) (54) Dutch Creek, (T.102, R.20, 21): 2C;

8 (50) (55) Eitzen Creek, (T.101, R.5, S.22, 23);

9 1B, 2A, 3B;

10 (51) (56) Etna Creek, (T.102, R.13, S.25, 36):

11 1B, 2A, 3B;

12 (52) (57) Ferguson Creek, (T.105, R.8, S.18;

13 T.105, R.9, S.12, 13): 1B, 2A, 3B;

14 (53) (58) Ferndale Creek, (T.104, R.7, S.29, 30,

15 31): 1B, 2A, 3B;

16 (54) Forestville Creek, North Branch (T.102,

17 R.12, S.13, 14, 15): 2B, 2A, 3B;

18 (55) Forestville Creek, South Branch (T.102,


20 (59) Forestville Creek (see North Branch Creek);

21 (56) (60) Frego Creek, (T.101, R.9, S.14, 15, 22,

22 23): 1B, 2A, 3B;

23 (57) (61) Garvin Brook, (T.106, R.8, S.4, 5, 8,

24 17; T.107, R.8, S.10, 11, 14, 15, 23, 26, 27, 33, 34, 35): 1B,

25 2A, 3B;

26 (58) (62) Gilbert Creek, (T.111, R.12, S.6;

27 T.111, R.13, S.1, 2, 3, 4, 10, 11, 12; T.112, R.12, S.31): 1B,
59+ (63) Gilmore Creek, (T.106, R.7, S.6; T.107, R.7, S.20, 29, 30, 31, 32): 1B, 2A, 3B;
60+ (64) Girl Scout Camp Creek, (T.103, R.7, S.29, 30): 1R, 2A, 3R;
61+ (65) Gorman Creek, (T.109, R.11, S.1; T.110, R.10, S.29, 30, 31; T.110, R.11, S.36): 1B, 2A, 3B;
62+ (66) Gribben Creek, (T.103, R.9, S.9, 16, 21, 27, 28): 1B, 2A, 3B;
63+ (67) Hallum Creek, (T.103, R.7, S.31; T.103, R.8, S.36): 1B, 2A, 3B;
64+ (68) Hamilton Creek, (T.103, R.13, NW 1/4 S.6; T.103, R.14, NE 1/4 S.1): 1B, 2A, 3B;
65+ (69) Bammond Creek, (T.109, R.13, S.28, 29): 1B, 2A, 3B;
66+ (70) Harkcom Creek, (T.108, R.15, 16): 2C;
67+ (71) Hay Creek, (T.111, R.15, S.4; T.112, R.14, S.19; T.112, R.15, S.1, 12, 13, 23, 24, 26, 27, 33, 34;
68+ (72) Hemmingway Creek (Hemingway Creek), (T.105, R.9, S.26, 28, 33, 34, 35): 1B, 2A, 3B;
69+ (73) Bommer Creek, (T.106, 107, R.6): 2C;
70+ (74) Indian Creek, East, (T.109, R.9, S.19; T.109, R.10, S.21, 22, 23, 24, 26, 27, 28, 29, 31, 32; T.109, R.11, S.36): 1B, 2A, 3B;
{78} Indian Creek, West, (T.109, R.11, S.6, 7, 8, 16, 17, 21): 1B, 2A, 3B;
{76} Indian Spring Creek (excluding trout waters), (T.103, R.5): 2C;
{72} Indian-Springs Creek (Dexter), (T.103, R.5, 109, R.17, 21, 2A, 3B;
{73} Iowa River, Little, (T.101, 102, R.14): 2C;
{78} Jordan Creek, Little (Carson Creek), (T.104, R.12, S.21, 22, 26, 27, 28): 1B, 2A, 3B;
{80} Kedron Creek, (T.104, R.13, S.36): 1B, 2A, 3B;
{81} King Creek, (T.111, R.11, 12): 2C;
{82} Kinney Creek, (T.105, R.13, S.1, 13, T.106, R.13, 8.36): 1B, 2A, 3B;
{83} Lanesboro Park Pond, (T.103, R.10, S.13): 1B, 2A, 3B;
{84} LeRoy Trout Pond, (T.101, R.14, S.36): 1B, 2A, 3B;
{85} Logan Creek (Logan Branch), (T.107, R.11, S.3): 1B, 2A, 3B;
{86} Long Creek (excluding trout waters), (T.108, 109, R.12): 2C;
{87} Long Creek, (T.109, R.12, S.3, 10, 15, 272:

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1  22, 27, 28):  1B, 2A, 3B;

2   (84) Lost Creek (Bear Creek), (T.104, R.11, S.13; T.104, R.12, S.8, 9, 10, 15, 16):  1B, 2A, 3B;

3   (85) Lynch Creek, (T.104, R.11, S.2, 11, 14):

4  1B, 2A, 3B;


6  2C;

7   (87) Mahoney Creek, (T.103, R.10):

8   2C;

9   (88) Mahoods Creek, (T.103, R.12, S.20):

10  1B, 2A, 3B;

11  (89) Maple Creek, (T.102, R.8, S.3, 4;

12  T.103, R.8, S.27, 28, 33, 34):  1B, 2A, 3B;

13   (90) Mazeppa Creek (Trout Brook), (T.109, R.14, S.4, 5, 9; T.110, R.14, S.19, 29, 30, 32; T.110, R.15, S.24, 25):  1B, 2A, 3B;

14   (91) Middle Creek, (T.109, R.11, S.18;

15  T.109, R.12, S.2, 3, 11, 13, 14):  1B, 2A, 3B;

16   (92) Mill Creek, (T.104, R.11, S.5, 6;

17  T.105, R.11, S.31; T.105, R.12, S.14, 23, 25, 26, 36):  1B, 2A, 3B;

18   (93) Miller Creek, (T.111, R.12, S.7, 8, 9, 10; T.111, R.13, S.13, 24):  1B, 2A, 3B;

19   (94) Money Creek, (T.105, R.7, S.3, 4, 5, 7, 8, 9, 16, 17):  1B, 2A, 3B;

20   (95) Mound Prairie Creek, (T.104, R.5):  2C;

21   (96) Mud Creek (Judicial Ditch No. 6),

22  (T.108, 109, R.20, 21):  2C;

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1. (101) Nepstad Creek (Shattuck Creek),
   (T.102, R.8, S.4, 5, 7, 8, 9; T.102, R.9, S.1, 2, 12): 1B, 2A, 3B;

2. (102) Newburg Creek (M-9-10-10-1), (T.101, R.8, S.5, 6): 1B, 2A, 3B;

3. (103) New Hartford Creek (see Pine Creek);


5. (105) North Branch Creek (Forestville Creek),
   (T.102, R.12, S.13, 14, 15): 1B, 2A, 3B;


7. (107) Peterson Creek, (T.106, R.8, S.7, 8): 1B, 2A, 3B;

8. (108) Pickwick Creek (Big Trout Creek),
   (T.106, R.5, S.7, 10; T.106, R.6, S.13, 23, 24, 26, 34, 35): 1B, 2A, 3B;

9. (109) Pickwick Creek, Little (Little Trout Creek), (T.106, R.5, S.18, 19, 20, 29, 30, 32; T.106, R.6, S.13):
   1B, 2A, 3B;

10. (110) Pine Creek (excluding Class 7 segment), (T.101, R.10): 2C, 3B 3C;

11. (111) Pine Creek (New Hartford Creek),
    (T.105, R.5, S.18, 19, 20, 29, 30, 31, 32; T.105, R.6, S.13, 36): 1B, 2A, 3B;


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1  {113} Pine Creek, South Fork, (T.105, R.5, S.19; T.105, R.6, S.24): 1B, 2A, 3B;
2  
3  {114} Pine Creek, Fillmore and Winona Counties, (T.104, R.9, S.2, 3, 4; T.105, R.9, S.25, 26, 33, 34, 35; T.105, R.8, S.30, 31, 32, 33): 1B, 2A, 3B;
4  
5  {115} Pine Creek, Dakota County, (excluding trout waters), (T.113, R.18): 2C;
6  
7  {116} Pine Creek, Dakota and Goodhue Counties, (T.112, R.17, S.5, 6, 8, 9; T.113, R.17, S.31; T.113, R.18, S.25, 26, 35, 36): 1B, 2A, 3B;
8  
9  {117} Pleasant Valley Creek (excluding trout waters), (T.106, 107, R.6, 7): 2C;
10  
11  {118} Pleasant Valley Creek, (T.106, R.6, 7, 18, 19; T.106, R.7, S.1, 12, 13, 24, 25): 1B, 2A, 3B;
12  
13  {119} Plum Creek, (T.108, R.15): 2C;
14  
15  {120} Prairie Creek, (T.110, 111, 112, R.18, 19, 20): 2C;
16  
17  {121} Rice Creek (Sugar Creek), (T.103, R.11, S.3, 4; 5, 7, 9, 9; T.104, R.11, S.14, 23, 28, 33): 1B, 2A, 3B;
18  
19  {122} Riceford Creek, (T.101, R.7, S.6, 7, 18, 19; T.101, R.8, S.1, 12, 13, 24; T.102, R.7, S.29, 30, 31, 32): 1B, 2A, 3B;
20  
21  {123} Riceford Creek, Mabel, (T.101, R.8, S.24, 25, 26): 7;
22  
23  {124} Rollingstone Creek, (T.107, R.8, S.2, 3, 4, 5, 6, 7, 9, 10, 11, T.107, R.9, S.12, 13): 1B, 2A, 3B;
24  
25  
26  
27  

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(125) Rollingstone Creek, Middle Branch, (T.I07, R.8, S.9, 16): 1B, 2A, 3B;

(126) Root River, Middle Branch, (T.I03, R.12, S.8, 9): 1B, 2A, 3B;

(127) Root River, South Branch, (T.I02, R.10, S.5, 6; T.I02, R.11, S.1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 21, 22, 23, 24, 26, 27; T.I03, R.9, S.7, 8; T.I03, R.10, S.13, 14, 15, 16, 21, 22, 23, 24, 28, 29, 32, 33; T.I03, R.11, S.36): 1B, 2A, 3B;

(128) Root River, South Fork, (T.I02, R.8, S.2, 3, 4, 8, 9, 10, 11, 17, 18, 19; T.I02, R.9, S.24, 25, 26): 1B, 2A, 3B;

(129) Rose Valley Creek, (T.I05, R.5, S.22, 27, 34, 35): 1B, 2A, 3B;

(130) Rupprecht Creek (Rollingstone Creek), (T.I07, R.9, S.13, 24, 25, 26, 35): 1B, 2A, 3B;

(131) Rush Creek, (T.I04, R.8, S.2, 3, 4, 10, 11, 13, 14; T.I05, R.8, S.6, 7, 18, 19, 20, 29, 32, 33; T.I05, R.9, S.1, 2, 12; T.I06, R.9, S.26, 34, 35, 36): 1B, 2A, 3B;

(132) Salem Creek, (T.I06, R.15, 16): 2C;

(133) Schueler Creek, (T.I04, R.8, S.1, 2, 3): 1B, 2A, 3B;

(134) Second Creek (Handshaw Coulee), (T.I11, R.12, S.15): 1B, 2A, 3B;

(135) Shady Creek, (T.I04, R.11, S.19, 30): 1B, 2A, 3B;
(136) Shattuck Creek (See Nepstad Creek);

(137) Shingle Creek, (T.109, 110, R.17):

(138) Silver Creek (excluding trout waters), (T.104, 105, R.6): 2C;

(139) Silver Creek, (T.104, R.6, S.1, 2, 11, 12, 14; T.105, R.6, S.34, 35): 1B, 2A, 3B;

(140) Silver Spring Creek, (T.108, 109, R.13): 2C;

(141) Snake Creek (excluding trout waters), (T.109, R.10): 2C;

(142) Snake Creek, (T.109, R.10, S.10, 11, 14, 15, 16): 1B, 2A, 3B;

(143) South Branch Creek (Canfield Creek), (T.108, R.10, S.24, 25): 1B, 2A, 3B;

(144) Speltz Creek, (T.107, R.8, S.5, 6; T.108, R.8, S.31; T.108, R.9, S.35): 1B, 2A, 3B;

(145) Spring Brook, (T.111, R.20, S.2, 3, 4): 1B, 2A, 3B;

(146) Spring Creek, (T.110, R.12, S.7, 17, 18, 20, 21, 27, 28, 29): 1B, 2A, 3B;

(147) Spring Creek, (T.112, R.15, S.5, 6, 7, 18; T.113, R.15, S.29, 31, 32, 33, 34): 1B, 2A, 3B;

(148) Spring Valley Creek, (T.103, R.12, S.8, 17, 18, 19, 20, 30; T.103, R.13, S.23, 24, 25, 26, 27, 28, 29, 32, 33, 34): 1B, 2A, 3B;

(149) Stockton Valley Creek, (T.106, R.8,
5 10 15 20 25

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1 5.2, 3, 10, 11, 14, 23; T.107, R.8, S.34): 1B, 2A, 3B;

2 \(\text{\texttt{\textbf{\textcircled{150}}} Storer Creek, (T.104, R.5, S.17, 18, 19, 30): 1B, 2A, 3B;}

3 \(\text{\texttt{\textbf{\textcircled{151}}} Straight Creek, (T.107, R.9, S.2, 11, 12): 1B, 2A, 3B;}

4 \(\text{\texttt{\textbf{\textcircled{152}}} Sugar Creek (Sugarloaf Creek),}

5 \(\text{\texttt{\textbf{\textcircled{153}}} Sullivan Creek (excluding trout waters), (T.103, R.5): 2C;}

6 \(\text{\texttt{\textbf{\textcircled{154}}} Sullivan Creek, (T.103, R.5, S.12, 13, 14, 23, 24, 25, 26): 1B, 2A, 3B;}

7 \(\text{\texttt{\textbf{\textcircled{155}}} Swede Bottom Creek, (T.103, R.6, S.10): 1B, 2A, 3B;}

8 \(\text{\texttt{\textbf{\textcircled{156}}} Thompson Creek (Indian Springs Creek), (T.103, R.4, S.5, 6, 7; T.103, R.5, S.12, 13, 14, 15, 21, 22, 23; T.104, R.4, S.31): 1B, 2A, 3B;}

9 \(\text{\texttt{\textbf{\textcircled{157}}} Tokelson Creek, (T.104, R.10, S.25, 36): 1B, 2A, 3B;}

10 \(\text{\texttt{\textbf{\textcircled{158}}} Trout Brook, Wabasha County, (T.110, R.11, S.5, 8): 1B, 2A, 3B;}

11 \(\text{\texttt{\textbf{\textcircled{159}}} Trout Brook, Dakota County, (T.112, R.17, S.1; T.113, R.17, S.26, 27, 35, 36): 1B, 2A, 3B;}

12 \(\text{\texttt{\textbf{\textcircled{160}}} Trout Brook (Hay Creek Tributary), (T.113, R.15, S.35, 36): 1B, 2A, 3B;}

13 \(\text{\texttt{\textbf{\textcircled{161}}} Trout Brook (see also Mazeppa Creek);}

14 \(\text{\texttt{\textbf{\textcircled{162}}} Trout Brook (Mazeppa Creek), Goodhue, (T.110, R.15, S.3, 4; T.111, R.15, S.28, 33, 34): 7;}

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(163) Trout Creek, Little (see Pickwick Creek, Little);

(164) Trout Creek, Big (see Pickwick Creek);

(165) Trout Run Creek (Trout Run), (T.104, R.10, S.4, 5, 8, 9, 16, 17, 20, 21, T.105, R.10, S.18, 19, 30, 31, 32); 1B, 2A, 3B;

(166) Trout Run Creek (Trout Creek Run) (excluding trout waters), (T.105, R.10): 2C;

(167) Trout Run-Whitewater Park, (T.107, R.10, S.29): 1B, 2A, 3B;

(168) Trout Valley Creek (Trout Creek), Wabasha and Winona Counties, (T.108, R.9, S.5, 8, 17, 20; T.109, R.9, S.31): 1B, 2A, 3B;

(169) Unnamed Creek, Houston County, (T.101, R.4, S.21): 1B, 2A, 3B;

(170) Unnamed Creek, Spring Grove, (T.101, R.7, S.14, 22, 23, 27): 7;

(171) Unnamed Creek, Houston County, (T.102, R.4, S.18, 19, 20, 29, 30): 1B, 2A, 3B;

(172) Unnamed Creek, Canton, (T.101, R.9, S.20): 7;

(173) Unnamed Creek, Byron, (T.107, R.15, S.17, 20, 29): 7;

(174) Unnamed Creek (Helbig), (T.110, R.11, S.28, 33): 1B, 2A, 3B;

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1. Unnamed Creek (M-9-10-5-3), (T.101, R.7, S.6; T.101, R.8, S.1, 2): 1B, 2A, 3B;
4. Unnamed Creek (Miller Valley), (T.106, R.5, S.21, 22, 27, 28): 1B, 2A, 3B;
5. Unnamed Creek (Deering Valley), (T.108, R.8, S.20, 28, 29): 1B, 2A, 3B;
6. Unnamed Creek (Main), (T.104, R.8, S.19, 30): 1B, 2A, 3B;
8. Unnamed Creek, West Concord, (T.108, R.17, S.17; 20, 21): 7;
9. Unnamed Creek, Hayfield, (T.105, R.17, S.3, 4): 7;
10. Unnamed Creek (Wells Creek Trib. §9), (T.111, R.14, S.8, 17): 1B, 2A, 3B;
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1 R.18, S.27, 34): 7;
5 882 (190) Unnamed Dry Run, Altura, (T.107, R.9, S.7, 10): 7;
6 883 (191) Unnamed Dry Run, Owatonna, Owatonna Canning Company, (T.107, R.20, S.6; T.107, R.21, S.1): 7;
7 884 (192) Unnamed Dry Run, Owatonna, Owatonna Canning Company, (T.107, R.20, S.6; T.107, R.21, S.1): 7;
8 885 (193) Unnamed Stream, Dodge Center, Owatonna Canning Company, (T.107, R.17, S.27, 34): 7;
9 886 (194) Vermillion River, (T.113, R.20, S.1, 2, 3, 4, 9; T.114, R.10, S.19, 20; T.114, R.19, S.21, 22, 23,
10 30, 31; T.114, R.20, S.33, 34, 35, 36): 1B, 2A, 3B;
11 887 (195) Vesta Creek, (T.102, R.8, S.10, 11, 14, 15, 23): 1B, 2A, 3B;
12 888 (196) Wapsipinicon River, (T.101, R.15): 1B, 2C, 3C;
13 889 (197) Waterloo Creek, (T.101, R.6, 7): 1B, 2B, 3B;

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(199) West Albany Creek (see Albany Creek, West):

(200) Whitewater River, Main Branch,
(T.107, R.10, S.2, 3, 9, 10; T.108, R.10, S.1, 2, 10, 11, 14, 15, 22, 23, 26, 27, 35): 1B, 2A, 3B;

(201) Whitewater River, South Branch,
(T.106, R.9, S.6; T.106, R.10, S.1; T.107, R.9, S.31; T.107, R.10, S.3, 10, 11, 13, 14, 24, 25, 35): 1B, 2A, 3B;

(202) Whitewater River, Middle Branch,
(T.106, R.11, S.2, 3, 10; T.107, R.10, S.9, 10, 16, 17, 19, 20, 30; T.107, R.11, S.24, 25, 26, 35): 1B, 2A, 3B;

(203) Whitewater River, North Branch
(Winona and Wabasha), (T.107, R.10, S.5, 6, 7, 8, 9; T.107, R.11, S.1, 2, 3; T.108, R.11, S.30, 31, 32, 33, 34): 1B, 2A, 3B;

(204) Whitewater River, North Fork, Elgin,
(T.108, R.12, S.25, 26, 27): 7;

(205) Wildcat Creek (excluding trout waters), (T.103, R.4): 2C;

(206) Wildcat Creek, (T.103, R.4, S.26, 27, 28, 29, 32, 33, 34, 35): 1B, 2A, 3B;

(207) Willow Creek, (T.101, R.11, S.1, 12; T.102, R.11, S.1, 12, 13, 24, 25, 36): 1B, 2A, 3B;

(208) Winnebago Creek, (T.101, R.4, S.28, 29, 30; T.101, R.5, S.7, 8, 14, 15, 16, 17, 22, 23, 24, 25, 27 T.101, R.6, S.12): 1B, 2A, 3B; and
Subp. 8. Cedar-Des Moines Rivers Basin. The water use classifications for the listed waters in the Cedar-Des Moines Rivers Basin are as identified in items A, C, and D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

(1) Bancroft Creek (County Ditch No. 63), (T.103, 104, R.21): 2C;

(2) Bear Creek (excluding Class 7 segment);

(3) Source to Iowa border; 2C, 3B;

(4) Cedar River, Little, (Source to Iowa border): 2C, 3B 3C;

(5) Bear Creek, (T.102, R.4): 2E;

(6) County Ditch No. 11, Sherburne, (T.101, R.32, S.4, 9, 10; T.102, R.32, S.7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26): 7;

(7) County Ditch No. 48, Conger, (T.102, R.22, S.19, 20; T.102, R.23, S.24, 25, 26, 35): 7;

(8) County Ditch No. 53 (see Soldier Creek);

(9) Deer Creek (excluding Class 7 segment),
5 Deer Creek (County Ditch No. 71), Myrtle,
(8) (T.101, R.19, 20): 2C, 3B 3C;
(9) Dobbins Creek, (T.103, R.16, 17): 2C;
(10) Goose Creek, Twin Lakes, (T.101, R.20,
S.31; T.101, R.21, S.16, 17, 18, 21, 22, 26, 27, 35, 36; T.101,
R.22, S.12, 13): 7;
(11) Heron Lake Outlet, (T.104, 105, R.37):
2C;
(12) Jack Creek, Wilmont, (T.104, R.41,
S.25, 26, 30, 31, 32, 33, 34, 35, 36): 7;
(13) Lime Creek, (T.101, R.22, 23): 2C, 3B
(14) Murphy Creek, (T.103, R.18): 2C;
(15) Okabena Creek (excluding Class 7
segment), (T.102, 103, R.37, 38, 40): 2C;
(16) Okabena Creek, Worthington, Worthington
Lagoons and Allied Mills, (T.102, R.38, S.6, 7; T.102, R.39,
S.7, 8, 9, 10, 11, 12, 14, 15, 16, 18; T.102, R.40, S.13): 7;
(17) Orchard Creek, (T.102, R.18, 19): 2C;
(18) Roberts Creek, (T.103, 104, R.16, 17,
18): 2C;
(19) Rose Creek, (T.102, 103, R.16, 17,
18): 2C;
(20) Scheldorf Creek, (T.106, R.36, S.19,
30, 31; T.106, R.37, S.13, 24, 25): 1B, 2A, 3B;
(21) Soldier Creek (Unnamed Stream and
County Ditch No. 53), (T.101, R.32, 33): 2C, 3B 3C;

†23† (22) Turtle Creek, (T.103, R.18, 19, 20):

2C;

†24† (23) Unnamed Creek, Emmons, (T.101, R.22, S.31): 7;

†25† (24) Unnamed Creek, Brownsdale, (T.103, R.17, S.4, 9): 7;

†26† (25) Unnamed Creek, Blooming Prairie, (T.104, R.18, S.5, 8, 9, 16; T.105, R.19, S.31): 7;

†29† (26) Unnamed Creek, Blooming Prairie, (T.105, R.19, S.25): 7;

†27† (27) Unnamed Creek, Iona, (T.105, R.41, S.3, 4, 9; T.106, R.40, S.19, 29, 30, 32; T.106, R.41, S.24, 25, 26, 34, 35): 7;


†30† (30) Unnamed Ditch, Blooming Prairie, (T.105, R.19, S.25): 7;

†31† (31) Unnamed Stream (see Soldier Creek);

†32† (32) Wolf Creek, (T.103, R.16, 17, 18): 2C;

†33† (33) Woodbury Creek, (T.101, 102, R.18, 19): 2C; and

†34† (34) Woodson Creek, (T.102, R.18, S.14, 15): 1B, 2A, 3B.

[For text of items B to D, see M.R.]
Subp. 9. Missouri River Basin. The water use classifications for the listed waters in the Missouri River Basin are as identified in items A and C to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed.

A. Streams:

1. Ash Creek, (T.101, R.45): 2C;
2. Beaver Creek, (T.102, 103, 104, R.45, 46, 47): 2C, 3B 3C;
3. Flandreau Creek (excluding Class 7 segment), (T.107, 108, R.46, 47): 2C, 3B 3C;
5. Judicial Ditch No. 13 (see Skunk Creek);
6. Kanaranxi Creek, (Source to Iowa border): 2C, 3B 3C;
7. Medary Creek, (Source to South Dakota border): 2C, 3B 3C;
8. Mound Creek, (T.103, 104, R.45): 2C;
9. Mud Creek, (T.101, 102, R.45, 46): 2C, 3B 3C;
10. Pipestone Creek, (Source to South Dakota border): 2C, 3B 3C;
11. Rock River (excluding Class 7 segment), (Source to Iowa border): 2C, 3B 3C;
(13) Rock River, Little, (source to Iowa border): 2C, 3B 3C;

(14) Sater's Creek (Unnamed Creek), Luverne, Agri-Energy, (T.102, R.45, S.9, 14, 15, 16); 7;

(15) Sioux River, Little, (Source to Iowa border): 2C, 3B 3C;

(16) Sioux River, West Fork Little, (Source to Iowa border): 2C, 3B 3C;

(17) Skunk Creek (Judicial Ditch No. 13), (T.101, 102, R.37, 38, 39): 2C;

(18) Split Rock Creek, (Split Rock Lake outlet to South Dakota border): 2C, 3B 3C;

(19) Unnamed Creek, Jasper, (T.104, R.46, S.6); 7;

(20) Unnamed Creek, Hatfield, (T.105, R.44, S.6, 7, 8; T.105, R.45, S.1; T.106, R.45, S.36); 7;

(21) Unnamed Creek, Hatfield, (T.106, R.45, S.34, 35, 36); 7;

(22) Unnamed Ditch, Luverne, Agri-Energy, (T.102, R.45, S.10, 15); 7;

(23) Unnamed Ditch, Steen, (T.101, R.45, S.31, 32); 7;

(24) Unnamed Ditch, Hills, (T.101, R.46, S.28, 33); 7; and


[For text of items B to D, see M.R.]
TITLE: Proposed Permanent Rules Relating to Water Quality

AGENCY: Pollution Control Agency

MINNESOTA RULES: Chapters 7001; 7050; 7053; 7056; and 7065

The attached rules are approved for publication in the State Register

Cindy K. Maxwell
Senior Assistant Revisor