CHAPTER 61
WATER QUALITY STANDARDS

[Prior to 7/1/83, DEQ Ch 16]
[Prior to 12/3/86, Water, Air and Waste Management[900]]

WATER QUALITY STANDARDS

567—61.1 Rescinded, effective August 31, 1977.

567—61.2(455B) General considerations.

61.2(1) *Policy statement.* It shall be the policy of the commission to protect and enhance the quality of all the waters of the state. In the furtherance of this policy it will attempt to prevent and abate the pollution of all waters to the fullest extent possible consistent with statutory and technological limitations. This policy shall apply to all point and nonpoint sources of pollution.

These water quality standards establish selected criteria for certain present and future designated uses of the surface waters of the state. The standards establish the areas where these uses are to be protected and provide minimum criteria for waterways having nondesignated uses as well. Many surface waters are designated for more than one use. In these cases the more stringent criteria shall govern for each parameter.

Certain of the criteria are in narrative form without numeric limitations. In applying such narrative standards, decisions will be based on the U.S. Environmental Protection Agency's methodology described in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses," (1985) and on the rationale contained in "Quality Criteria for Water," published by the U.S. Environmental Protection Agency (1977), as updated by supplemental Section 304 (of the Act) Ambient Water Quality Criteria documents. To provide human health criteria for parameters not having numerical values listed in 61.3(3) Table 1, the required criteria will be based on the rationale contained in these EPA criteria documents. The human health criterion considered will be the value associated with the consumption of fish flesh and a risk factor of 10^{-5} for carcinogenic parameters. For noncarcinogenic parameters, the recommended EPA criterion will be selected. For Class C water, the EPA criteria for fish and water consumption will be selected using the same considerations for carcinogenic and noncarcinogenic parameters as noted above.

All methods of sample collection, preservation, and analysis used in applying any of the rules in these standards shall be in accord with those prescribed in 567—Chapter 63.

61.2(2) *Antidegradation policy.* It is the policy of the state of Iowa that:

a. Tier 1 protection. Existing surface water uses and the level of water quality necessary to protect the existing uses will be maintained and protected.

b. Tier 2 protection. Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the department shall ensure water quality adequate to protect existing uses fully. Further, the department shall ensure the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control before allowing any lowering of water quality.

c. Tier 2½ protection—outstanding Iowa waters. Where high quality waters constitute an outstanding state resource, such as waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

d. Tier 3 protection—outstanding national resource waters. Where high quality waters constitute an outstanding national resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. Any proposed activity that would result in a permanent new or expanded source of pollutants in an outstanding national resource water is prohibited.

e. The four levels of protection provided by the antidegradation policy in paragraphs *"a"* through *"d"* of this subrule shall be implemented according to procedures hereby incorporated by reference and known as the "Iowa Antidegradation Implementation Procedure," effective February 17, 2010. This document may be obtained on the department's Web site at http://www.iowadnr.com/water/standards/index.html.

f. All unapproved facility plans for new or expanded construction permits, except for construction permits issued for nondischarging facilities, shall undergo an antidegradation review if degradation is likely in the receiving water or downstream waters following February 17, 2010.

g. This policy shall be applied in conjunction with water quality certification review pursuant to Section 401 of the Act. In the event that activities are specifically exempted from flood plain development permits or any other permits issued by this department in 567—Chapters 70, 71, and 72, the activity will be considered consistent with this policy. Other activities not otherwise exempted will be subject to 567—Chapters 70, 71, and 72 and this policy. United States Army Corps of Engineers (Corps) nationwide permits 3, 4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, and 50 as well as Corps regional permits 7, 27, 33, and 34 as promulgated February 16, 2011, are certified pursuant to Section 401 of the Clean Water Act subject to the following Corps regional conditions and the state water quality conditions:

(1) Side slopes of a newly constructed channel will be no steeper than 2:1 and planted to permanent, perennial, native vegetation if not armored.

(2) Nationwide permits with mitigation may require recording of the nationwide permit and pertinent drawings with the registrar of deeds or other appropriate official charged with the responsibility for maintaining records of title to, or interest in, real property and may also require the permittee to provide proof of that recording to the Corps.

(3) Mitigation shall be scheduled prior to, or concurrent with, the discharge of dredged or fill material into waters of the United States.

(4) For discharges of dredged or fill material resulting in the permanent loss of more than 1/10 acre of waters of the United States (including jurisdictional wetlands), a compensatory mitigation plan to offset those losses will be required. In addition, a preconstruction notice to the Corps of Engineers in accordance with general condition 27 will be required.

(5) For newly constructed channels through areas that are unvegetated, native grass filter strips, or a riparian buffer with native trees or shrubs a minimum of 35 feet wide from the top of the bank must be planted along both sides of the new channel. A survival rate of 80 percent of desirable species shall be achieved within three years of establishment of the buffer strip.

(6) For single-family residences authorized under nationwide permit 29, the permanent loss of waters of the United States (including jurisdictional wetlands) must not exceed 1/4 acre.

(7) For nationwide permit 46, the discharge of dredged or fill material into ditches that would sever the jurisdiction of an upstream water of the United States from a downstream water of the United States is not allowed.

(8) For projects that impact an outstanding national resource water, outstanding Iowa water, fens, bogs, seeps, or sedge meadows, an individual Section 401 Water Quality Certification will be required (Iowa Section 401 Water Quality Certification condition).

(9) For nationwide permits when the Corps' district engineer has issued a waiver to allow the permittee to exceed the limits of the nationwide permit, an individual Section 401 Water Quality Certification will be required (Iowa Section 401 Water Quality Certification condition). Written verification by the Corps or 401 certification by the state is required for activities covered by these permits as required by the nationwide permit or the Corps, and the activities are allowed subject to the terms and conditions of the nationwide and regional permits. The department will maintain and periodically update a guidance document listing special waters of concern. This document will be provided to the Corps for use in determining whether preconstruction notices should be provided to the department and other interested parties prior to taking action on applications for projects that would normally be covered by a nationwide or regional permit and not require preconstruction notice under nationwide permit conditions.

61.2(3) *Minimum treatment required.* All wastes discharged to the waters of the state must be of such quality that the discharge will not cause the narrative or numeric criteria limitations to be exceeded. Where the receiving waters provide sufficient assimilative capacity that the water quality standards are not the limiting factor, all point source wastes shall receive treatment in compliance with minimum effluent standards as adopted in rules by the department.

There are numerous parameters of water quality associated with nonpoint source runoff which are of significance to the designated water uses specified in the general and specific designations in 61.3(455B), but which are not delineated. It shall be the intent of these standards that the limits on such nonpoint source related parameters when adopted shall be those that can be achieved by best management practices as defined in the course of the continuing planning process from time to time. Existing water quality and nonpoint source runoff control technology will be evaluated in the course of the Iowa continuing planning process, and best management practices and limitations on specific water quality parameters will be reviewed and revised from time to time to ensure that the designated water uses and water quality enhancement goals are met.

61.2(4) *Regulatory mixing zones.* Mixing zones are recognized as being necessary for the initial assimilation of point source discharges which have received the required degree of treatment or control. Mixing zones shall not be used for, or considered as, a substitute for minimum treatment technology required by subrule 61.2(3). The objective of establishing mixing zones is to provide a means of control over the placement and emission of point source discharges so as to minimize environmental impacts. Waters within a mixing zone shall meet the general water quality criteria of subrule 61.3(2). Waters at and beyond mixing zone boundaries shall meet all applicable standards and the chronic and human health criteria of subrule 61.3(3), Tables 1 and 3, for that particular water body or segment. A zone of initial dilution may be established within the mixing zone beyond which the applicable standards and the acute criteria of subrule 61.3(3) will be met. For waters designated under subrule 61.3(5), any parameter not included in Tables 1, 2 and 3 of subrule 61.3(3), the chronic and human health criteria, and the acute criterion calculated following subrule 61.2(1), will be met at the mixing zone and zone of initial dilution boundaries, respectively.

a. Due to extreme variations in wastewater and receiving water characteristics, spatial dimensions of mixing zones shall be defined on a site-specific basis. These rules are not intended to define each individual mixing zone, but will set maximum limits which will satisfy most biological, chemical, physical and radiological considerations in defining a particular mixing zone. Additional details are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009, for considering unusual site-specific features such as side channels and sand bars which may influence a mixing zone. Applications for operation permits under 567—subrule 64.3(1) may be required to provide specific information related to the mixing zone characteristics below their outfall so that mixing zone boundaries can be determined.

b. For parameters included in Table 1 only (which does not include ammonia nitrogen), the dimensions of the mixing zone and the zone of initial dilution will be calculated using a mathematical model presented in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009, or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

(1) The stream flow in the mixing zone may not exceed the most restrictive of the following:

1. Twenty-five percent of the design low stream flows noted in subrule 61.2(5) for interior streams and rivers, and the Big Sioux and Des Moines Rivers.

2. Ten percent of the design low stream flows noted in subrule 61.2(5) for the Mississippi and Missouri Rivers.

3. The stream flow contained in the mixing zone at the most restrictive of the applicable mixing zone length criteria, noted below.

(2) The length of the mixing zone below the point of discharge shall be set by the most restrictive of the following:

1. The distance to the juncture of two perennial streams.

2. The distance to a public water supply intake.

3. The distance to the upstream limits of an established recreational area, such as public beaches, and state, county and local parks.

4. The distance to the middle of a crossover point in a stream where the main current flows from one bank across to the opposite bank.

5. The distance to another mixing zone.

6. Not to exceed a distance of 2000 feet.

7. The location where the mixing zone contained the percentages of stream flow noted in 61.2(4)*"b"*(1).

(3) The width of the mixing zone is calculated as the portion of the stream containing the allowed mixing zone stream flow. The mixing zone width will be measured perpendicular to the basic direction of stream flow at the downstream boundary of the mixing zone. This measurement will only consider the distance of continuous water surface.

(4) The width and length of the zone of initial dilution may not exceed 10 percent of the width and length of the mixing zone.

c. The stream flow used in determining wasteload allocations to ensure compliance with the maximum contaminant level (MCL), chronic and human health criteria of Table 1 will be that value contained at the boundary of the allowed mixing zone. This stream flow may not exceed the following percentages of the design low stream flow as measured at the point of discharge:

(1) Twenty-five percent for interior streams and rivers, and the Big Sioux and Des Moines Rivers.

(2) Ten percent for the Mississippi and Missouri Rivers.

The stream flow in the zone of initial dilution used in determining effluent limits to ensure compliance with the acute criteria of Table 1 may not exceed 10 percent of the calculated flow associated with the mixing zone.

d. For toxic parameters noted in Table 1, the following exceptions apply to the mixing zone requirements:

(1) No mixing zone or zone of initial dilution will be allowed for waters designated as lakes or wetlands.

(2) No zone of initial dilution will be allowed in waters designated as cold water.

(3) The use of a diffuser device to promote rapid mixing of an effluent in a receiving stream will be considered on a case-by-case basis with its usage as a means for dischargers to comply with an acute numerical criterion.

(4) A discharger to interior streams and rivers, the Big Sioux and Des Moines Rivers, and the Mississippi or Missouri Rivers may provide to the department, for consideration, instream data which technically supports the allowance of an increased percentage of the stream flow contained in the mixing zone due to rapid and complete mixing. Any allowed increase in mixing zone flow would still be governed by the mixing zone length restrictions. The submission of data should follow the guidance provided in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

e. For ammonia criteria noted in Table 3, the dimensions of the mixing zone and the zone of initial dilution will be calculated using a mathematical model presented in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009, or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

(1) The stream flow in the mixing zone may not exceed the most restrictive of the following:

1. One hundred percent of the design low stream flows noted in subrule 61.2(5) for locations where the dilution ratio is less than or equal to 2:1.

2. Fifty percent of the design low stream flows noted in subrule 61.2(5) for locations where the dilution ratio is greater than 2:1, but less than or equal to 5:1.

3. Twenty-five percent of the design low stream flows noted in subrule 61.2(5) for locations where the dilution ratio is greater than 5:1.

4. The stream flow contained in the mixing zone at the most restrictive of the applicable mixing zone length criteria, noted below.

(2) The length of the mixing zone below the point of discharge shall be set by the most restrictive of the following:

1. The distance to the juncture of two perennial streams.
2. The distance to a public water supply intake.
3. The distance to the upstream limits of an established recreational area, such as public beaches, and state, county, and local parks.
4. The distance to the middle of a crossover point in a stream where the main current flows from one bank across to the opposite bank.
5. The distance to another mixing zone.
6. Not to exceed a distance of 2000 feet.
7. The location where the mixing zone contained the percentages of stream flow noted in 61.2(4)*"e"*(1).

(3) The width of the mixing zone is calculated as the portion of the stream containing the allowed mixing zone stream flow. The mixing zone width will be measured perpendicular to the basic direction of stream flow at the downstream boundary of the mixing zone. This measurement will only consider the distance of continuous water surface.

(4) The width and length of the zone of initial dilution may not exceed 10 percent of the width and length of the mixing zone.

f. For ammonia criteria noted in Table 3, the stream flow used in determining wasteload allocations to ensure compliance with the chronic criteria of Table 3 will be that value contained at the boundary of the allowed mixing zone. This stream flow may not exceed the percentages of the design low stream flow noted in 61.2(4)*"e"*(1) as measured at the point of discharge.

The pH and temperature values at the boundary of the mixing zone used to select the chronic ammonia criteria of Table 3 will be from one of the following sources. The source of the pH and temperature data will follow the sequence listed below, if applicable data exists from the source.

(1) Specific pH and temperature data provided by the applicant gathered at their mixing zone boundary. Procedures for obtaining this data are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

(2) Regional background pH and temperature data provided by the applicant gathered along the receiving stream and representative of the background conditions at the outfall. Procedures for obtaining this data are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

(3) The statewide average background values presented in Table IV-2 of the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

The stream flow in the zone of initial dilution used in determining effluent limits to ensure compliance with the acute criteria of Table 3 may not exceed 5 percent of the calculated flow associated with the mixing zone for facilities with a dilution ratio of less than or equal to 2:1, and not exceed 10 percent of the calculated flow associated with the mixing zone for facilities with a dilution ratio of greater than 2:1. The pH and temperature values at the boundary of the zone of initial dilution used to select the acute ammonia criteria of Table 3 will be from one of the following sources and follow the sequence listed below, if applicable data exists from the source.

1. Specific effluent pH and temperature data if the dilution ratio is less than or equal to 2:1.
2. If the dilution ratio is greater than 2:1, the logarithmic average pH of the effluent and the regional or statewide pH provided in 61.2(4)*"f"* will be used. In addition, the flow proportioned average temperature of the effluent and the regional or statewide temperature provided in 61.2(4)*"f"* will be used. The procedures for calculating these data are noted in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

g. For ammonia criteria noted in Table 3, the following exceptions apply to the mixing zone requirements.

(1) No mixing zone or zone of initial dilution will be allowed for waters designated as lakes or wetlands.

(2) No zone of initial dilution will be allowed in waters designated as cold water.

(3) The use of a diffuser device to promote rapid mixing of an effluent in a receiving stream will be considered on a case-by-case basis with its usage as a means for dischargers to comply with an acute numerical criterion.

(4) A discharger to interior streams and rivers, the Big Sioux and Des Moines Rivers, and the Mississippi and Missouri Rivers may provide to the department, for consideration, instream data which technically supports the allowance of an increased percentage of the stream flow contained in the mixing zone due to rapid and complete mixing. Any allowed increase in mixing zone flow would still be governed by the mixing zone length restrictions. The submission of data should follow the guidance provided in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

h. Temperature changes within mixing zones established for heat dissipation will not exceed the temperature criteria in 61.3(3)*"b"*(5).

i. The appropriateness of establishing a mixing zone where a substance discharged is bioaccumulative, persistent, carcinogenic, mutagenic, or teratogenic will be carefully evaluated. In such cases, effects such as potential groundwater contamination, sediment deposition, fish attraction, bioaccumulation in aquatic life, bioconcentration in the food chain, and known or predicted safe exposure levels shall be considered.

61.2(5) *Implementation strategy.* Numerical criteria specified in these water quality standards shall be met when the flow of the receiving stream equals or exceeds the design low flows noted below.

Type of Numerical Criteria	Design Low Flow Regime
Aquatic Life Protection (TOXICS)	
Acute	$1Q_{10}$
Chronic	$7Q_{10}$
Aquatic Life Protection (AMMONIA - N)	
Acute	$1Q_{10}$
Chronic	$30Q_{10}$
Human Health Protection & MCL	
Noncarcinogenic	$30Q_5$
Carcinogenic	Harmonic mean

a. The allowable 3°C temperature increase criterion for warm water interior streams, 61.3(3)*"b"*(5)"1," is based in part on the need to protect fish from cold shock due to rapid cessation of heat source and resultant return of the receiving stream temperature to natural background temperature. On low flow streams, in winter, during certain conditions of relatively cold background stream temperature and relatively warm ambient air and groundwater temperature, certain wastewater treatment plants with relatively constant flow and constant temperature discharges will cause temperature increases in the receiving stream greater than allowed in 61.3(3)*"b"*(5)"1."

b. During the period November 1 to March 31, for the purpose of applying the 3°C temperature increase criterion, the minimum protected receiving stream flow rate below such discharges may be increased to not more than three times the rate of flow of the discharge, where there is reasonable assurance that the discharge is of such constant temperature and flow rate and continuous duration as to not constitute a threat of heat cessation and not cause the receiving stream temperature to vary more than 3°C per day.

c. Site-specific water quality criteria may be allowed in lieu of the specific numerical criteria listed in Tables 1 and 3 of this chapter if adequate documentation is provided to show that the proposed criteria will protect all existing or potential uses of the surface water. Site-specific water quality criteria may be appropriate where:

(1) The types of organisms differ significantly from those used in setting the statewide criteria; or

(2) The chemical characteristics of the surface water such as pH, temperature, and hardness differ significantly from the characteristics used in setting the statewide criteria.

Development of site-specific criteria shall include an evaluation of the chemical and biological characteristics of the water resource and an evaluation of the impact of the discharge. All evaluations for site-specific criteria modification must be coordinated through the department, and be conducted using scientifically accepted procedures approved by the department. Any site-specific criterion developed under the provisions of this subrule is subject to the review and approval of the U.S. Environmental Protection Agency. All criteria approved under the provisions of this subrule will be published periodically by the department. Guidelines for establishing site-specific water quality criteria can be found in "Water Quality Standards Handbook," published by the U.S. Environmental Protection Agency, December 1983.

d. A wastewater treatment facility may submit to the department technically valid instream data which provides additional information to be used in the calculations of their wasteload allocations and effluent limitations. This information would be in association with the low flow characteristics, width, length and time of travel associated with the mixing zone or decay rates of various effluent parameters. The wasteload allocation will be calculated considering the applicable data and consistent with the provisions and restrictions in the rules.

e. The department may perform use assessment and related use attainability analyses on water bodies where uses may not be known or adequately documented. The preparation of use attainability analysis documents will consider available U.S. Environmental Protection Agency guidance or other applicable guidance. Credible data and documentation will be used to assist in the preparation of use assessments and use attainability analysis reports.

[**ARC 8214B**, IAB 10/7/09, effective 11/11/09; **ARC 8466B**, IAB 1/13/10, effective 2/17/10; **ARC 9330B**, IAB 1/12/11, effective 2/16/11]

567—61.3(455B) Surface water quality criteria.

61.3(1) *Surface water classification.* All waters of the state are classified for protection of beneficial uses. These classified waters include general use segments and designated use segments.

a. General use segments. These are intermittent watercourses and those watercourses which typically flow only for short periods of time following precipitation and whose channels are normally above the water table. These waters do not support a viable aquatic community during low flow and do not maintain pooled conditions during periods of no flow.

The general use segments are to be protected for livestock and wildlife watering, aquatic life, noncontact recreation, crop irrigation, and industrial, agricultural, domestic and other incidental water withdrawal uses.

b. Designated use segments. These are water bodies which maintain flow throughout the year or contain sufficient pooled areas during intermittent flow periods to maintain a viable aquatic community.

All perennial rivers and streams as identified by the U.S. Geological Survey 1:100,000 DLG Hydrography Data Map (published July 1993) or intermittent streams with perennial pools in Iowa not specifically listed in the surface water classification of 61.3(5) are designated as Class B(WW-1) waters.

All perennial rivers and streams as identified by the U.S. Geological Survey 1:100,000 DLG Hydrography Data Map (published July 1993) or intermittent streams with perennial pools in Iowa are designated as Class A1 waters.

Designated uses of segments may change based on a use attainability analysis consistent with 61.2(5)*"e."* Designated use changes will be specifically listed in the surface water classification of 61.3(5).

Designated use waters are to be protected for all uses of general use segments in addition to the specific uses assigned. Designated use segments include:

(1) Primary contact recreational use (Class "A1"). Waters in which recreational or other uses may result in prolonged and direct contact with the water, involving considerable risk of ingesting water in quantities sufficient to pose a health hazard. Such activities would include, but not be limited to, swimming, diving, water skiing, and water contact recreational canoeing.

(2) Secondary contact recreational use (Class "A2"). Waters in which recreational or other uses may result in contact with the water that is either incidental or accidental. During the recreational use,

the probability of ingesting appreciable quantities of water is minimal. Class A2 uses include fishing, commercial and recreational boating, any limited contact incidental to shoreline activities and activities in which users do not swim or float in the water body while on a boating activity.

(3) Children's recreational use (Class "A3"). Waters in which recreational uses by children are common. Class A3 waters are water bodies having definite banks and bed with visible evidence of the flow or occurrence of water. This type of use would primarily occur in urban or residential areas.

(4) Cold water aquatic life—Type 1 (Class "B(CW1)"). Waters in which the temperature and flow are suitable for the maintenance of a variety of cold water species, including reproducing and nonreproducing populations of trout (*Salmonidae* family) and associated aquatic communities.

(5) Cold water aquatic life—Type 2 (Class "B(CW2)"). Waters that include small, channeled streams, headwaters, and spring runs that possess natural cold water attributes of temperature and flow. These waters usually do not support consistent populations of trout (*Salmonidae* family), but may support associated vertebrate and invertebrate organisms.

(6) Warm water—Type 1 (Class "B(WW-1)"). Waters in which temperature, flow and other habitat characteristics are suitable to maintain warm water game fish populations along with a resident aquatic community that includes a variety of native nongame fish and invertebrate species. These waters generally include border rivers, large interior rivers, and the lower segments of medium-size tributary streams.

(7) Warm water—Type 2 (Class "B(WW-2)"). Waters in which flow or other physical characteristics are capable of supporting a resident aquatic community that includes a variety of native nongame fish and invertebrate species. The flow and other physical characteristics limit the maintenance of warm water game fish populations. These waters generally consist of small perennially flowing streams.

(8) Warm water—Type 3 (Class "B(WW-3)"). Waters in which flow persists during periods when antecedent soil moisture and groundwater discharge levels are adequate; however, aquatic habitat typically consists of nonflowing pools during dry periods of the year. These waters generally include small streams of marginally perennial aquatic habitat status. Such waters support a limited variety of native fish and invertebrate species that are adapted to survive in relatively harsh aquatic conditions.

(9) Lakes and wetlands (Class "B(LW)"). These are artificial and natural impoundments with hydraulic retention times and other physical and chemical characteristics suitable to maintain a balanced community normally associated with lake-like conditions.

(10) Human health (Class "HH"). Waters in which fish are routinely harvested for human consumption or waters both designated as a drinking water supply and in which fish are routinely harvested for human consumption.

(11) Drinking water supply (Class "C"). Waters which are used as a raw water source of potable water supply.

61.3(2) *General water quality criteria.* The following criteria are applicable to all surface waters including general use and designated use waters, at all places and at all times for the uses described in 61.3(1)*"a."*

a. Such waters shall be free from substances attributable to point source wastewater discharges that will settle to form sludge deposits.

b. Such waters shall be free from floating debris, oil, grease, scum and other floating materials attributable to wastewater discharges or agricultural practices in amounts sufficient to create a nuisance.

c. Such waters shall be free from materials attributable to wastewater discharges or agricultural practices producing objectionable color, odor or other aesthetically objectionable conditions.

d. Such waters shall be free from substances attributable to wastewater discharges or agricultural practices in concentrations or combinations which are acutely toxic to human, animal, or plant life.

e. Such waters shall be free from substances, attributable to wastewater discharges or agricultural practices, in quantities which would produce undesirable or nuisance aquatic life.

f. The turbidity of the receiving water shall not be increased by more than 25 Nephelometric turbidity units by any point source discharge.

g. Cations and anions guideline values to protect livestock watering may be found in the "Supporting Document for Iowa Water Quality Management Plans," Chapter IV, July 1976, as revised on November 11, 2009.

h. The Escherichia coli (E. coli) content of water which enters a sinkhole or losing stream segment, regardless of the water body's designated use, shall not exceed a Geometric Mean value of 126 organisms/100 ml or a sample maximum value of 235 organisms/100 ml. No new wastewater discharges will be allowed on watercourses which directly or indirectly enter sinkholes or losing stream segments.

61.3(3) *Specific water quality criteria.*

a. Class "A" waters. Waters which are designated as Class "A1," "A2," or "A3" in subrule 61.3(5) are to be protected for primary contact, secondary contact, and children's recreational uses. The general criteria of subrule 61.3(2) and the following specific criteria apply to all Class "A" waters.

(1) The Escherichia coli (E. coli) content shall not exceed the levels noted in the Bacteria Criteria Table when the Class "A1," "A2," or "A3" uses can reasonably be expected to occur.

Bacteria Criteria Table (organisms/100 ml of water)

Use or Category	Geometric Mean	Sample Maximum
Class A1		
3/15 – 11/15	126	235
11/16 – 3/14	Does not apply	Does not apply
Class A2 (Only)		
3/15 – 11/15	630	2880
11/16 – 3/14	Does not apply	Does not apply
[Class A2 and B(CW)] or OIW or ONRW		
Year-Round	630	2880
Class A3		
3/15 – 11/15	126	235
11/16 – 3/14	Does not apply	Does not apply
Class A1 - Primary Contact Recreational Use Class A2 - Secondary Contact Recreational Use Class A3 - Children's Recreational Use		

When a water body is designated for more than one of the recreational uses, the most stringent criteria for the appropriate season shall apply.

(2) The pH shall not be less than 6.5 nor greater than 9.0. The maximum change permitted as a result of a waste discharge shall not exceed 0.5 pH units.

b. Class "B" waters. All waters which are designated as Class B(CW1), B(CW2), B(WW-1), B(WW-2), B(WW-3) or B(LW) are to be protected for wildlife, fish, aquatic, and semiaquatic life. The following criteria shall apply to all Class "B" waters designated in subrule 61.3(5).

(1) Dissolved oxygen. Dissolved oxygen shall not be less than the values shown in Table 2 of this subrule.

(2) pH. The pH shall not be less than 6.5 nor greater than 9.0. The maximum change permitted as a result of a waste discharge shall not exceed 0.5 pH units.

(3) General chemical constituents. The specific numerical criteria shown in Tables 1, 2, and 3 of this subrule apply to all waters designated in subrule 61.3(5). The sole determinant of compliance with these criteria will be established by the department on a case-by-case basis. Effluent monitoring or instream monitoring, or both, will be the required approach to determine compliance.

1. The acute criteria represent the level of protection necessary to prevent acute toxicity to aquatic life. Instream concentrations above the acute criteria will be allowed only within the boundaries of the zone of initial dilution.

2. The chronic criteria represent the level of protection necessary to prevent chronic toxicity to aquatic life. Excursions above the chronic criteria will be allowed only inside of mixing zones or only for short-term periods outside of mixing zones; however, these excursions cannot exceed the acute criteria shown in Tables 1 and 3. The chronic criteria will be met as short-term average conditions at all times the flow equals or exceeds either the design flows noted in subrule 61.2(5) or any site-specific low flow established under the provisions of subrule 61.2(5).

3. Rescinded IAB 2/15/06, effective 3/22/06.

(4) Rescinded IAB 2/15/06, effective 3/22/06.

(5) Temperature.

1. No heat shall be added to interior streams or the Big Sioux River that would cause an increase of more than 3°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added in excess of that amount that would raise the stream temperature above 32°C.

2. No heat shall be added to streams designated as cold water fisheries that would cause an increase of more than 2°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added in excess of that amount that would raise the stream temperature above 20°C.

3. No heat shall be added to lakes and reservoirs that would cause an increase of more than 2°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added in excess of that amount that would raise the temperature of the lake or reservoirs above 32°C.

4. No heat shall be added to the Missouri River that would cause an increase of more than 3°C. The rate of temperature change shall not exceed 1°C per hour. In no case shall heat be added that would raise the stream temperature above 32°C.

5. No heat shall be added to the Mississippi River that would cause an increase of more than 3°C. The rate of temperature change shall not exceed 1°C per hour. In addition, the water temperature at representative locations in the Mississippi River shall not exceed the maximum limits in the table below during more than 1 percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the table below by more than 2°C.

Zone II—Iowa-Minnesota state line to the northern Illinois border (Mile Point 1534.6).

Zone III—Northern Illinois border (Mile Point 1534.6) to Iowa-Missouri state line.

Month	Zone II	Zone III
January	4°C	7°C
February	4°C	7°C
March	12°C	14°C
April	18°C	20°C
May	24°C	26°C
June	29°C	29°C
July	29°C	30°C
August	29°C	30°C
September	28°C	29°C
October	23°C	24°C
November	14°C	18°C
December	9°C	11°C

(6) Early life stage for each use designation. The following seasons will be used in applying the early life stage present chronic criteria noted in Table 3b, "Chronic Criterion for Ammonia in Iowa Streams - Early Life Stages Present."

1. For all Class B(CW1) waters, the early life stage will be year-round.

2. For all Class B(CW2) waters, the early life stage will begin on April 1 and last through September 30.

3. For all Class B(WW-1) waters, the early life stage will begin in March and last through September, except as follows:

- For the following, the early life stage will begin in February and last through September:

—The entire length of the Mississippi and Missouri Rivers,

—The lower reach of the Des Moines River south of the Ottumwa dam, and

—The lower reach of the Iowa River below the Cedar River.

- For the following, the early life stage will begin in April and last through September:

—All Class B(WW-1) waters in the Southern Iowa River Basin,

—All of the Class B(WW-1) reach of the Skunk River, the North Skunk River and the South Skunk River south of Indian Creek (Jasper County), and the Class B(WW-1) tributaries to these reaches, and the entire Class B(WW-1) reach of the English River.

4. For all Class B(WW-2) and Class B(WW-3) waters, the early life stage will begin in April and last through September.

5. For all Class B(LW) lake and wetland waters, the early life stage will begin in March and last through September except for the Class B(LW) waters in the southern two tiers of Iowa counties which will have the early life stage of April through September.

c. Class "C" waters. Waters which are designated as Class "C" are to be protected as a raw water source of potable water supply. The following criteria shall apply to all Class "C" waters designated in subrule 61.3(5).

(1) Radioactive substances.

1. The combined radium-226 and radium-228 shall not exceed 5 picocuries per liter at the point of withdrawal.

2. Gross alpha particle activity (including radium-226 but excluding radon and uranium) shall not exceed 15 picocuries per liter at the point of withdrawal.

3. The average annual concentration at the point of withdrawal of beta particle and photon radioactivity from man-made radionuclides other than tritium and strontium-90 shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.

4. The average annual concentration of tritium shall not exceed 20,000 picocuries per liter at the point of withdrawal; the average annual concentration of strontium-90 shall not exceed 8 picocuries per liter at the point of withdrawal.

(2) All substances toxic or detrimental to humans or detrimental to treatment process shall be limited to nontoxic or nondetrimental concentrations in the surface water.

(3) The pH shall not be less than 6.5 nor greater than 9.0.

d. Class "HH" waters. Waters which are designated as Class HH shall contain no substances in concentrations which will make fish or shellfish inedible due to undesirable tastes or cause a hazard to humans after consumption.

(1) The human health criteria represent the level of protection necessary, in the case of noncarcinogens, to prevent adverse health effects in humans and, in the case of carcinogens, to prevent a level of incremental cancer risk not exceeding 1 in 100,000. Instream concentrations in excess of the human health criteria will be allowed only within the boundaries of the mixing zone.

(2) Reserved.

TABLE 1. Criteria for Chemical Constituents

(all values as micrograms per liter as total recoverable unless noted otherwise)

Human health criteria for carcinogenic parameters noted below were based on the prevention of an incremental cancer risk of 1 in 100,000. For parameters not having a noted human health criterion, the U.S. Environmental Protection Agency has not developed final national human health guideline values. For noncarcinogenic parameters, the recommended EPA criterion was selected. For Class C waters, the EPA criteria for fish and water consumption were selected using the same considerations for carcinogenic and noncarcinogenic parameters as noted above. For Class C waters for which no EPA human health criteria were available, the EPA MCL value was selected.

Parameter		Use Designations							
		B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)	C	HH
Alachlor	MCL	—	—	—	—	—	—	2	—
Aldrin	Acute	—	—	3	3	3	—	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.00050[e]
	Human Health + — F & W	—	—	—	—	—	—	—	.00049[f]
Aluminum	Chronic	87	—	87	87	87	748	—	—
	Acute	1106	—	750	750	750	983	—	—
Antimony	Human Health — Fish	—	—	—	—	—	—	—	640[e]
	Human Health + — F & W	—	—	—	—	—	—	—	5.6[f]
Arsenic (III)	Chronic	200	—	150	150	150	200	—	—
	Acute	360	—	340	340	340	360	—	—
	Human Health — Fish	—	—	—	—	—	—	—	50[e][g]
	Human Health — F & W	—	—	—	—	—	—	—	.18[f][g]
Asbestos	Human Health — F & W	—	—	—	—	—	—	—	7[a][f]
Atrazine	MCL	—	—	—	—	—	—	3	—
Barium	Human Health + — F & W	—	—	—	—	—	—	—	1000[f]
Benzene	Human Health — F & W	—	—	—	—	—	—	—	22[f]
	Human Health — Fish	—	—	—	—	—	—	—	510[e]
Benzo(a)Pyrene	Human Health — F & W	—	—	—	—	—	—	—	.038[f]
	Human Health — Fish	—	—	—	—	—	—	—	.18[e]
Beryllium	MCL	—	—	—	—	—	—	4	—
Bromoform	Human Health — F & W	—	—	—	—	—	—	—	43[f]
	Human Health — Fish	—	—	—	—	—	—	—	1400[e]
Cadmium	Chronic	1	—	.45[h]	.45[h]	.45[h]	1	—	—
	Acute	4	—	4.32[h]	4.32[h]	4.32[h]	4	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	168[e]
	MCL	—	—	—	—	—	—	5	—
Carbofuran	MCL	—	—	—	—	—	—	40	—
Carbon Tetrachloride	Human Health — F & W	—	—	—	—	—	—	—	2.3[f]
	Human Health — Fish	—	—	—	—	—	—	—	16[e]
Chlordane	Chronic	.004	—	.0043	.0043	.0043	.004	—	—
	Acute	2.5	—	2.4	2.4	2.4	2.5	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.0081[e]
	Human Health — F & W	—	—	—	—	—	—	—	.008[f]

Parameter		Use Designations							
		B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)	C	HH
Chloride	Chronic	389(m)*	389(m)*	389(m)*	389(m)*	389(m)*	389(m)*	—	—
	Acute	629(m)*	629(m)*	629(m)*	629(m)*	629(m)*	629(m)*	—	—
	MCL	—	—	—	—	—	—	250*	—
Chlorobenzene	Human Health + — Fish	—	—	—	—	—	—	—	1.6*(e)
	Human Health + — F & W	—	—	—	—	—	—	—	130(f)
	MCL	—	—	—	—	—	—	100	—
Chlorodibromomethane	Human Health — F & W	—	—	—	—	—	—	—	4.0(f)
	Human Health — Fish	—	—	—	—	—	—	—	130(e)
Chloroform	Human Health — F & W	—	—	—	—	—	—	—	57(f)
	Human Health — Fish	—	—	—	—	—	—	—	4700(e)
Chloropyrifos	Chronic	.041	—	.041	.041	.041	.041	—	—
	Acute	.083	—	.083	.083	.083	.083	—	—
Chromium (VI)	Chronic	40	—	11	11	11	10	—	—
	Acute	60	—	16	16	16	15	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	3365(e)
	MCL	—	—	—	—	—	—	100	—
Copper	Chronic	20	—	16.9(i)	16.9(i)	16.9(i)	10	—	—
	Acute	30	—	26.9(i)	26.9(i)	26.9(i)	20	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	1000(e)
	Human Health + — F & W	—	—	—	—	—	—	—	1300(f)
Cyanide	Chronic	5	—	5.2	5.2	5.2	10	—	—
	Acute	20	—	22	22	22	45	—	—
	Human Health + — F & W	—	—	—	—	—	—	—	140(f)
	Human Health — Fish	—	—	—	—	—	—	—	140(e)
Dalapon	MCL	—	—	—	—	—	—	200	—
Dibromochloropropane	MCL	—	—	—	—	—	—	.2	—
4,4-DDT ++	Chronic	.001	—	.001	.001	.001	.001	—	—
	Acute	.9	—	1.1	1.1	1.1	.55	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.0022(e)
	Human Health — F & W	—	—	—	—	—	—	—	.0022(f)
o-Dichlorobenzene	MCL	—	—	—	—	—	—	600	—
para-Dichlorobenzene	Human Health + — F & W	—	—	—	—	—	—	—	63(f)
	Human Health + — Fish	—	—	—	—	—	—	—	190(e)
3,3-Dichlorobenzidine	Human Health — Fish	—	—	—	—	—	—	—	.28(e)
	Human Health — F & W	—	—	—	—	—	—	—	.21(f)

Parameter		Use Designations							
		B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)	C	HH
Dichlorobromomethane	Human Health — F & W	—	—	—	—	—	—	—	5.5(f)
	Human Health — Fish	—	—	—	—	—	—	—	170(e)
1,2-Dichloroethane	Human Health — F & W	—	—	—	—	—	—	—	3.8(f)
	Human Health — Fish	—	—	—	—	—	—	—	370(e)
1,1-Dichloroethylene	Human Health — F & W	—	—	—	—	—	—	—	330(f)
	Human Health — Fish	—	—	—	—	—	—	—	7.1*(e)
cis-1,2-Dichloroethylene	MCL	—	—	—	—	—	—	70	—
1,2-trans-Dichlorethylene	Human Health + — F & W	—	—	—	—	—	—	—	10*(f)
	Human Health — Fish	—	—	—	—	—	—	—	140(e)
Dichloromethane	MCL	—	—	—	—	—	—	5	—
1,2-Dichloropropane	Human Health — F & W	—	—	—	—	—	—	—	5.0(f)
	Human Health — Fish	—	—	—	—	—	—	—	150(e)
Dieldrin	Chronic	.056	—	.056	.056	.056	.056	—	—
	Acute	.24	—	.24	.24	.24	.24	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.00054(e)
	Human Health — F & W	—	—	—	—	—	—	—	.00052(f)
Dinoseb	MCL	—	—	—	—	—	—	7	—
2,3,7,8-TCDD (Dioxin)	Human Health — F & W	—	—	—	—	—	—	—	5.0-8(f)
	Human Health — Fish	—	—	—	—	—	—	—	5.1-8(e)
Diquat	MCL	—	—	—	—	—	—	20	—
2,4-D	Human Health + — F & W	—	—	—	—	—	—	—	100(f)
Endosulfan(b)	Chronic	.056	—	.056	.056	.056	.15	—	—
	Acute	.11	—	.22	.22	.22	.3	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	89(e)
	Human Health + — F & W	—	—	—	—	—	—	—	62(f)
Endothall	MCL	—	—	—	—	—	—	100	—
Endrin	Chronic	.05	—	.036	.036	.036	.036	—	—
	Acute	.12	—	.086	.086	.086	.086	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	.06(e)
	Human Health + — F & W	—	—	—	—	—	—	—	.059(f)
Ethylbenzene	Human Health + — F & W	—	—	—	—	—	—	—	530(f)
	Human Health — Fish	—	—	—	—	—	—	—	2100(e)
Ethylene dibromide	MCL	—	—	—	—	—	—	.05	—

Parameter		Use Designations							
		B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)	C	HH
Di(2-ethylhexyl)adipate	MCL	—	—	—	—	—	—	400	—
bis(2-ethylhexyl)phthalate	Human Health — F & W	—	—	—	—	—	—	—	12[f]
	Human Health — Fish	—	—	—	—	—	—	—	22[e]
Fluoride	MCL	—	—	—	—	—	—	4000	—
Glyphosate	MCL	—	—	—	—	—	—	700	—
Heptachlor	Chronic	.0038	—	.0038	.0038	.0038	.0038	—	—
	Acute	.38	—	.52	.52	.52	.38	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.00079[e]
	Human Health — F & W	—	—	—	—	—	—	—	.00079[f]
Heptachlor epoxide	Chronic	.0038	—	.0038	.0038	.0038	.0038	—	—
	Acute	.52	—	.52	.52	.52	.52	—	—
	Human Health — F & W	—	—	—	—	—	—	—	.00039[f]
	Human Health — Fish	—	—	—	—	—	—	—	.00039[e]
Hexachlorobenzene	Human Health — F & W	—	—	—	—	—	—	—	.0028[f]
	Human Health — Fish	—	—	—	—	—	—	—	.0029[e]
Hexachlorocyclopentadiene	Human Health — F & W	—	—	—	—	—	—	—	40[f]
	Human Health — Fish	—	—	—	—	—	—	—	1100[e]
Lead	Chronic	3	—	7.7[j]	7.7[j]	7.7[j]	3	—	—
	Acute	80	—	197[j]	197[j]	197[j]	80	—	—
	MCL	—	—	—	—	—	—	50	—
gamma-BHC (Lindane)	Chronic	N/A	—	N/A	N/A	N/A	N/A	—	—
	Acute	.95	—	.95	.95	.95	.95	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	1.8[e]
	Human Health + — F & W	—	—	—	—	—	—	—	.98[f]
Mercury (II)	Chronic	3.5	—	.9	.9	.9	.91	—	—
	Acute	6.5	—	1.64	1.64	1.64	1.7	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	.15[e]
	Human Health + — F & W	—	—	—	—	—	—	—	.05[f]
Methoxychlor	Human Health + — F & W	—	—	—	—	—	—	—	100[f]
Nickel	Chronic	350	—	93[k]	93[k]	93[k]	150	—	—
	Acute	3250	—	843[k]	843[k]	843[k]	1400	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	4600[e]
	Human Health + — F & W	—	—	—	—	—	—	—	610[f]
Nitrate as N	MCL	—	—	—	—	—	—	10*	—
Nitrate + Nitrite as N	MCL	—	—	—	—	—	—	10*	—
Nitrite as N	MCL	—	—	—	—	—	—	1*	—

Parameter		Use Designations							
		B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)	C	HH
Oxamyl (Vydate)	MCL	—	—	—	—	—	—	200	—
Parathion	Chronic	.013	—	.013	.013	.013	.013	—	—
	Acute	.065	—	.065	.065	.065	.065	—	—
Pentachlorophenol (PCP)	Chronic	(d)	—	(d)	(d)	(d)	(d)	—	—
	Acute	(d)	—	(d)	(d)	(d)	(d)	—	—
	Human Health — Fish	—	—	—	—	—	—	—	30[e]
	Human Health — F & W	—	—	—	—	—	—	—	2.7[f]
Phenols	Chronic	50	—	50	50	50	50	—	—
	Acute	1000	—	2500	2500	2500	1000	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	1700*[e]
	Human Health + — F & W	—	—	—	—	—	—	—	21*[f]
Picloram	MCL	—	—	—	—	—	—	500	—
Polychlorinated	Chronic	.014	—	.014	.014	.014	.014	—	—
Biphenyls (PCBs)	Acute	2	—	2	2	2	2	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.00064[e]
	Human Health — F & W	—	—	—	—	—	—	—	.00064[f]
Polynuclear Aromatic	Chronic	.03	—	.03	3	3	.03	—	—
Hydrocarbons (PAHs)**	Acute	30	—	30	30	30	30	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.18[e]
	Human Health — F & W	—	—	—	—	—	—	—	.038[f]
Selenium	Chronic	10	—	5	5	5	70	—	—
	Acute	15	—	19.3	19.3	19.3	100	—	—
	Human Health + — F & W	—	—	—	—	—	—	—	170[f]
	Human Health + — Fish	—	—	—	—	—	—	—	4200[e]
Silver	Chronic	N/A	—	N/A	N/A	N/A	N/A	—	—
	Acute	30	—	3.8	3.8	3.8	4	—	—
	MCL	—	—	—	—	—	—	50	—
2,4,5-TP (Silvex)	MCL	—	—	—	—	—	—	10	—
Simazine	MCL	—	—	—	—	—	—	4	—
Styrene	MCL	—	—	—	—	—	—	100	—
Tetracholorethylene	Human Health — F & W	—	—	—	—	—	—	—	6.9[f]
	Human Health — Fish	—	—	—	—	—	—	—	33[e]
Thallium	Human Health + — F & W	—	—	—	—	—	—	—	.24[f]
	Human Health + — Fish	—	—	—	—	—	—	—	.47[e]

Parameter		Use Designations							
		B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)	C	HH
Toluene	Chronic	50	—	50	150	150	50	—	—
	Acute	2500	—	2500	7500	7500	2500	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	15*(e)
	Human Health + — F & W	—	—	—	—	—	—	—	1300(f)
Total Residual	Chronic	10	—	11	11	11	10	—	—
Chlorine (TRC)	Acute	35	—	19	19	19	20	—	—
Toxaphene	Chronic	.037	—	.002	.002	.002	.037	—	—
	Acute	.73	—	.73	.73	.73	.73	—	—
	Human Health — Fish	—	—	—	—	—	—	—	.0028(e)
	Human Health — F & W	—	—	—	—	—	—	—	.0028(f)
1,2,4-Trichlorobenzene	MCL	—	—	—	—	—	—	70	—
1,1,1-Trichlorethane	MCL	—	—	—	—	—	—	200	—
	Human Health + — Fish	—	—	—	—	—	—	—	173*(e)
1,1,2-Trichloroethane	Human Health — F & W	—	—	—	—	—	—	—	6(f)
Trichloroethylene (TCE)	Chronic	80	—	80	80	80	80	—	—
	Acute	4000	—	4000	4000	4000	4000	—	—
	Human Health — Fish	—	—	—	—	—	—	—	300(e)
	Human Health — F & W	—	—	—	—	—	—	—	25(f)
Trihalomethanes (total)(c)	MCL	—	—	—	—	—	—	80	—
Vinyl Chloride	Human Health — F & W	—	—	—	—	—	—	—	.25(f)
	Human Health — Fish	—	—	—	—	—	—	—	24(e)
Xylenes (Total)	MCL	—	—	—	—	—	—	10*	—
Zinc	Chronic	200	—	215(l)	215(l)	215(l)	100	—	—
	Acute	220	—	215(l)	215(l)	215(l)	110	—	—
	Human Health + — Fish	—	—	—	—	—	—	—	26*(e)
	Human Health + — F & W	—	—	—	—	—	—	—	7.4*(f)

* units expressed as milligrams/liter

** to include the sum of known and suspected carcinogenic PAHs (includes benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene)

† expressed as nanograms/liter

\+ represents the noncarcinogenic human health parameters

++ The concentrations of 4,4-DDT or its metabolites; 4,4-DDE and 4,4-DDD, individually shall not exceed the human health criteria.

(a) units expressed as million fibers/liter (longer than 10 micrometers)

(b) includes alpha-endosulfan, beta-endosulfan, and endosulfan sulfate in combination or as individually measured

(c) The sum of the four trihalomethanes (bromoform [tribromomethane], chlorodibromomethane, chloroform [trichloromethane], and dichlorobromomethane) may not exceed the MCL.

(d) Class B numerical criteria for pentachlorophenol are a function of pH using the equation: Criterion (µg/l) = $e^{[1.005(pH) - x]}$, where e = 2.71828 and x varies according to the following table:

	B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)
Acute	3.869	—	4.869	4.869	4.869	4.869
Chronic	4.134	—	5.134	5.134	5.134	5.134

(e) This Class HH criterion would be applicable to any Class B(LW), B(CW1), B(WW-1), B(WW-2), or B(WW-3) water body that is also designated Class HH.

(f) This Class HH criterion would be applicable to any Class C water body that is also designated Class HH.

(g) inorganic form only

(h) Class B(WW-1), B(WW-2), and B(WW-3) criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for cadmium are a function of hardness (as $CaCO_3$ (mg/l)) using the equation for each use according to the following table:

	B(WW-1)	B(WW-2)	B(WW-3)
Acute	$e^{[1.0166Ln(Hardness) - 3.924]}$	$e^{[1.0166Ln(Hardness) - 3.924]}$	$e^{[1.0166Ln(Hardness) - 3.924]}$
Chronic	$e^{[0.7409Ln(Hardness) - 4.719]}$	$e^{[0.7409Ln(Hardness) - 4.719]}$	$e^{[0.7409Ln(Hardness) - 4.719]}$

(i) Class B(WW-1), B(WW-2), and B(WW-3) criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for copper are a function of hardness ($CaCO_3$ (mg/l)) using the equation for each use according to the following table:

	B(WW-1)	B(WW-2)	B(WW-3)
Acute	$e^{[0.9422Ln(Hardness) - 1.700]}$	$e^{[0.9422Ln(Hardness) - 1.700]}$	$e^{[0.9422Ln(Hardness) - 1.700]}$
Chronic	$e^{[0.8545Ln(Hardness) - 1.702]}$	$e^{[0.8545Ln(Hardness) - 1.702]}$	$e^{[0.8545Ln(Hardness) - 1.702]}$

(j) Class B(WW-1), B(WW-2), and B(WW-3) criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for lead are a function of hardness ($CaCO_3$ (mg/l)) using the equation for each use according to the following table:

	B(WW-1)	B(WW-2)	B(WW-3)
Acute	$e^{[1.2731Ln(Hardness) - 1.46]}$	$e^{[1.2731Ln(Hardness) - 1.46]}$	$e^{[1.2731Ln(Hardness) - 1.46]}$
Chronic	$e^{[1.2731Ln(Hardness) - 4.705]}$	$e^{[1.2731Ln(Hardness) - 4.705]}$	$e^{[1.2731Ln(Hardness) - 4.705]}$

(k) Class B(WW-1), B(WW-2), and B(WW-3) criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for nickel are a function of hardness ($CaCO_3$ (mg/l)) using the equation for each use according to the following table:

	B(WW-1)	B(WW-2)	B(WW-3)
Acute	$e^{[0.846Ln(Hardness) + 2.255]}$	$e^{[0.846Ln(Hardness) + 2.255]}$	$e^{[0.846Ln(Hardness) + 2.255]}$
Chronic	$e^{[0.846Ln(Hardness) + 0.0584]}$	$e^{[0.846Ln(Hardness) + 0.0584]}$	$e^{[0.846Ln(Hardness) + 0.0584]}$

(l) Class B(WW-1), B(WW-2), and B(WW-3) criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)). Numerical criteria (µg/l) for zinc are a function of hardness ($CaCO_3$ (mg/l)) using the equation for each use according to the following table:

	B(WW-1)	B(WW-2)	B(WW-3)
Acute	$e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$
Chronic	$e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$	$e^{[0.8473Ln(Hardness) + 0.884]}$

(m) Acute and chronic criteria listed in main table are based on a hardness of 200 mg/l (as $CaCO_3$ (mg/l)) and a sulfate concentration of 63 mg/l. Numerical criteria (µg/l) for chloride are a function of hardness ($CaCO_3$ (mg/l)) and sulfate (mg/l) using the equation for each use according to the following table:

	B(CW1), B(CW2), B(WW-1), B(WW-2). B(WW-3), B(LW)
Acute	$287.8(Hardness)^{0.205797}(Sulfate)^{-0.07452}$
Chronic	$177.87(Hardness)^{0.205797}(Sulfate)^{-0.07452}$

TABLE 2. Criteria for Dissolved Oxygen

(all values expressed in milligrams per liter)

	B(CW1)	B(CW2)	B(WW-1)	B(WW-2)	B(WW-3)	B(LW)
Minimum value for at least 16 hours of every 24-hour period	7.0	7.0	5.0	5.0	5.0	5.0*
Minimum value at any time during every 24-hour period	5.0	5.0	5.0	4.0	4.0	5.0*

**applies only to the upper layer of stratification in lakes*

TABLE 3a. Acute Criterion for Ammonia in Iowa Streams

Acute Criterion, mg/l as N (or Criterion Maximum Concentration, CMC)		
pH	Class B(WW-1), B(WW-2), B(WW-3) & B(LW)	Class B(CW1) & B(CW2)
6.5	48.8	32.6
6.6	46.8	31.3
6.7	44.6	29.8
6.8	42.0	28.0
6.9	39.1	26.1
7.0	36.1	24.1
7.1	32.8	21.9
7.2	29.5	19.7
7.3	26.2	17.5
7.4	23.0	15.3
7.5	19.9	13.3
7.6	17.0	11.4
7.7	14.4	9.64
7.8	12.1	8.11
7.9	10.1	6.77
8.0	8.40	5.62
8.1	6.95	4.64
8.2	5.72	3.83
8.3	4.71	3.15
8.4	3.88	2.59
8.5	3.20	2.14
8.6	2.65	1.77
8.7	2.20	1.47
8.8	1.84	1.23
8.9	1.56	1.04
9.0	1.32	0.885

TABLE 3b. Chronic Criterion for Ammonia in Iowa Streams - Early Life Stages Present

Chronic Criterion - Early Life Stages Present, mg/l as N (or Criterion Continuous Concentration, CCC)										
pH	Temperature, °C									
	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.8	2.8	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

TABLE 3c. Chronic Criterion for Ammonia in Iowa Streams - Early Life Stages Absent

Chronic Criterion - Early Life Stages Absent, mg/l as N (or Criterion Continuous Concentration, CCC)										
pH	Temperature, °C									
	0-7	8	9	10	11	12	13	14	15*	16*
6.5	10.8	10.1	9.51	8.92	8.36	7.84	7.35	6.89	6.46	6.06
6.6	10.7	9.99	9.37	8.79	8.24	7.72	7.24	6.79	6.36	5.97
6.7	10.5	9.81	9.20	8.62	8.08	7.58	7.11	6.66	6.25	5.86
6.8	10.2	9.58	8.98	8.42	7.90	7.40	6.94	6.51	6.10	5.72
6.9	9.93	9.31	8.73	8.19	7.68	7.20	6.75	6.33	5.93	5.56
7.0	9.60	9.00	8.43	7.91	7.41	6.95	6.52	6.11	5.73	5.37
7.1	9.20	8.63	8.09	7.58	7.11	6.67	6.25	5.86	5.49	5.15
7.2	8.75	8.20	7.69	7.21	6.76	6.34	5.94	5.57	5.22	4.90
7.3	8.24	7.73	7.25	6.79	6.37	5.97	5.60	5.25	4.92	4.61
7.4	7.69	7.21	6.76	6.33	5.94	5.57	5.22	4.89	4.59	4.30
7.5	7.09	6.64	6.23	5.84	5.48	5.13	4.81	4.51	4.23	3.97

Chronic Criterion - Early Life Stages Absent, mg/l as N (or Criterion Continuous Concentration, CCC)										
pH	Temperature, °C									
	0-7	8	9	10	11	12	13	14	15*	16*
7.6	6.46	6.05	5.67	5.32	4.99	4.68	4.38	4.11	3.85	3.61
7.7	5.81	5.45	5.11	4.79	4.49	4.21	3.95	3.70	3.47	3.25
7.8	5.17	4.84	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89
7.9	4.54	4.26	3.99	3.74	3.51	3.29	3.09	2.89	2.71	2.54
8.0	3.95	3.70	3.47	3.26	3.05	2.86	2.68	2.52	2.36	2.21
8.1	3.41	3.19	2.99	2.81	2.63	2.47	2.31	2.17	2.03	1.91
8.2	2.91	2.73	2.56	2.40	2.25	2.11	1.98	1.85	1.74	1.63
8.3	2.47	2.32	2.18	2.04	1.91	1.79	1.68	1.58	1.48	1.39
8.4	2.09	1.96	1.84	1.73	1.62	1.52	1.42	1.33	1.25	1.17
8.5	1.77	1.66	1.55	1.46	1.37	1.28	1.20	1.13	1.06	0.99
8.6	1.49	1.40	1.31	1.23	1.15	1.08	1.01	0.951	0.892	0.836
8.7	1.26	1.18	1.11	1.04	0.976	0.915	0.858	0.805	0.754	0.707
8.8	1.07	1.01	0.944	0.885	0.829	0.778	0.729	0.684	0.641	0.601
8.9	0.917	0.860	0.806	0.756	0.709	0.664	0.623	0.584	0.548	0.513
9.0	0.790	0.740	0.694	0.651	0.610	0.572	0.536	0.503	0.471	0.442

*At 15°C and above, the criterion for fish early life stage (ELS) absent is the same as the criterion for fish ELS present.

TABLE 4. Aquatic Life Criteria for Sulfate for Class B Waters

(all values expressed in milligrams per liter)

	Chloride		
Hardness mg/l as $CaCO_3$	Cl^- < 5 mg/l	5 < = Cl^- < 25	25 < = $C1^-$ < = 500
H < 100 mg/l	500	500	500
100 < = H < = 500	500	[–57.478 + 5.79 (hardness) + 54.163 (chloride)] × 0.65	[1276.7 + 5.508 (hardness) –1.457 (chloride)] × 0.65
H > 500	500	2,000	2,000

61.3(4) *Class "C" waters.* Rescinded IAB 4/18/90, effective 5/23/90.

61.3(5) *Surface water classification.* The department hereby incorporates by reference "Surface Water Classification," effective December 22, 2010. This document may be obtained on the department's Web site at http://www.iowadnr.com/water/standards/index.html.

61.3(6) *Cold water use designation assessment protocol.* The department hereby incorporates by reference "Cold Water Use Designation Assessment Protocol," effective December 15, 2004. This document may be obtained on the department's Web site at http://www.iowadnr.com/water/standards/index.html.

61.3(7) *Warm water stream use assessment and attainability analysis protocol.* The department hereby incorporates by reference "Warm Water Stream Use Assessment and Attainability Analysis Protocol," effective March 22, 2006. This document may be obtained on the departments Web site at http://www.iowadnr.com/water/standards/index.html.

61.3(8) *Recreational use assessment and attainability analysis protocol.* The department hereby incorporates by reference "Recreational Use Assessment and Attainability Analysis Protocol," effective March 19, 2008. This document may be obtained on the department's Web site.

This rule is intended to implement Iowa Code chapter 455B, division I, and division III, part 1.

[**ARC 8039B**, IAB 8/12/09, effective 9/16/09; **ARC 8214B**, IAB 10/7/09, effective 11/11/09; **ARC 8226B**, IAB 10/7/09, effective 11/11/09; **ARC 8466B**, IAB 1/13/10, effective 2/17/10; **ARC 9223B**, IAB 11/17/10, effective 12/22/10]

567—61.4 to **61.9** Reserved.

VOLUNTEER MONITORING DATA REQUIREMENTS

567—61.10(455B) Purpose. The department uses water quality monitoring data for a number of purposes, including determining compliance with effluent limits for operation permits issued under 567—Chapter 64. The department also uses water quality monitoring data to determine the relative health of a water body by comparing monitoring data to the appropriate water quality standards established in 567—Chapter 61, a process known as water body assessments. Water body assessments are performed to prepare the biennial water quality report required under Section 305(b) of the Act and the list of impaired waters under Section 303(d) of the Act.

Iowa Code sections 455B.193 to 455B.195 require that credible data, as defined in Iowa Code section 455B.171, be used for the purpose of preparing Section 303(d) lists and other water quality program functions. Data provided by a volunteer are not considered credible data unless provided by a qualified volunteer. The purpose of this chapter is to establish minimum requirements for data produced by volunteers to meet the credible data and qualified volunteer requirements.

567—61.11(455B) Monitoring plan required. Volunteer water quality monitoring data submitted to the department must have been produced in accordance with a department-approved volunteer water quality monitoring plan before the data may be used for any of the purposes listed in Iowa Code section 455B.194. Approval of a plan will establish qualified volunteer status for the personnel identified in the plan for those monitoring activities covered under the plan.

61.11(1) *Submittal of the plan.* Prior to initiation of volunteer water quality monitoring activities intended to produce credible data, a water quality monitoring plan must be submitted to the department for review and approval. The plan must be submitted to the Volunteer Monitoring Coordinator, Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319, a minimum of 90 days before planned initiation of volunteer monitoring activities. A letter transmitting the plan must specifically request formal review and approval of the plan and identify a contact person. Volunteer monitors are encouraged to communicate with the department and to attend volunteer monitoring training sessions prior to formal submittal of a plan.

61.11(2) *Content of the plan.* A volunteer monitoring plan must contain, at a minimum, the following to be considered an acceptable volunteer monitoring plan:

a. A statement of the intent of the monitoring effort.

b. The name(s) of the person or persons that will be involved in data collection or analysis, the specific responsibilities of each person or group of people, and the general qualifications of the volunteers to carry out those responsibilities. For groups, such as educational institutions, it will be acceptable to identify the persons involved by general description (e.g., tenth grade biology class) with the exception of persons in responsible charge.

c. The name(s) of the person or persons that will oversee the monitoring plan, ensure that quality assurance and control objectives are being met, and certify the data. The person or persons in responsible charge must have training commensurate with the level of expertise to ensure that credible data is being generated.

d. The duration of the volunteer monitoring effort. In general, the department will not approve plans of greater than three years' duration unless a longer duration is justified.

e. Location and frequency of sample collection.

f. Methods of data collection and analysis.

g. Record keeping and data reporting procedures.

61.11(3) *Department review of the plan.* The department will review monitoring plans and normally approve or disapprove the plan within 90 days of receipt. The department will work with the contact person identified in the plan to make any necessary changes prior to taking formal action. The department will use guidelines contained in the publications EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5, 2001) and Volunteer Monitor's Guide to Quality Assurance Project Plans (1966, EPA

841-B-96-003) or equivalent updates to determine if the plans provide adequate quality assurance and quality control measures. Approval or disapproval of the plan will be in the form of a letter and approval may include conditions or limitations.

61.11(4) *Changes in monitoring plans.* The department must approve any changes to an approved monitoring plan. Data collected under a modified plan will not be considered credible data until such time as the department has approved the modifications. Modifications to an approved plan should be submitted at the earliest possible time to avoid interruptions in data collection and to ensure continuity of data.

61.11(5) *Appeal of disapproval.* If a monitoring plan submitted for approval is disapproved, the decision may be appealed by filing an appeal with the director within 30 days of disapproval. The form of the notice of appeal and appeal procedures are governed by 567—Chapter 7.

567—61.12(455B) Use of volunteer monitoring data. Data produced under an approved water quality monitoring plan will be considered credible data for the purposes listed in Iowa Code section 455B.194 if the following conditions are met.

61.12(1) *Data submittal.* A qualified volunteer monitor or qualified volunteer monitoring group must specifically request that data produced under an approved volunteer monitoring plan be considered credible data. A letter identifying the specific data must be submitted along with a certification from the volunteer or the person in responsible charge for volunteer groups that the data, to the best of the volunteer's or responsible person's knowledge, was produced in accordance with the approved volunteer monitoring plan. The department shall provide a standard format on the IOWATER Web site for submittal of qualified volunteer data and related information. The department encourages volunteers to enter monitoring data on the IOWATER volunteer monitoring database maintained by the department, but doing so does not constitute submittal to or acceptance of the data by the department for uses requiring credible data. Volunteer data shall be labeled as such in any departmental reports, Web sites, or databases.

61.12(2) *Department review of submitted data.* The department must review and approve the submitted data. The person submitting the data will be informed of the department's decision either to accept or reject the data. The department will attempt to resolve any apparent inconsistencies or questionable values in the submitted data prior to making a final decision.

567—61.13(455B) Department audits of volunteer monitoring activities. The department shall conduct field audits of a statistically valid and representative sample of volunteer data collection and analysis procedures to ensure compliance with an approved plan and may conduct confirmatory monitoring tests. Volunteers shall be informed of any audit results and be provided with an opportunity to address any concerns to the extent possible. The department reserves the right to rescind approval of an approved plan if it finds substantial problems that cannot be addressed in a timely manner to ensure the quality of the data being produced.

These rules are intended to implement Iowa Code chapter 455B, division III, part 1.

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◊ Two or more ARCs