

Iowa Department of Natural Resources
Environmental Protection Commission

ITEM

17

Decision

TOPIC

Notice of Intended Action – Chapter 61 – Water Quality Standards (Updates
to Wasteload Allocation Procedure and *E. Coli* criteria)

There are two primary purposes of this proposed rule. The first is to revise the rule referenced document “Supporting Document for Iowa Water Quality Management Plans.” This document was last updated in 2009. It establishes the technical methodologies the DNR uses to develop wastewater permit limits based on water quality criteria. The proposed revision will provide more flexibility for facilities seeking to use alternative permitting options. For example, the revision will allow the use of monthly stream low flows in addition to annual stream low flows, alternative methodologies for deriving site-specific permit limits, and fewer sampling requirements for site-specific data collection. These changes will result in cost savings for permitted facilities. The proposed revision will also clarify and update the procedures the DNR uses to calculate permit limits based on water quality criteria and will ensure those procedures make use of the most recent scientific data. The proposed revision also changes the title of the document to more clearly reflect its contents. The revised document will be titled “Iowa Wasteload Allocation (WLA) Procedure.” The current and revised versions of the document are available on the DNR’s website at www.iowadnr.gov/Environmental-Protection/Water-Quality/Wasteload-Allocations.

The second purpose of this proposed rule is to update the water quality criteria for *E. coli* by eliminating the existing single sample maximum value. The DNR has determined that the single sample maximum value is overly stringent and is not an appropriate tool for water quality assessment and permitting purposes. The geometric mean *E. Coli* value will be retained as it is the more appropriate measure and is protective of recreational activity in Iowa’s waters. This change will result in fewer water bodies being listed as impaired by the overly stringent single sample maximum *E. coli* value.

Jon Tack, Chief
Water Quality Bureau
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ENVIRONMENTAL PROTECTION COMMISSION[567]

Notice of Intended Action

Pursuant to the authority of Iowa Code sections 455B.105(11) “a” and 455B.173(2) and (3), the Environmental Protection Commission (Commission) hereby gives Notice of Intended Action to amend 567 Iowa Administrative Code chapter 61, “Water Quality Standards,” and chapter 62 “Effluent and Pretreatment Standards: Other Effluent Limitations or Prohibitions”.

The purpose of the proposed amendments is to:

1. Revise the bacteria water quality criteria table at 567 IAC 61.3(3) “a”(2). The revision will eliminate the single sample maximum values of 235 organisms per 100 milliliters of water for Recreational Use Classes A1 and A3 and 2,880 organisms per 100 milliliters of water for Recreational Use Class A2. The Commission has determined that the single sample maximum value is overly stringent and is not an appropriate tool for water quality assessment and permitting purposes. The geometric mean *E. coli* criterion is a more appropriate measure and will be retained.

2. Update the rule referenced document “Supporting Document for Iowa Water Quality Management Plans, Chapter IV, July 1976, as revised on November 11, 2009.” The revision of this document will include a title change to “Iowa Wasteload Allocation (WLA) Procedure” to more clearly reflect the contents of the document. A wasteload allocation (WLA) is the portion of a water body’s assimilative capacity that is allocated to an existing or future point source discharge. This document establishes the technical methodologies the Department of Natural Resources (Department) uses to develop WLAs and water quality-based effluent limits for point source dischargers. The revision will make the document more understandable and better

describe the procedures used in WLA calculations. The update will also provide greater flexibility to facilities seeking alternative permitting options.

The major elements of the Iowa WLA Procedure document revision are as follows:

- a. Update the Stream Low Flow Values for United States Geological Survey (USGS) gaged sites and ungaged sites based on the USGS low flow study report “Methods for Estimating Selected Low-Flow Frequency Statistics and Harmonic Mean Flows for Streams in Iowa,” by David A. Eash and Kimberlee K. Barnes, published in 2012 and revised in 2013. This change will incorporate the most up-to-date stream critical low flows published by USGS to better reflect actual stream low flows;
- b. Incorporate statewide default background chemical concentrations using the most up-to-date monitoring data available;
- c. Incorporate statewide default effluent chemical concentrations for different types of wastewater treatment plants using the most up-to-date effluent monitoring data available;
- d. Replace the total residual chlorine default decay value in the mixing zone with site-specific decay measurements;
- e. Incorporate the current implementation procedures for the chloride and sulfate criteria that were adopted in 2009;
- f. Revise the *E. coli* WLA procedures for both continuous and non-continuous discharges to reflect the *E. coli* criteria changes at 567 IAC 61.3(3) “a”(2), as described above;
- g. Revise the *E. coli* decay rate coefficient to be consistent with other Department programs;

h. Revise the temperature criteria implementation procedure to incorporate all elements of the temperature criteria in 567 IAC chapter 61 for different designated uses. The proposed revision to the temperature implementation procedure provides flexibility for facilities seeking alternative permitting options;

i. Modify the WLA procedure for pH so that pH criteria must be met at the boundary of the mixing zone instead of the boundary of the zone of initial dilution. This will result in increased dilution for pH WLA calculations;

j. Clarify that the fathead minnow is to be used as the most sensitive representative species for establishing acute toxicity effluent limits for general use waterbodies;

k. Clarify the current mixing zone procedures and the requirements for mixing zone and diffuser studies;

l. Incorporate a Site-Specific Data Collection Procedure in order to standardize the site-specific data collection process. The proposed revision will have fewer sampling requirements and will result in cost savings for point source discharge facilities seeking site-specific permit limits;

m. Revise the Water Quality Modeling section to replace previous models with commonly used and modernized QUALIK and Modified Streeter-Phelps models. It will also update decay rates and reaeration rates to reflect the latest scientific data;

n. Add a reference to the antidegradation implementation procedure document;

o. Add a new section on Alternative Site-Specific Methodology for Water Quality Based Limits that provides point source discharge facilities with the flexibility to develop site specific NPDES permit limits.

Other minor revisions to the document include improvements in the estimation of ammonia nitrogen decay calculations in discharge pipes and general use segments, clarification of the procedure for determining discharge flows used in WLAs, and clarification of various sections to make the document more understandable. The proposed “Iowa Wasteload Allocation (WLA) Procedure” document is available at www.iowadnr.gov/Environmental-Protection/Water-Quality/Wasteload-Allocations.

The proposed amendments also update references to the Department’s website.

Any person may submit written suggestions or comments on the proposed amendments through September 8, 2017. Such written material should be submitted to Connie Dou, Water Quality Monitoring and Assessment Section, Iowa Department of Natural Resources, 502 East 9th Street, Des Moines, Iowa 50319-0034, fax (515)725-8202; or e-mailed to Connie.Dou@dnr.iowa.gov. Persons who have questions may contact Connie Dou by e-mail or by telephone at (515)725-8400.

Persons are invited to present oral or written comments at a series of public hearings, which will be held throughout the state as follows:

Date	Time	Location
September 5, 2017	4:00 pm	State Bank Room Washington Public Library 115 West Washington St. Washington, IA

September 6, 2017	4:00 pm	Meeting Room B Urbandale Public Library 3520 86 th St. Urbandale, IA
September 7, 2017	4:00 pm	Harlan Community Library 718 Court St. Harlan, IA

Persons attending a hearing will be asked to give their names and addresses for the record and to confine their remarks to the content of the proposed amendments.

Any person who intends to attend a public hearing and has special requirements, such as those related to mobility or hearing impairments, should contact the Department to advise of any specific needs.

After analysis and review of this rule making, these amendments are expected to have a positive impact on jobs. The amendments are projected to result in a total cost savings for cities, industries, and semi-public entities ranging between \$26 million and \$58 million. This total savings is expected to be achieved by approximately 94 facilities across the state. These cost savings will likely lead to further investment in production and job growth.

The proposed amendments are intended to implement Iowa Code sections 455B.105(11) “a” and 455B.173(2) and (3).

The following amendments are proposed.

ITEM 1. Amend paragraph 61.2(4) “a” as follows:

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,~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date], 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.

ITEM 2. Amend paragraph 61.2(4) “b” introductory paragraph, as follows:

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,~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date], or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

ITEM 3. Amend subparagraph **61.2(4) “d”(4)**, as follows:

(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~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date].

ITEM 4. Amend paragraph **61.2(4) “e”** introductory paragraph, as follows:

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,~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date], or from instream studies of the mixing characteristics during low flow. In addition, the most restrictive of the following factors will be met:

ITEM 5. Amend paragraph **61.2(4) “f”** as follows:

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~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date].

(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~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date].

(3) The statewide average median background values as determined by the department ~~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~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date].

ITEM 6. Amend subparagraph **61.2(4) “g”(4)**, as follows:

(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~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date].

ITEM 7. Amend paragraph **61.3(2) “g”** as follows:

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~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date].

ITEM 8. Amend paragraph **61.3(2) “h”** as follows:

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.

ITEM 9. Amend subparagraph **61.3(3) “a”(1)** as follows:

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.

ITEM 10. Amend subrule **61.3(5)** as follows:

61.3(5) Surface water classification. The department hereby incorporates by reference “Surface Water Classification,” effective June 17, 2015. This document may be obtained on the department’s Web site at [http://www.iowadnr.gov/InsideDNR/RegulatoryWater/Water Quality Standards/Rules.aspx](http://www.iowadnr.gov/InsideDNR/RegulatoryWater/WaterQualityStandards/Rules.aspx) <http://www.iowadnr.gov>.

ITEM 11. Amend subrule **61.3(6)** as follows:

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> <http://www.iowadnr.gov>.

ITEM 12. Amend subrule **61.3(7)** as follows:

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 department’s Web site

at <http://www.iowadnr.com/water/standards/index.html> <http://www.iowadnr.gov>.

ITEM 13. Adopt the following new subrule **61.3(9)** as follows:

61.3(9) *Iowa Wasteload Allocation (WLA) Procedure.* The department hereby incorporates by reference “Iowa Wasteload Allocation (WLA) Procedure,” [effective date]. This document may be obtained on the department’s Web site at <http://www.iowadnr.gov>.

ITEM 14. Amend subrule **62.8(2)** as follows:

62.8(2) Effluent limitations necessary to meet water quality standards. No effluent, alone or in combination with the effluent of other sources, shall cause a violation of any applicable water quality standard. When it is found that a discharge that would comply with applicable effluent standards in 567—62.3(455B), 567—62.4(455B) or 567—62.5(455B) or effluent limitations in 567—62.6(455B) would cause a violation of water quality standards, the discharge will be required to meet the water quality-based effluent limits (WQBELs) necessary to achieve the applicable water quality standards as established in 567—Chapter 61. Any such effluent limit shall be derived from the calculated waste load allocation, as described in “~~Supporting Document for Iowa Water Quality Management Plans,~~” Chapter IV, July 1976, as revised on November 11,

~~2009~~“Iowa Wasteload Allocation (WLA) Procedure,” [effective date] or the waste load allocation as required by a total maximum daily load, whichever is more stringent. The translation of waste load allocations to WQBELs shall use Iowa permit derivation methods, as described in the “~~Supporting Document for Iowa Water Quality Management Plans,~~” Chapter IV, July 1976, ~~as revised on November 11, 2009,~~ “Iowa Wasteload Allocation (WLA) Procedure,” [effective date]. ~~except that the daily sample maximum criteria for *E. coli* set forth in Part E of the “Supporting Document for Iowa Water Quality Management Plans” shall not be used as an end-of-pipe permit limitation.~~

Date

Chuck Gipp, Director