

# FINAL REPORT TO THE ENVIRONMENTAL QUALITY COUNCIL ON PROGRESS TOWARD NUMERIC NUTRIENT STANDARDS FOR MONTANA'S SURFACE WATERS

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AUGUST 22, 2012

## EXECUTIVE SUMMARY

Excess nutrients (nitrogen and phosphorus) released to surface waters can result in adverse effects on water quality such as nuisance algae growth, undesirable changes in aquatic life, and reductions in dissolved oxygen which impacts fish. The Department of Environmental Quality (Department) has been working to manage nutrient enrichment of Montana waters and one of its larger efforts is the development of numeric water quality standards for nutrients. Scientific work has been largely completed for Montana's wadeable streams, while work continues for other waterbodies. Through the development of these scientifically-grounded numeric standards, it became clear that in some regions (notably western Montana) the standards would be quite difficult to meet. If all communities were made to meet the nutrient standards in one step, the costs would be too high and/or the technology might not be currently available. Therefore, the Department investigated options for implementing the standards in a staged manner. The idea was that if communities and other entities could begin working towards nutrient standards in steps, the standards could ultimately be achieved, given that technologies generally improve and become less expensive over time. It would also allow the Department time to address nonpoint sources of nutrient pollution. Research led the Department to conclude that a temporary variance process that has discharger specific permit limits that differ from the standards for a defined period of time, could work effectively for implementing the standards.

The Department did not have clear legal authority to grant the variances as envisioned, and therefore worked to introduce a bill into the 2009 legislature to provide that authority. The bill (SB 95) passed and is now codified at MCA 75-5-313. The law included the creation of a Nutrient Work Group (NWG), convened by the Department, and whose role is to provide the Department advice on the standards and their implementation. The Nutrient Work Group comprises a broad array of Montana interests, from agriculture to municipalities to industry to environmental groups. Meetings are open to the public and have been well attended.

Since the last EQC report, the Department in consultation with the NWG, identified issues with the variance processes laid out in SB95. From these discussions, new legislation was drafted for the 2011 session. SB 367 was a direct result of the collaboration between the Department and the NWG as the group realized the complexities associated with individual variances, economics, and wastewater treatment.

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## 1.0 INTRODUCTION

### 1.1 BACKGROUND AND HISTORY OF NUMERIC NUTRIENT STANDARDS DEVELOPMENT IN MONTANA

Controlling the undesirable affects on water quality caused by the release of excess nutrients (nitrogen and phosphorus) into state waters has long been an important concern of the Department. In the mid 1970s and into the 1980s, citizen complaints about excessive algae growth in the Clark Fork River led, in 1998, to a pioneering voluntary agreement among dischargers to reduce nutrient loading to the river. The goal of the agreement was to achieve ambient nutrient concentration targets and bottom-attached algae limits during summer months. These concentrations and algae limits for the Clark Fork River were subsequently adopted into state law in 2002 (ARM 17.30.631).

Narrative water quality standards that address nutrient effects (e.g., nuisance aquatic life) were adopted for all state waters decades ago, but the fact that narrative standards are general statements, rather than specific numbers, has led to their limited application. Since 2000, the Department has been actively working to develop numeric nutrient standards for all state waters. This work is motivated by the Department's long-standing desire to address this significant form of water pollution, as well as by an Environmental Protection Agency (EPA) plan, initiated in 1998, to encourage states to adopt numeric nutrient standards for all of their surface waters.

Many difficult technical problems had to be addressed in order to develop numeric nutrient standards. Unlike other water quality standards, which are commonly developed in laboratories and then promulgated by EPA for the entire nation, it was expected that nutrient standards would be developed at the regional/local scale and would be different for different waterbody types. This is because nutrient concentrations vary naturally in the environment, due to factors such as local geology, soil types, and vegetation, and this fact needed to be accounted for in developing the standards. The specific manner in which excess nutrient problems manifest themselves in different waterbody types also had to be sorted out.

Throughout the 2000's the Department carried out a number of scientific studies and analyses, all intended to determine how nutrients detrimentally affected the quality of state waters (e.g., how much bottom-attached algae is excessive), and to determine the appropriate concentrations needed to prevent these problems. As of this writing, work has been largely completed for wadeable streams of western Montana, but is ongoing in eastern Montana prairie streams. Large rivers (e.g., Yellowstone River, Missouri River) were found to be too unique to place into waterbody groups (i.e., for common treatment), and therefore the Department is addressing them case by case. Work on lakes and reservoirs is also proceeding. A number of the key technical reports prepared by the Department to support this effort can be found at: <http://deq.mt.gov/wqinfo/standards/NumericNutrientCriteria.mcp>

Around 2005 it became very apparent that the scientifically derived nutrient concentrations being developed by the Department were going to be very low (i.e. stringent) in some regions of the state. It also became apparent that some of the nutrient concentrations the Department was considering were at or below levels that can be readily achieved by practical wastewater technologies of today. It is known that as one attempts to achieve lower and lower nutrient concentrations, the cost to do so goes up exponentially. In other words, if all towns were made to meet nutrient standards in one step, the costs might be too high and/or the technology might not be currently available. The Department began

investigating options for implementing the standards in a more staged manner. The idea was that if communities and other entities could begin to work towards the nutrient standards in steps, the standards could ultimately be achieved, given that technologies generally improve and become less expensive over time. It would also allow the Department more time to address nonpoint sources of nutrient pollution. The Department commissioned two studies to evaluate the cost of various treatment technologies, as well as the mechanisms by which the standards could be implemented in stages. The studies, and consultation with EPA, revealed that a temporary variance process with discharger specific permit limits for a defined period of time could work effectively for implementing these standards.

## 1.2 SENATE BILL 95 (MCA 75-5-313)

Consultation with Department legal staff revealed that the Department did not have clear legal authority to allow the case-by-case, discharger-by-discharger variances envisioned. Temporary water quality standards were already part of state law (MCA 75-5-312; ARM 17.30.630). But these laws allow for temporary changes of standards along an entire reach of stream; the idea is that somewhat less stringent standards can realistically be met during instream remediation procedures (e.g., to remove mine waste), after which the original standards are to be re-instated. In contrast, the Department envisioned a process for nutrient standards whereby the standards, once adopted, would remain the same along the stream so that point and nonpoint sources of pollution would clearly know what the standards are. However, individual dischargers could (as needed) apply for *discharger specific* variances from the standards. By this mechanism dischargers could remain in compliance with their permits as they moved, over time, towards meeting the standards, while simultaneously the Department worked with nonpoint source nutrient contributors in the watershed. The Department's intent is that the process allows for incremental progress towards the standards on all fronts (point and nonpoint source).

The Department penned a draft bill which was sponsored by MT Senator John Brueggeman ([R]; Senate District 6). The bill was passed, is codified at MCA 75-5-313, and can be found at <http://data.opi.mt.gov/bills/mca/75/5/75-5-313.htm>. Among its provisions, the law requires that the Department consult with a Nutrient Work Group. The Department, in consultation with the Nutrient Work Group:

*"...shall develop guidelines to ensure that the economic impacts from base numeric nutrient standards<sup>2</sup> on public and private systems are equally and adequately addressed. In developing those guidelines, the department and the nutrient work group shall consider economic impacts appropriate for application within Montana and may also consider relevant guidance of the United States environmental protection agency pertaining to analysis of economic impacts from water quality standards."*

The bill also allows for nutrient trading. The Department has developed a trading policy that the Board of Environmental Review initiated rulemaking on in July.

Even prior to the bill's passage (since September 2008), the Department had been working with an informal stakeholder group (Nutrient Criteria Affordability Advisory Group) to address many of these cost-related issues. This predecessor group developed a detailed affordability assessment process for publically owned treatment works (POTWs) based on EPA guidance. When the Nutrient Work Group was

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<sup>2</sup> "Base numeric nutrient standards" is the term used in the bill (and statute) for instream numeric nutrient standards.

created by statute and met for the first time in May 2009, many of its members had also served on the earlier informal group.

### **1.3 SENATE BILL 367 (MCA 75-5-313)**

Senate Bill 367 was a direct result of work done by the Department and the NWG. The rationale behind the development of SB367 was due to issues identified by the group that would make implementation difficult. SB 367 addressed these issues and therefore modified MCA 75-5-313. The bill was sponsored by MT. Senator Chas Vincent ([R]; Senate District 1). SB367 added a few key provisions:

- In addition to the individual variances established in SB 95, SB 367 directs the Department to grant general variances *with permit limits established in statute*. The general variance is divided into 3 categories based on discharge flow. These limits sun set on May 31, 2016.
- SB 367 directs the Department (in consultation with NWG), to develop new categorical variance numbers in rule immediately after May 31, 2016.
- SB 367 established that meeting the numeric nutrient standards would result in a substantial and widespread economic impact to the State of Montana.
- SB 367 directs the Department to revisit the variance process on a 3-year interval, and update the concentration levels of the general variance in conjunction with the tri-annual review.
- Permittees receiving a variance shall evaluate current facility operations to optimize nutrient reduction with existing infrastructure and shall analyze cost-effective methods of reducing nutrient loading, including but not limited to nutrient trading without substantial investment in new infrastructure.
- A confidentiality clause protecting proprietary information.

## **2.0 NUTRIENT WORK GROUP**

The Nutrient Work Group comprises members representing the following groups or entities:

- Agriculture and livestock
- Conservation districts
- Environmental organizations
- Financing and grant agencies (state-level)
- Forestry
- Manufacturing
- Municipalities (water and wastewater)
- Oil and gas
- Railroad
- Real estate
- Wastewater engineering
- Mining

The Department also provides to the Nutrient Work Group members whose primary roles are as technical and policy experts. The meetings are run and arbitrated by a non- governmental arbitrator. In assembling Nutrient Work Group members, the Department actively solicited a broad range of Montana interests so that conclusions arrived at by the group would be, hopefully, acceptable to a large number of Montanans. Meetings are open to the public and are well attended with public members typically

doubling the original meeting size. Constructive public input is allowed throughout the meeting, and often leads to enhanced understanding of topics.

Meetings since the last EQC report have focused on justifying substantial and widespread impacts, receiving EPA buy-in, details of implementation, & permits. Highlights include:

- A Statewide analysis proving that meeting the criteria would result in a substantial & widespread economic impact to Montana. While codified in MCA 75-5-313, the Department and the group worked in good faith with EPA to conduct this analysis.
- On December 29, 2011, the Department sent a letter to the EPA Region 8 Administrator requesting a response on whether Montana's variance process was consistent with the Clean Water act and approvable. EPA's response was favorable.
- Several issues and details needed to finalize portions of the implementation package were completed. Most are found in guidance documents on the web page.<sup>3</sup>

### 3.0 KEY ISSUES AND CONCERNS

Since the July 2010 report to EQC, the Nutrient Work Group has met seven times, with various subgroup meetings in between. The Department is proposing to initiate adoption of the numeric standards in rule this December to the Board of Environmental Review (BER). At the same time, the Department will initiate adoption of the variance process, a department rule-making exercise. The following is a synopsis of issues to resolve:

- A. Nondegradation for nutrients.
- B. Quantification of significance. This occurs in two situations. The first is determining if a point source is or is not a significant loading source to a waterbody. This concept would follow the watershed (TMDL) approach. If they are not significant, the need to upgrade treatment would not be necessary. The second is a situation post May 31st, 2016. If the permit limits for the general variance category were lowered, but one or more dischargers can show that lowering to those levels, would in fact, not result in a significant change to water quality than that discharger would not have to lower their treatment limits.
- C. For an individual variance, we still need to figure out how to address private companies and their ability to pay, while balancing confidentiality.
- D. Need to further explore a few options on the table on how we measure compliance with the criteria, i.e. mixing zones, flow, etc.
- E. NWG members want a clearer pathway on how the process is laid out in a permit.
- F. NWG members want to better understand how the Department might go about analyzing site-specific criteria on some streams in the future.

### 4.0 SCHEDULE

The Nutrient Work Group is scheduled to meet approximately every other month. For the past several months, the Department has been developing solutions to the issues raised by the group. When

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<sup>3</sup> All documents mentioned, including the letter from EPA Regional Director can be found at the Nutrient Work Groups website: <http://deg.mt.gov/wqinfo/NutrientWorkGroup/default.mcp>

requested, small work groups will meet more frequently to increase efficiency. The Department has also drafted rule language.

The next NWG meeting is scheduled for September 12, 2012 in the Director's conference room in the Metcalf building from 1:00-5:00pm. The main focus of the meeting will be to discuss the draft rule package that will be presented at the August 24<sup>th</sup> 2012 Water Pollution control Advisory Council meeting, address any comments from Nutrient Work Group members, review comments on the criteria from EPA's N-STEPS (a peer review group), and any public comments.

When the Nutrient Work Group has reached a reasonable consensus on the issues, and are comfortable with understanding how the process will work, the Department will initiate the process of rule adoption before the Board of Environmental Review (BER). Currently, we are planning on the December 7, 2012 BER meeting for proposal of initiation of rule making.