

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW  
OF THE STATE OF MONTANA

In the matter of the amendment of ARM )  
17.30.201, 17.30.507, 17.30.516, )  
17.30.602, 17.30.619, 17.30.622, )  
17.30.623, 17.30.624, 17.30.625, )  
17.30.626, 17.30.627, 17.30.628, )  
17.30.629, 17.30.635, 17.30.702, and )  
17.30.715 pertaining to permit )  
application, degradation authorization, )  
and annual permit fees, specific )  
restrictions for surface water mixing )  
zones, standard mixing zones for )  
surface water, definitions, incorporations )  
by reference, A-1 classification )  
standards, B-1 classification standards, )  
B-2 classification standards, B-3 )  
classification standards, C-1 )  
classification standards, C-2 )  
classification standards, I classification )  
standards, C-3 classification standards, )  
general treatment standards, definitions, )  
and criteria for determining )  
nonsignificant changes in water quality )

NOTICE OF PUBLIC HEARING ON  
PROPOSED AMENDMENT

(WATER QUALITY)

TO: All Concerned Persons

1. On March 24, 2014, at 2:00 p.m., the Board of Environmental Review will hold a public hearing in Room 111, Metcalf Building, 1520 East Sixth Avenue, Helena, Montana, to consider the proposed amendment of the above-stated rules. At 9:00 a.m., immediately preceding the hearing for MAR Notice No. 17-355 (which is scheduled for 10:00 a.m.), at the same location, the Department of Environmental Quality will hold an informal question and answer session regarding this rulemaking and MAR Notice No. 17-355, which is the Department's proposed adoption of numeric nutrient standards variances rules.

2. The board will make reasonable accommodations for persons with disabilities who wish to participate in this public hearing or need an alternative accessible format of this notice. If you require an accommodation, contact Elois Johnson, Paralegal, no later than 5:00 p.m., March 10, 2014, to advise us of the nature of the accommodation that you need. Please contact Elois Johnson at Department of Environmental Quality, P.O. Box 200901, Helena, Montana 59620-0901; phone (406) 444-2630; fax (406) 444-4386; or e-mail [ejohnson@mt.gov](mailto:ejohnson@mt.gov).

3. The board is proposing to adopt new Department Circular DEQ-12A (DEQ-12A), which contains base numeric nutrient standards for total nitrogen and

total phosphorus, and to incorporate new DEQ-12A into the surface water quality classifications and the nondegradation rules. The board is also proposing rule amendments pertaining to definitions and a low flow for base numeric nutrient standards appropriate for the design of disposal systems.

The department has documented that various forms of nitrogen and phosphorus rank as the 4th, 8th, 10th, and 12th most common types of pollution in Montana's flowing waters. In fact, excess nitrogen and phosphorus levels account for 17 percent of all stream miles impaired by all forms of water pollution in Montana. The intent of the proposed nutrient standards is to control the undesirable effects of eutrophication. Eutrophication is the enrichment of a waterbody (e.g., a stream or lake) by nitrogen and phosphorus, which leads to increased plant and algae growth and decay and all the consequential changes to the water quality that occur as a result. At present Montana does not have numeric water quality standards for controlling eutrophication, except on the Clark Fork River. Therefore, in most cases, permit limits, including waste load allocations determined in Total Maximum Daily Loads (i.e., TMDLs) are based upon the narrative water quality standard. The narrative standard prohibits substances in water that "create conditions which produce undesirable aquatic life" (ARM 17.30.637(1)(e)). Translating the narrative standard into enforceable permit limits on a case-by-case basis is time-consuming, dependent upon judgment which invites controversy, and may result in inconsistent or differing permit limits due to various interpretations among permit or TMDL writers. Numeric nutrient criteria will resolve this.

The effects of excess nitrogen and phosphorus in streams and rivers go well beyond the undesirable aquatic life referred to in the narrative standard. Excess nitrogen and phosphorus affect other water quality parameters for which Montana already has standards (dissolved oxygen, pH). The state of the science is such that linkages can clearly be made between nitrogen and phosphorus concentrations and these other, already-adopted standards. Thus, the numeric nutrient criteria will also ensure protection and attainment of Montana's dissolved oxygen and pH standards which are, in and of themselves, critical to the protection of fish and aquatic life.

State law requires that waterbodies support multiple beneficial uses (e.g., agriculture, fish and associated aquatic life, recreation). In turn, a water quality criterion for a given pollutant is established at a concentration that protects the most sensitive of the beneficial uses from the impacts caused by the pollutant. Numeric criteria for nitrogen and phosphorus concentrations are contained in DEQ-12A and vary geographically across the state. For streams and small rivers of western Montana, the numeric nutrient criteria have generally been established at concentrations that will prevent nuisance levels of bottom-attached algae and ensure that dissolved oxygen levels are maintained at standards already established by the state. The nuisance threshold for attached algae was determined via scientific polling of Montana citizens and river and stream users, and is, therefore, associated with the recreation use. Dissolved oxygen standards, in contrast, are associated with the fish and aquatic life beneficial use. In western Montana, the fish and aquatic life use and the recreation use have broadly similar sensitivities to nitrogen and phosphorus pollution.

In eastern Montana, the criteria are established at levels that will protect the indigenous fish populations and will generally ensure that dissolved oxygen levels do

not decline below state standards. The attached algae threshold was not used to derive nutrient criteria for eastern Montana streams and small rivers because (a) the department's scientific poll did not address the types of streams typical of eastern Montana, and (b) attached algae levels higher than the nuisance threshold have been periodically observed in reference streams of the region. Nitrogen and phosphorus criteria concentrations are substantially higher in eastern Montana and this is due, in part, to the higher natural turbidity of those streams. Nutrient criteria for large rivers are mostly still under development. However, they have been completed for a large river segment (the lower Yellowstone), which is included in DEQ-12A. In the lower Yellowstone River, the nutrient criteria are set at concentrations that will prevent nuisance bottom-attached algae and extreme variations in pH (the latter of which impacts fish). The scientific bases for the criteria are laid out in more detail in the following documents: Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers (2008) and Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers: Update 1 (2013). These documents may be viewed on the department's web site at <http://www.deq.mt.gov/wqinfo/standards/NumericNutrientCriteria.mcp>x. They may also be obtained from the department at the address or phone number listed in paragraph 5 of this notice.

The nutrient criteria concentrations being proposed for adoption as standards are generally low, particularly in the western region of Montana. In many cases, the concentrations are below the limits of current wastewater treatment technology, particularly for nitrogen. Therefore, when little or no stream dilution is available, dischargers will find it difficult or impossible to meet the standards. Senate Bill 95 (2009 Legislature) and Senate Bill 367 (2011 Legislature), now codified at 75-5-313, MCA, addressed the high cost and technological difficulties associated with meeting the nutrient standards in the short term. Section 75-5-313, MCA, allows dischargers to be granted variances from numeric nutrient standards, once the criteria have been adopted as standards, in those cases where meeting the standards today would be an unreasonable economic burden or technologically infeasible. Variances from the standards may be granted for up to twenty years. Thus, 75-5-313, MCA, allows for the nutrient standards to be met in a staged manner, over time, as alternative effluent management methods are considered, nutrient removal technologies become more cost-effective and efficient, and nonpoint sources of nutrients are addressed. Rules implementing 75-5-313, MCA, are within the rulemaking authority of the Department of Environmental Quality, not the Board of Environmental Review. Concurrent with the board's rulemaking process initiated by this notice, the department has proposed rulemaking to implement the variance process. See MAR Notice No. 17-355. The department will hold a separate hearing on those rules. Comments regarding the variance process must be submitted to the department as indicated in MAR Notice No. 17-355.

4. The rules proposed to be amended provide as follows, stricken matter interlined, new matter underlined:

17.30.201 PERMIT APPLICATION, DEGRADATION AUTHORIZATION,

AND ANNUAL PERMIT FEES (1) through (5) remain the same.

(6) The fee schedules for new or renewal applications for, or modifications of, a Montana pollutant discharge elimination system permit under ARM Title 17, chapter 30, subchapter 11 or 13, a Montana ground water pollution control system permit under ARM Title 17, chapter 30, subchapter 10, or any other authorization under 75-5-201, 75-5-301, or 75-5-401, MCA, or rules promulgated under these authorities, are set forth below as Schedules I.A, I.B, I.C, and I.D. Fees must be paid in full at the time of submission of the application. For new applications under Schedule I.A, the annual fee from Schedule III.A for the first year must also be paid at the time of application. For new applications under Schedule I.B and I.C, the annual fee is included in the new permit amount and covers the annual fee for the calendar year in which the permit coverage becomes effective.

(a) through (e) remain the same.

(f) Applications for new permits or permit renewals for sources that constitute a new or increased source, as defined in ARM 17.30.702~~(18)~~ (17), must pay a significance determination fee for each outfall in addition to the application fee.

(g) through (11)(b) remain the same.

AUTH: 75-5-516, MCA

IMP: 75-5-516, MCA

REASON: The amendment to ARM 17.30.201(6)(f) modifies a cross-reference to ARM 17.30.702 because the numbering in that rule is proposed to be changed in this notice.

17.30.507 SPECIFIC RESTRICTIONS FOR SURFACE WATER MIXING ZONES (1) Mixing zones for surface waters are ~~to comply with~~ subject to the following water quality standards:

(a) narrative water quality standards, standards for harmful substances, numeric acute and chronic standards for aquatic life; standards in Department Circular DEQ-12A; and standards based on human health must not be exceeded beyond the boundaries of the surface water mixing zone;

(b) through (3) remain the same.

AUTH: 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

REASON: The amendment to this rule is necessary to ensure that mixing zones are available for nutrient standards and to ensure that the nutrient standards must be met beyond the mixing zone. A mixing zone is a nationally recognized and useful tool to implement standards in permits, and there is no reason that this tool should not be available for nutrient standards.

17.30.516 STANDARD MIXING ZONES FOR SURFACE WATER (1) and (2) remain the same.

(3) Facilities that meet the terms and conditions in (a) through ~~(d)~~ (e) qualify for a standard mixing zone as follows:

(a) through (d) remain the same.

(e) Facilities that discharge the parameters found in Department Circular DEQ-12A to surface water. Discharge limitations must be based on dilution with the entire seasonal 14-day, five-year (seasonal 14Q5) low flow of the receiving water without the discharge.

(4) The length of a standard mixing zone for flowing surface water, other than a nearly instantaneous mixing zone, must not extend downstream more than the one-half mixing width distance or extend downstream more than ~~40~~ ten times the stream width, whichever is more restrictive. For purposes of making this determination, the stream width as well as the discharge limitations are considered at the 7Q10 or seasonal 14Q5 low flow. The seasonal 14Q5 low flow may be used only in conjunction with base numeric nutrient standards in Department Circular DEQ-12A. The recommended calculation to be used to determine the one-half mixing width distance downstream from a stream bank discharge is described below.

(a)  $A_{1/2} = [0.4(W/2)^2V]/L$ , where:

(i) remains the same.

(ii)  $W$  = width in feet at the 7Q10 or seasonal 14Q5;

(iii)  $V$  = velocity of the stream at the 7Q10 or seasonal 14Q5 downstream of the discharge (in ft/second);

(iv)  $L$  = lateral dispersion coefficient for the 7Q10 or seasonal 14Q5 downstream of the discharge (in ft<sup>2</sup>/second), where:

(b)  $L = CDU$ , where:

(i) through (i)(E) remain the same.

(ii)  $D$  = average water depth at the 7Q10 or seasonal 14Q5 downstream of the discharge (in feet);

(iii) remains the same.

(c)  $U = (32.2DS)^{1/2}$ , where:

(i) remains the same.

(ii)  $D$  = average water depth at the 7Q10 or seasonal 14Q5 downstream of the discharge (in feet); and

(iii) through (6) remain the same.

AUTH: 75-5-301, MCA

IMP: 75-5-301, MCA

REASON: The manner in which nutrients affect and impact beneficial uses in streams and rivers is different from toxic and harmful compounds found in Department Circular DEQ-7 (DEQ-7), and it is necessary to develop an appropriate low flow design flow (the seasonal 14Q5) specifically for permitting nutrient discharges. Derivation of the seasonal 14Q5 is discussed in the proposed changes to ARM 17.30.635. Here, the rule amendments incorporate the seasonal 14Q5 flow into the calculations used to determine the length of a standard mixing zone. ARM 17.30.516 is proposed to be amended to provide that the full volume of a seasonal 14Q5, as opposed to some fraction of it, is to be used for dilution calculations for nutrients in DEQ-12A. This allowance reflects the non-toxic nature of nutrients at the concentrations found in DEQ-12A.

17.30.602 DEFINITIONS In this subchapter the following terms have the meanings indicated below and are supplemental to the definitions given in 75-5-103, MCA:

(1) through (32) remain the same.

(33) "Total nitrogen" means the ~~total nitrogen concentration (as N) of unfiltered water. This may be determined by direct methods, or derived as the sum of the soluble (as N) and non-soluble (as N) nitrogen fractions. The filter used to separate the soluble and non-soluble fractions must be 0.45 µm~~ sum of all nitrate, nitrite, ammonia, and organic nitrogen, as N, in an unfiltered water sample. Total nitrogen in a sample may also be determined by the persulfate digestion or as the sum of total kjeldahl nitrogen plus nitrate plus nitrite.

(34) "Total phosphorus" means the ~~total phosphorus concentration (as P) of unfiltered water~~ sum of orthophosphates, polyphosphates, and organically bound phosphates, as P, in an unfiltered water sample. Total phosphorus may also be determined directly by persulfate digestion.

(35) through (38) remain the same.

(39) "DEQ-7" means the department circular that is adopted and incorporated by reference in ARM 17.30.619 and is entitled "Montana Numeric Water Quality Standards." This circular establishes water quality standards for toxic, carcinogenic, ~~bioconcentration~~ bioconcentrating, ~~nutrient~~, radioactive, and harmful parameters, and also establishes human health-based water quality standards for the following specific nutrients with toxic effects:

(a) nitrate;

(b) nitrate + nitrite; and

(c) nitrite.

(40) "DEQ-12A" means the department circular that is adopted and incorporated by reference in ARM 17.30.619 and is entitled "Montana Base Numeric Nutrient Standards." This circular contains numeric water quality standards for total nitrogen and total phosphorus in surface waters.

(41) "DEQ-12B" means the department circular that is adopted and that is entitled "Montana Base Numeric Nutrient Standards Variances." This circular describes procedures for receiving a variance from the standards and will document recipients of individual variances.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

REASON: The proposed amendments to ARM 17.30.602 provide modification of existing definitions and a new definition in order to implement the nutrient standards. The modified definition of "total nitrogen," at (33), provides a more technically accurate description compared to the old definition. The same is true for "total phosphorus," at (34). In the definition for "DEQ-7," at (39), "nutrient" has been removed because base numeric nutrient standards will now be housed in a new department circular, DEQ-12A. Some nitrogen compounds (nitrate, nitrate + nitrite, and nitrite) have toxic effects at relatively high concentrations and standards for them already exist and are intended to protect human health. By definition at 75-

5-103(2)(b), MCA, these compounds are not considered part of the base numeric nutrients standards. Therefore, they will remain in DEQ-7 and are now listed under the DEQ-7 definition for better clarity. The new definition at (40), "DEQ-12A," defines the new department circular where base numeric nutrient standards are found. In addition to the criteria concentrations, the circular includes instructions on how to develop permits for base numeric nutrient standards. In MAR Notice No. 17-355, the department is proposing to adopt new Department Circular DEQ-12B. It contains the procedures for receiving a variance from the standards and will document recipients of individual variances. The board anticipates that DEQ-12B will be adopted before or at the same time DEQ-12A is adopted.

17.30.619 INCORPORATIONS BY REFERENCE (1) The board adopts and incorporates by reference the following state and federal requirements and procedures as part of Montana's surface water quality standards:

(a) Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (October 2012 edition), which establishes water quality standards for toxic, carcinogenic, bioconcentrating, ~~nutrient~~, radioactive, and harmful parameters and also establishes human health-based water quality standards for the following specific nutrients with toxic effects:

(i) nitrate;

(ii) nitrate + nitrite; and

(iii) nitrite;

(b) remains the same.

(c) 40 CFR Part 136 (July 1, 2011), which establishes guidelines and procedures for the analysis of pollutants; ~~and~~

(d) 40 CFR 131.10(g), (h) and (j) (2000), which establishes criteria and guidelines for conducting a use attainability analysis; and

(e) Department Circular DEQ-12A, entitled "Montana Base Numeric Nutrient Standards" (December 2013 edition), which establishes numeric water quality standards for total nitrogen and total phosphorus in surface waters.

(2) If a court of competent jurisdiction declares 75-5-313, MCA, or any portion of that statute invalid, or if the United States Environmental Protection Agency disapproves 75-5-313, MCA, or any portion of that statute, under 30 CFR 131.21, or if rules adopted pursuant to 75-5-313(6) or (7), MCA, expire and general variances are not available, then (1)(e) and all references to DEQ-12A, base numeric nutrient standards and nutrient standards variances in ARM 17.30.201, 17.30.507, 17.30.516, 17.30.602, 17.30.622 through 17.30.629, 17.30.635, 17.30.702, and 17.30.715 are void, and the narrative water quality standards contained in ARM 17.30.637 are the standards for total nitrogen and total phosphorus in surface water, except for the Clark Fork River, for which the standards are the numeric standards in ARM 17.30.631.

(2) remains the same, but is renumbered (3).

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

REASON: The amendments to the definitions for DEQ-7, in (1)(a),

correspond to those already discussed above for definitions (ARM 17.30.602). Proposed new (2) is a non-severability clause. Essentially, if the statute that defines the nutrient standards variance process is rendered invalid, or if general variance rules expire and general variances are not available, then the base numeric nutrient standards would no longer be contained in the rules. The Legislature intended that variances be available to permittees once base numeric nutrient standards were adopted and both pieces (base numeric standards and variances) must remain together as a package.

17.30.622 A-1 CLASSIFICATION STANDARDS (1) and (2) remain the same.

(3) No person may violate the following specific water quality standards for waters classified A-1:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient or harmful parameters may not exceed the applicable standards set forth in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards contained in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

17.30.623 B-1 CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified B-1:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient, or harmful parameters may not exceed the applicable standards set forth in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards specified in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA



17.30.624 B-2 CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified B-2:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient, or harmful parameters may not exceed the applicable standards set forth in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards specified in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

17.30.625 B-3 CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified B-3:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient, or harmful parameters may not exceed the applicable standards set forth in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards specified in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

17.30.626 C-1 CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified C-1:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient, or harmful parameters may not exceed the applicable standards specified in dDepartment Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards specified in ~~Department Circular DEQ-7~~ and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

17.30.627 C-2 CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified C-2:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient, or harmful parameters may not exceed the applicable standards specified in ~~Department Circular ~~WQB~~ DEQ-7~~ and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards specified in ~~Department Circular DEQ-7~~ and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, 75-5-313, MCA

REASON: The proposed amendments to ARM 17.30.622 through 17.30.627 are necessary to incorporate DEQ-12A standards and nutrient standards variance limits into the surface water classes.

17.30.628 I CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified I:

(a) through (i) remain the same.

(j) Beneficial uses are considered supported when the concentrations of toxic, carcinogenic, nutrient, or harmful parameters in these waters do not exceed the applicable standards specified in ~~Department Circular DEQ-7~~ and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the flows specified in ARM 17.30.635(4) (2) or, alternatively, for aquatic life when site-specific criteria are adopted using the procedures given in 75-5-310, MCA. The limits shall be used as water quality standards for the affected waters and as the basis for permit limits instead of the applicable standards in ~~Department Circular DEQ-7~~.

(k) Limits for toxic, carcinogenic, or harmful parameters in new discharge permits issued pursuant to the MPDES rules (ARM Title 17, chapter 30, subchapter 13) are the larger of either the applicable standards specified in Department Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A, site-specific standards, or one-half of the mean in-stream concentrations immediately upstream of the discharge point.

AUTH: 75-5-201, 75-5-301, MCA  
IMP: 75-5-301, 75-5-313, MCA

REASON: The proposed amendment to ARM 17.30.628 is necessary to incorporate DEQ-12A and the nutrient standards variance limits into the I surface water class. I Class waterbodies are those which had severe human-caused pollution problems at the time the surface water class system was adopted in the 1970s, and it is the board's intent that these waterbodies will eventually support beneficial uses typical for ecologically similar, unimpacted waterbodies.

17.30.629 C-3 CLASSIFICATION STANDARDS (1) remains the same.

(2) No person may violate the following specific water quality standards for waters classified C-3:

(a) through (g) remain the same.

(h) Concentrations of carcinogenic, bioconcentrating, toxic, radioactive, nutrient, or harmful parameters may not exceed the applicable standards set forth in Department Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A.

(i) Dischargers issued permits under ARM Title 17, chapter 30, subchapter 13, shall conform with ARM Title 17, chapter 30, subchapter 7, the nondegradation rules, and may not cause receiving water concentrations to exceed the applicable standards specified in Department Circular DEQ-7 and, unless a nutrient standards variance has been granted, Department Circular DEQ-12A when stream flows equal or exceed the design flows specified in ARM 17.30.635(4) (2).

(j) and (k) remain the same.

AUTH: 75-5-201, 75-5-301, MCA  
IMP: 75-5-301, 75-5-313, MCA

REASON: The proposed amendments to ARM 17.30.629 are necessary to incorporate DEQ-12A standards and nutrient variance limits into the C-3 surface water class.

17.30.635 GENERAL TREATMENT STANDARDS (1) through (1)(e) remain the same.

(2) For design of disposal systems, stream flow dilution requirements must be based on the minimum consecutive seven-day average flow which may be expected to occur on the average of once in ten years. When dilution flows are less than the above design flow at a point discharge, the discharge is to be governed by the permit conditions developed for the discharge through the waste discharge

permit program. If the flow records on an affected surface water are insufficient to calculate a ten-year seven-day low flow, the department shall determine an acceptable stream flow for disposal system design. ~~The department shall determine the acceptable stream flow for disposal system design for controlling nitrogen and phosphorus concentrations.~~ For total nitrogen and total phosphorus, the stream flow dilution requirements must be based on the seasonal 14Q5, which is the lowest average 14 consecutive day low flow, occurring from July through October, with an average recurrence frequency of once in five years.

(3) remains the same.

AUTH: 75-5-201, 75-5-301, MCA

IMP: 75-5-301, MCA

REASON: The proposed amendments to ARM 17.30.635 will provide a low flow for the design of disposal systems specific to eutrophication-based nutrient standards. Work by the department and others shows that nuisance benthic algae can develop in about 15-20 days once nutrient concentrations exceed the proposed standards. In many streams, these algae levels can ultimately lead to dissolved oxygen impacts. The use of the seasonal 14Q5 flow for the design of disposal systems is appropriate because this flow should not allow excess algae levels to develop more often than about once in five summers, on average. This frequency of exceedence is within the acceptable recommendations of the U.S. Environmental Protection Agency for the protection of aquatic life. Unlike the 7Q10 flow, which will continue to be used for parameters in DEQ-7 and which was derived from year-round flow data, the seasonal 14Q5 flow is derived from July through October data and is, therefore, in alignment with the proposed nutrient standards' periods of application. The seasonal 14Q5 is routinely calculated and reported by the U.S. Geological Survey.

17.30.702 DEFINITIONS The following definitions, in addition to those in 75-5-103, MCA, apply throughout this subchapter (Note: 75-5-103, MCA, includes definitions for "base numeric nutrient standards," "degradation," "existing uses," "high quality waters," "mixing zone," and "parameter"):

(1) through (16) remain the same.

~~(17) "Nutrients" means total inorganic phosphorus and total inorganic nitrogen.~~

(18) through (21) remain the same, but are renumbered (17) through (20).

~~(22)~~ (21) "Reporting values (RRV)" means the detection level that must be achieved in reporting surface water or ground water monitoring or compliance data to the department unless otherwise specified in a permit, approval, or authorization issued by the department. The RRV is the ~~department's~~ board's best determination of a level of analysis that can be achieved by the majority of commercial, university, or governmental laboratories using EPA approved methods or methods approved by the department. The RRV is listed in Department Circular DEQ-7, Department Circular DEQ-12A, and in the definition of "total inorganic phosphorus."

(23) remains the same, but is renumbered (22).

(23) "Total nitrogen" means the sum of all nitrate, nitrite, ammonia, and

organic nitrogen, as N, in an unfiltered water sample. Total nitrogen in a sample may also be determined by persulfate digestion, or as the sum of total kjeldahl nitrogen plus nitrate plus nitrite.

(24) "Total phosphorus" means the sum of orthophosphates, polyphosphates, and organically bound phosphates, as P, in an unfiltered water sample. Total phosphorus may also be determined directly by persulfate digestion.

(24) and (25) remain as proposed, but are renumbered (25) and (26).

~~(26)~~ (27) The board adopts and incorporates by reference:

(a) Department Circular DEQ-7, entitled "Montana Numeric Water Quality Standards" (October 2012 edition), which establishes water quality standards for toxic, carcinogenic, bioconcentrating, ~~nutrient~~, radioactive, and harmful parameters and also establishes human health-based water quality standards for the following specific nutrients with toxic effects:

(i) nitrate;

(ii) nitrate + nitrite; and

(iii) nitrite;

(b) Department Circular DEQ-12A, entitled "Montana Base Numeric Nutrient Standards" (December 2013 edition), which establishes numeric water quality standards for total nitrogen and total phosphorus in surface waters;

(b) through (d) remain the same, but are renumbered (c) through (e).

AUTH: 75-5-301, 75-5-303, MCA

IMP: 75-5-303, MCA

**REASON:** The proposed amendments to ARM 17.30.702 will modify current definitions in the nondegradation rules and will add new definitions necessary for the implementation of base numeric nutrient standards. "Base numeric nutrients standards" have been added to the list of definitions from 75-5-103, MCA, that are incorporated by reference. The current definition of "nutrients," at (17), is being repealed, because it is not consistent with the use of the term in DEQ-12A, which contains standards for total nutrients. Further, the definition of "nutrients" added no clear value to the nondegradation rules, because, where needed, specific nutrient compounds or forms (e.g., TKN, nitrate as N) are named or referenced in the nondegradation rules. The proposed definitions of "total nitrogen," at (24), and "total phosphorus," at (25), correspond to those discussed above for amendments to ARM 17.30.602. The definition of "DEQ-7," in (28)(b), has been amended for the same reasons described above for ARM 17.30.602.

**17.30.715 CRITERIA FOR DETERMINING NONSIGNIFICANT CHANGES IN WATER QUALITY** (1) The following criteria will be used to determine whether certain activities or classes of activities will result in nonsignificant changes in existing water quality due to their low potential to affect human health or the environment. These criteria consider the quantity and strength of the pollutant, the length of time the changes will occur, and the character of the pollutant. Except as provided in (2), changes in existing surface or ground water quality resulting from the activities that meet all the criteria listed below are nonsignificant, and are not required to undergo review under 75-5-303, MCA:

(a) and (b) remain the same.

(c) discharges containing toxic parameters, inorganic nitrogen, or inorganic phosphorus ~~or nutrients~~, except as specified in (1)(d) and (e), which will not cause changes that equal or exceed the trigger values in ~~Department Circular DEQ-7~~. Whenever the change exceeds the trigger value, the change is not significant if the resulting concentration outside of a mixing zone designated by the department does not exceed 15% of the lowest applicable standard;

(d) through (e) remain the same.

(f) changes in the quality of water for any harmful parameter, including parameters listed in Department Circular DEQ-12A, for which water quality standards have been adopted other than ~~nitrogen, phosphorous, and carcinogenic~~, bioconcentrating, or toxic parameters, in either surface or ground water, if the changes outside of a mixing zone designated by the department are less than 10% of the applicable standard and the existing water quality level is less than 40% of the standard;

(g) through (3) remain the same.

(4) If a court of competent jurisdiction declares 75-5-313, MCA, or any portion of that statute invalid or if the United States Environmental Protection Agency disapproves 75-5-313, MCA, or any portion of that statute under 30 CFR 131.21, then the significance criteria contained in (1)(g) are the significance criteria for total nitrogen and total phosphorus in surface water.

AUTH: 75-5-301, 75-5-303, MCA

IMP: 75-5-303, MCA

REASON: The proposed amendments to ARM 17.30.715 will allow the department to calculate nonsignificant changes in water quality for the base numeric nutrient standards in DEQ-12A. If adopted by the board, base numeric nutrient standards will preclude the need to use the narrative standards at ARM 17.30.637(1)(e) to interpret eutrophication-based water quality impacts from nutrients. Base numeric nutrient standards are intended to control eutrophication and, at the concentrations found in DEQ-12A, the board considers base numeric nutrient standards to be harmful parameters. Therefore, DEQ-12A is incorporated into (1)(f), the section of the nondegradation rules addressing nonsignificance specific to harmful parameters. Nitrogen compounds at concentrations that are toxic, e.g., nitrate at ten mg/L, will remain in DEQ-7, as discussed earlier, and toxics-based nonsignificance criteria applicable to such compounds will continue to be applied to them. The proposed deletion of "or nutrients," in (1)(c), corresponds with the retaining of toxic-level nitrogen compounds in DEQ-7 and the relocation of eutrophication-based nitrogen and phosphorus standards to DEQ-12A. In addition, the term "or nutrients" in (1)(c) has been replaced with "or total inorganic phosphorus or total inorganic nitrogen," for the specific purpose of providing a nonsignificance threshold for nondegradation review of new dischargers, which are commonly subdivisions. This change allows the department to continue to carry out these reviews in the same manner as currently practiced, because DEQ-7 provides a trigger value for both of these inorganic compounds. ARM 17.30.715(1)(c) also provides: "Whenever the change exceeds the trigger value, the change is not

significant if the resulting concentration outside of a mixing zone designated by the department does not exceed 15% of the lowest applicable standard." When these provisions become applicable, the "lowest applicable standard" would be the narrative standard contained in ARM 17.30.637(1)(e). Significance would then be determined under ARM 17.30.715(1)(g). Proposed new (4) is a non-severability clause. If the statute that defines the nutrient standards variance process is rendered invalid, then the numeric nutrient standards in DEQ-12A are void and the narrative standard for nutrients at ARM 17.30.637(1)(e) applies. As a result, the part of the nondegradation rules at ARM 17.30.715(1)(g) that relate to the narrative standards would apply. The Legislature intended that both major pieces of the numeric nutrient standards rules (base numeric nutrient standards and nutrient standards variances) remain together as a package.

5. The proposed new circular may be viewed at and copied from the department's web site at <http://deq.mt.gov/wqinfo/Standards/default.mcp>x. Also, copies may be obtained by contacting Carrie Greeley at Department of Environmental Quality, P.O. Box 200901, Helena, MT 59620-0901; by phone at (406) 444-6749; or by e-mail at [CGreeley@mt.gov](mailto:CGreeley@mt.gov).

6. Concerned persons may submit their data, views, or arguments, either orally or in writing, at the hearing. Written data, views, or arguments may also be submitted to Elois Johnson, Paralegal, Department of Environmental Quality, 1520 E. Sixth Avenue, P.O. Box 200901, Helena, Montana 59620-0901; faxed to (406) 444-4386; or e-mailed to [ejohnson@mt.gov](mailto:ejohnson@mt.gov), no later than 5:00 p.m., April 1, 2014. To be guaranteed consideration, mailed comments must be postmarked on or before that date.

7. Katherine Orr, attorney for the board, or another attorney for the Agency Legal Services Bureau, has been designated to preside over and conduct the hearing.

8. The board maintains a list of interested persons who wish to receive notices of rulemaking actions proposed by this agency. Persons who wish to have their name added to the list shall make a written request that includes the name, e-mail, and mailing address of the person to receive notices and specifies that the person wishes to receive notices regarding: air quality; hazardous waste/waste oil; asbestos control; water/wastewater treatment plant operator certification; solid waste; junk vehicles; infectious waste; public water supply; public sewage systems regulation; hard rock (metal) mine reclamation; major facility siting; opencut mine reclamation; strip mine reclamation; subdivisions; renewable energy grants/loans; wastewater treatment or safe drinking water revolving grants and loans; water quality; CECRA; underground/above ground storage tanks; MEPA; or general procedural rules other than MEPA. Notices will be sent by e-mail unless a mailing preference is noted in the request. Such written request may be mailed or delivered to Elois Johnson, Paralegal, Department of Environmental Quality, 1520 E. Sixth Ave., P.O. Box 200901, Helena, Montana 59620-0901, faxed to the office at (406) 444-4386, e-mailed to Elois Johnson at [ejohnson@mt.gov](mailto:ejohnson@mt.gov), or may be made by

completing a request form at any rules hearing held by the board.

9. The bill sponsor contact requirements of 2-4-302, MCA, do not apply.

10. With regard to the requirements of 2-4-111, MCA, the department has determined that the amendment of the above-referenced rules will significantly and directly impact small businesses.

Reviewed by:

BOARD OF ENVIRONMENTAL REVIEW

/s/ John F. North  
JOHN F. NORTH  
Rule Reviewer

BY: /s/ Robin Shropshire  
ROBIN SHROPSHIRE  
Chairman

Certified to the Secretary of State, February 3, 2014.





# **DEPARTMENT CIRCULAR**

## **DEQ-12A**

### **Montana Base Numeric Nutrient Standards**

## GENERAL INTRODUCTION

This circular (DEQ-12A) contains information pertaining to the base numeric nutrients standards (§75-5-103(2), MCA) and their implementation. This information includes the standards' concentration limits, where the standards apply, and their period of application. DEQ-12A is adopted by the Board of Environmental Review under its rulemaking authority in §75-5-301(2), MCA.

Circular DEQ-12B contains information about variances from the base numeric nutrient standards and is a separate document available from the Department. DEQ-12B addresses effluent treatment requirements associated with general nutrient standards variances, as well as effluent treatment requirements for individual nutrient standards variances and to whom these apply. Unlike DEQ-12A, DEQ-12B is not adopted by the Board of Environmental Review; DEQ-12B is adopted by the Department following its formal rulemaking process, pursuant to §75-5-313, MCA.

The Department has reviewed a considerable amount of scientific literature and has carried out scientific research on its own in order to derive the base numeric nutrient standards (see **References** in this circular). Because many of the base numeric nutrient standards are stringent and may be difficult for MPDES permit holders to meet in the short term, Montana's Legislature adopted laws (e.g., §75-5-313, MCA) allowing for the achievement of the standards over time via the variance procedures in Circular DEQ-12B. This approach should allow time for nitrogen and phosphorus removal technologies to improve and become less costly and to allow time for nonpoint sources of nitrogen and phosphorus pollution to be better addressed.

# Circular DEQ-12A

DECEMBER 2013 EDITION

## 1.0 Introduction

Elements comprising Circular DEQ-12A are found below. These elements are adopted by the Montana Board of Environmental Review. The nitrogen and phosphorus concentrations provided here have been set at levels that will protect beneficial uses and prevent exceedences of other surface water quality standards which are commonly linked to nitrogen and phosphorus concentrations (e.g., pH and dissolved oxygen; see Circular DEQ-7 for those standards). The nitrogen and phosphorus concentrations provided here also reflect the intent of the narrative standard at ARM 17.30.637(1)(e) and will preclude the need for case-by-case interpretations of that standard in most cases.

## 1.1 Definitions

1. **Ecoregion** means mapped regions of relative homogeneity in ecological systems derived from perceived patterns of a combination of causal and integrative factors including land use, land surface form, potential natural vegetation, soils, and geology. See also Endnote 1.
2. **Large river** means a perennial waterbody which has, during summer and fall baseflow (August 1 to October 31 each year), a wadeability index (product of river depth [in feet] and mean velocity [in ft/sec]) of 7.24 ft<sup>2</sup>/sec or greater, a depth of 3.15 ft or greater, or a baseflow annual discharge of 1,500 ft<sup>3</sup>/sec or greater. See also, Endnote 6.
3. **Total nitrogen** means the sum of all nitrate, nitrite, ammonia, and organic nitrogen, as N, in an unfiltered water sample. Total nitrogen in a sample may also be determined via persulfate digestion or as the sum of total kjeldahl nitrogen plus nitrate plus nitrite.
4. **Total phosphorus** means the sum of orthophosphates, polyphosphates, and organically bound phosphates, as P, in an unfiltered water sample. Total phosphorus may also be determined directly by persulfate digestion.
5. **Wadeable stream** means a perennial or intermittent stream in which most of the wetted channel is safely wadeable by a person during baseflow conditions.

## 2.0 Base Numeric Nutrient Standards

**Table 12A-1** contains the base numeric nutrient standards for Montana's flowing waters. In **Table 12A-1** nutrient standards for wadeable streams are grouped by ecoregion, either at level III (coarse scale) or level IV (fine scale). Following the ecoregional standards is a list of wadeable streams with reach-specific standards. These waterbodies have characteristics dissimilar from those of the ecoregions in which they reside and have therefore been provided reach-specific values. **For wadeable streams, the standards should be applied in this order: named stream reach first (if applicable) then level IV ecoregion (if applicable) then level III ecoregion.** **Table 12A-1** also contains a list of large river segments for which base numeric nutrient standards have been developed. Note that the ecoregional values in **Table 12A-1** do not apply to large rivers within those ecoregions. See Endnote 6 for a list of all large Montana rivers. If a particular large river reach is not listed in **Table 12A-1**, standards for it have not yet been developed.

**Table 12A-2** contains base numeric nutrient standards for Montana's lakes and reservoirs. The Department has not yet developed regional lake criteria, but it is expected that when they are developed they will be grouped by ecoregion. As such, placeholders for future ecoregionally-based criteria are provided in the table. The table also provides lake-specific standards. The Department anticipates that reservoir standards will generally be developed case-by-case and, therefore, will be individually listed, as provided for in the table.

**Table 12A-1. Base Numeric Nutrient Standards for Wadeable Streams in Different Montana Ecoregions.**  
**If standards have been developed for level IV ecoregions (subcomponents of the level III ecoregions) they are shown in italics below the applicable level III ecoregion. Individual reaches are in the continuation of this table.**

Ecoregion <sup>1,2</sup> (level III or IV) and Number	Ecoregion Level	Period When Criteria Apply <sup>3</sup>	Numeric Nutrient Standard <sup>4</sup>	
			Total Phosphorus (µg/L)	Total Nitrogen (µg/L)
<b>Northern Rockies (15)</b>	III	July 1 to September 30	25	275
<b>Canadian Rockies (41)</b>	III	July 1 to September 30	25	325
<b>Idaho Batholith (16)</b>	III	July 1 to September 30	25	275
<b>Middle Rockies (17)</b>	III	July 1 to September 30	30	300
<i>Absaroka-Gallatin Volcanic Mountains (17i)</i>	IV	July 1 to September 30	105	250
<b>Northwestern Glaciated Plains (42)</b>	III	June 16 to September 30	110	1300
<i>Sweetgrass Upland (42l), Milk River Pothole Upland (42n), Rocky Mountain Front Foothill Potholes (42q), and Foothill Grassland (42r)</i>	IV	July 1 to September 30	80	560
<b>Northwestern Great Plains (43) and Wyoming Basin (18)</b>	III	July 1 to September 30	150	1300
<i>River Breaks (43c)</i>	IV	See Endnote 5	See Endnote 5	See Endnote 5
<i>Non-calcareous Foothill Grassland (43s), Shields-Smith Valleys (43t), Limy Foothill Grassland (43u), Pryor-Bighorn Foothills (43v), and Unglaciated Montana High Plains (43o)*</i>	IV	July 1 to September 30	33	440

\*For the Unglaciated High Plains ecoregion (43o), criteria only apply to the polygon located just south of Great Falls, MT.

<sup>1</sup> See Endnote 1

<sup>3</sup> See Endnote 3

<sup>2</sup> See Endnote 2

<sup>4</sup> See Endnote 4

**Table 12A-1, Continued. Base Numeric Nutrient Standards for Individual Wadeable Streams (and Wadeable-stream Reaches), and Large-river Reaches.**

Individual Stream or Reach Description <sup>2</sup>	Period When Criteria Apply <sup>3</sup>	Numeric Nutrient Standard <sup>4</sup>	
		Total Phosphorus (µg/L)	Total Nitrogen (µg/L)
<b>Wadeable Streams: Clark Fork River basin</b>			
Flint Creek, from Georgetown Lake outlet to the ecoregion 17ak boundary (46.4002, -113.3055)	July 1 to September 30	72	500
<b>Wadeable Streams: Gallatin River basin</b>			
Bozeman Creek, from headwaters to Forest Service Boundary (45.5833, -111.0184)	July 1 to September 30	105	250
Bozeman Creek, from Forest Service Boundary (45.5833, -111.0184) to mouth at East Gallatin River	July 1 to September 30	76	270
Hyalite Creek, from headwaters to Forest Service Boundary (45.5833, -111.0835)	July 1 to September 30	105	250
Hyalite Creek, from Forest Service Boundary (45.5833, -111.0835) to mouth at East Gallatin River	July 1 to September 30	90	260
East Gallatin River between Bozeman Creek and Bridger Creek confluences	July 1 to September 30	50	290
East Gallatin River between Bridger Creek and Hyalite Creek confluences	July 1 to September 30	40	300
East Gallatin River between Hyalite Creek and Smith Creek confluences	July 1 to September 30	60	290
East Gallatin River from Smith Creek confluence mouth (Gallatin River)	July 1 to September 30	40	300
<b>Large Rivers<sup>6</sup>:</b>			
Yellowstone River (Bighorn River confluence to Powder River confluence)	August 1 -October 31	55	655
Yellowstone River (Powder River confluence to stateline)	August 1 -October 31	95	815

<sup>2</sup> See Endnote 2

<sup>6</sup> See Endnote 6

<sup>3</sup> See Endnote 3

<sup>4</sup> See Endnote 4

**Table 12A-2. Base Numeric Nutrient Standards and Other Standards for Lakes and Reservoirs.**

		Numeric Nutrient Standard <sup>7</sup>		
Ecoregion <sup>1</sup> (level III) and Number, or Individual Lake or Reservoir Description	Period of Application	Total Phosphorus (µg/L)	Total Nitrogen (µg/L)	Other Standards <sup>8</sup>
<i>LAKES/RESERVOIRS by ecoregion:</i>				
Middle Rockies (17)	Year-round	[]	[]	
Northern Rockies (15)	Year-round	[]	[]	
Canadian Rockies (41)	Year-round	[]	[]	
Idaho Batholith (16)	Year-round	[]	[]	
<i>LAKE SPECIFIC CRITERIA:</i>				
Flathead Lake <sup>9</sup>	Year-round	5.0	95	Secchi depth ≥ 10.4 m during non turbidity-plume conditions. Phytoplankton chlorophyll <i>a</i> 1.0 µg/L, as an annual average, not to be exceeded more than once in any three year period, on average.
<i>RESERVOIR SPECIFIC CRITERIA:</i>				
	Year-round	[]	[]	

<sup>1</sup> See Endnote 1<sup>9</sup> See Endnote 9<sup>7</sup> See Endnote 7<sup>8</sup> See Endnote 8

## 2.1 Required Reporting Values for Base Numeric Nutrient Standards

Table 12A-3 presents the required reporting values (RRVs) for total phosphorus and total nitrogen, as well as the RRVs for nitrogen fractions that can be used to compute total nitrogen.

**Table 12A-3. Required reporting values<sup>a,b</sup> for total nitrogen and phosphorus measurements.**

Nutrient	Method of Measurement	Required Reporting Value
Total phosphorus	Persulfate digestion	3 µg/L
Total nitrogen	Persulfate digestion	70 µg/L
Total nitrogen	Sum of:	(a) total kjeldahl nitrogen 150 µg/L
		(b) nitrate + nitrite See RRVs below
Nitrate- as N		20 µg/L
Nitrite- as N		10 µg/L
Nitrate + Nitrite-as N		20 µg/L

<sup>a</sup> See definition for required reporting values found in footnote 19 of Department Circular DEQ-7.<sup>b</sup> Concentrations in Table 12A-3 must be achieved unless otherwise specified in a permit, approval, or authorization issued by the Department (DEQ-7; ARM 17.30.702).

## 2.2 Developing Permit Limits for Base Numeric Nutrient Standards

For total nitrogen and total phosphorus, the critical low-flow for the design of disposal systems shall be based on the seasonal 14Q5 of the receiving water (ARM 17.30.635(2)). When developing permit limits for base numeric nutrient standards, the Department will use an average monthly limit (AML) only, using methods appropriate for criterion continuous concentrations (i.e., chronic concentrations). Permit limits will be established using a value corresponding to the 95<sup>th</sup> percentile probability distribution of the effluent. Nitrogen and phosphorus concentrations of the receiving waterbody upstream of the discharge may be characterized using other frequency distribution percentiles. The Department shall use methods that are appropriate for criterion continuous concentrations which are found in the document "*Technical Support Document for Water Quality-based Toxics Control*," Document No. EPA/505/2-90-001, United States Environmental Protection Agency, 1991.

## 3.0 Endnotes

- (1) Ecoregions are based on the 2009 version (version 2) of the U.S. Environmental Protection Agency maps. These can be found at: [http://www.epa.gov/wed/pages/ecoregions/mt\\_eco.htm](http://www.epa.gov/wed/pages/ecoregions/mt_eco.htm) . For Geographic Information System (GIS) use within the Department, the GIS layers may be found at: L:\DEQ\Layers\Ecoregions.lyr
- (2) Within and among the geographic regions or watersheds listed, base numeric nutrient standards of the downstream reaches or other downstream waterbodies must continue to be maintained. Where possible, modeling methods will be utilized to determine the limitations required which provide for the attainment and maintenance of water quality standards of downstream waterbodies.
- (3) For the purposes of ambient surface water monitoring and assessment only, a ten-day window (plus/minus) on the beginning and ending dates of the period when the criteria apply is allowed in order to accommodate year-specific conditions (an early-ending spring runoff, for example).
- (4) The 30 day average concentration of these parameters may not be exceeded more than once in any five-year period, on average.
- (5) In this level IV ecoregion, the narrative standard for nuisance aquatic life (ARM 17.30.637(1)(e)) applies in lieu of specific base numeric nutrient standards.



(6) **Table E-1** below shows the beginning and ending locations for large rivers in Montana.

**Table E-1. Large river segments within the state of Montana.**

<b>River Name</b>	<b>Segment Description</b>
Big Horn River	Yellowtail Dam to mouth
Clark Fork River	Bitterroot River to state-line
Flathead River	Origin to mouth
Kootenai River	Libby Dam to state-line
Madison River	Ennis Lake to mouth
Missouri River	Origin to state-line
South Fork Flathead River	Hungry Horse Dam to mouth
Yellowstone River	State-line to state-line

(7) No lake or reservoir in **Table 12A-2** shall have a total nutrient concentration that exceeds the values shown, as an annual average, more than once in any three year period, on average. The Department will determine on a case-by-case basis whether or not a permitted discharge to a stream or river is likely to be affecting any downstream lake or reservoir. If so, the permittee would be required to meet its average monthly nutrient limit year-round.

(8) Parameters listed under this column are standards specific to lakes and reservoirs.

(9) Standards and related assessment information (excluding Secchi depth) are to be determined from 0-30 m depth-integrated samples. Samples and Secchi depth measurements are to be collected at the Midlake Deep site which is located approximately 1 mile west of Yellow Bay Point in a pelagic area of the lake (approximately at latitude 47.861, longitude -114.067).

## 4.0 References

The following are citations for key scientific and technical literature used to derive the base numeric nutrient standards. This is not a complete list; rather, it contains the most pertinent citations. Many other articles and reports were reviewed during the development of the standards.

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- Suplee, M.W., V. Watson, A. Varghese, and J. Cleland, 2008. Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers. Helena, MT: Montana Department of Environmental Quality, 86 p.  
<http://deq.mt.gov/wqinfo/standards/NumericNutrientCriteria.mcp>

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