

MONTANA 2014 INTEGRATED WATER QUALITY REPORT SUMMARY

INTRODUCTION

As the state agency responsible for implementing certain components of the federal Clean Water Act, and as directed under Montana's Water Quality Act (MCA 75-5-702), the Montana Department of Environmental Quality (DEQ) prepares this biennial Integrated Report (IR) to list the status of water quality for waterbodies under state jurisdiction. Specifically, this IR describes the condition and trends of Montana's streams and lakes, contaminants found in groundwater, and the safety of drinking water during the previous 2-year period; thus, the 2014 IR reports on the state's condition of water quality for the years 2012–2013. The IR fulfills requirements under the federal Clean Water Act by reporting on elements found in two sections of the act:

1. Section 303(d), a list of water quality limited (i.e., "impaired") or threatened waterbodies in the state and require a TMDL (see below)
2. Section 305(b), a report on the condition of waterbodies under the state's jurisdiction

DEQ oversees efforts to measure the quality of all waterbodies under state jurisdiction, which includes about 46,000 miles of perennial streams and about 573,000 acres of lakes and reservoirs larger than 5 acres. These waters do not include waterbodies on tribal lands where the state does not have jurisdiction or the waters in national parks or wilderness areas, which the state does not typically assess for water quality. Of the perennial streams and lakes and reservoirs managed by the state, to date DEQ has assessed the water quality of 20,278 stream miles (roughly 44% of the total) and 493,237 acres of lakes/reservoirs (roughly 86% of the total).

NOTE: These figures of stream miles and lake/reservoir acres are important to know, and to use in context, when attempting to interpret the results of water quality reporting presented in this IR. Please address any questions about the interpretation of these results to DEQ's Water Quality Planning Bureau.

DEQ's effort to effectively monitor **all** of the state's jurisdictional waters is limited by financial and personnel resource constraints; however, DEQ assigns monitoring priority to those waterbodies that have the greatest potential benefits to the greatest number of residents and/or to those waterbodies whose benefits are the most critical to protect.

Before reading the IR, we encourage you to understand two important concepts that form the cornerstone of the report: **beneficial use** and **Total Maximum Daily Load**.

Beneficial Use

Beneficial uses are the various ways a particular waterbody can be used by people, wildlife, and livestock, such as for drinking water, habitat for fish and waterfowl, recreation, or agricultural or industrial purposes. Once beneficial uses are officially designated, DEQ can establish appropriate water quality objectives that maintain or enhance water quality to protect those uses. Thus, beneficial uses are really goals for achieving water quality. Each goal includes criteria that establish the maximum amount of any particular pollutant while still allowing a waterbody to maintain a given beneficial use. Together, beneficial uses, criteria, and non-degradation policies form water quality standards, that is, benchmarks to aim for in protecting and maintaining water quality.

If a waterbody is deemed “impaired,” it means one or more of its beneficial uses is limited or harmed to some extent. Federal law requires states to assess waterbodies to determine whether they are supporting their beneficial uses—and to what extent—based on the presence or absence of pollutants. From the results, DEQ classifies each assessed waterbody into one of three main categories:

1. **Fully supporting:** the waterbody meets all of its water quality standards to support all designated beneficial uses, or for all uses that have been assessed
2. **Not fully supporting:** the waterbody has one or more beneficial uses limited by a pollutant or pollution
3. **Threatened:** the waterbody currently meets water quality standards but will likely exceed a pollutant limit if current conditions do not change

In addition, the status of some waterbodies cannot be determined because DEQ has insufficient data to assess whether they meet water quality standards. Further, many of the waterbodies under state jurisdiction have not been sampled yet; therefore, the state does not know whether their beneficial uses are supported.

In Montana, the most common threats to beneficial uses are too much sediment, nutrients, or metals, all of which alter physical and chemical properties of a waterbody. These threats can come from one or a combination of three source types:

1. **Point sources:** human activities from a specific location that are regulated through permits, such as discharges from wastewater treatment plants
2. **Nonpoint sources:** non-regulated human activities that accumulate pollutants from widespread areas, such as runoff from agricultural lands or roadways
3. **Naturally occurring sources:** not as a result of human activities, such as naturally-occurring arsenic from Yellowstone National Park’s geothermal basin

Keep in mind that land uses and other human activities that effect beneficial uses can change over time; therefore, managing and improving water quality throughout our vast state can be challenging and requires careful monitoring, development of effective quality standards, and a plan to restore water quality, called a Total Maximum Daily Load.

Total Maximum Daily Load

A Total Maximum Daily Load (TMDL) is a regulatory term under the Clean Water Act and is a calculation of the maximum amount of a contaminant (pollutant) that a waterbody can receive and still meet water quality standards, that is, support its beneficial uses. The formula for calculating a TMDL assigns pollutants among both point and nonpoint sources, while also accounting for naturally-occurring conditions. In addition, TMDLs must consider the uncertainty in predicting how well reducing a pollutant will result in meeting water quality standards. In other words, to what degree will reducing that pollutant’s loading (the amount of the pollutant delivered to a waterbody) help the waterbody to support its most sensitive beneficial use? The TMDL calculation also considers seasonal variations in temperature and water flow and volume, which can affect how waterbodies respond to certain pollutants.

DEQ uses TMDLs to set water quality goals for watersheds; therefore, TMDLs provide both a way to measure water quality and to plan for improving it. TMDLs evaluate how much of any given pollutant is

present (its “loading”), where it comes from (its source), and by how much it needs to be reduced so the waterbody can meet its *most sensitive* beneficial use. TMDLs may also include a set of goals for threatened waterbodies, which includes making recommendations for reducing, or setting loading limits for, pollutant(s) threatening a beneficial use.

DEQ uses a watershed approach to develop TMDLs and water quality restoration plans. In this way, many rivers, streams, and lakes within a watershed can be efficiently addressed in a single TMDL document. DEQ works with watershed stakeholders during TMDL development so that completed TMDLs will be used by local watershed groups and/or other parties interested in watershed health as tools to help guide local activities for improving water quality.

Note: A TMDL defines explicitly only what is needed for a waterbody to meet its water quality goal for the specific pollutant identified in the TMDL. Therefore, until all TMDLs are established and implemented, a waterbody is likely to remain water quality limited for one or more of its beneficial uses.

SUMMARY OF IR SECTIONS

Following is a summary of each section of the Montana 2014 IR. In addition, the IR includes **appendices** comprising seven separate sections. The complete report is available on line at <http://deq.mt.gov/wqinfo/cwaic/reports.mcp.x>.

Section 1

Lists the elements of the IR and its appendices. The report also includes a glossary of frequently used technical terms.

Section 2 Description of Surface Waters

Gives an overview of Montana’s water resources and describes the four administrative basins into which the state is divided for water quality management purposes. A map shows the distribution of administrative basins and sub-major basins. Surface waters are described and listed by type (streams vs. lakes) and number of miles and acreages for both the entire state and also for only those waters DEQ manages (jurisdictional waters) and excludes waters within the boundaries of tribal lands (non-jurisdictional waters), national parks, and designated wilderness areas.

Section 3 Water Pollution Control Programs

Gives an overview of the status of programs administered under the federal Clean Water Act to help achieve water quality goals. Programs discussed include water quality standards, point and nonpoint source controls, the Water Pollution Control State Revolving Fund, and TMDL. Also included is a cost-benefit analysis of implementing the programs.

Water Quality Standards

DEQ reviews Montana’s water quality standards and updates or modifies existing standards as needed. DEQ, through the Board of Environmental Review, adopts standards into the Administrative Rules of Montana using a rule-making process that involves the Water Pollution Control Advisory Council, the governor’s office, EPA, and the public.

Montana’s water quality criteria are also discussed and include both numeric and narrative criteria. Numeric criteria define precise, measurable concentrations of pollutants that are allowable without

harming a use. Refer to [Circular DEQ-7](http://deq.mt.gov/wqinfo/Standards/default.mcp) for the list. Some pollutants have narrative water quality criteria, which are statements that describe the desired water quality goal. For more information, visit <http://deq.mt.gov/wqinfo/Standards/default.mcp>.

This section also discusses Montana's non-degradation policy, which prohibits degradation of high-quality waters, except under limited circumstances, and ensures that all designated beneficial uses are maintained and protected.

Point & Nonpoint Source Controls

In Montana, DEQ is delegated the authority to administer the National Pollutant Discharge Elimination System (NPDES) program from EPA. DEQ issues Montana Pollutant Discharge Elimination System (MPDES) permits to all point sources and works with the Board of Environmental Review to adopt rules governing permitting. Under its nonpoint source pollution control program, DEQ identifies and assesses sources of pollution originating from diffuse sources and works with landowners to apply best management practices. These nonpoint sources are discussed in detail and include discussions of DEQ's efforts to mitigate them.

Water Pollution Control State Revolving Fund

The fund program provides federal capitalization grants to states, which in turn (with state matching funds) provide financial assistance for constructing water pollution control projects. Also discussed are funding capacity and methods for ranking priority projects. A short section on the Drinking Water State Revolving Fund lists all grants received and their amounts. The criteria and methods used for distributing the funds, as well as projects identified for funding, are discussed.

TMDLs

In Montana, restoration strategies and monitoring recommendations are incorporated into TMDL documents to help implement Total Maximum Daily Loads. TMDLs are more thoroughly defined, along with a discussion of regulatory requirements for developing them and the development and implementation process. DEQ uses a watershed-based approach to develop multiple TMDLs as one project, where the project area usually corresponds to a pre-defined TMDL Planning Area.

Cost-Benefit Analysis

The average annual cost for Montana's point- and nonpoint source pollution programs from all funding sources, plus wetland and drinking water protection, was approximately \$53 million in FY 2011 and FY 2012. This figure does not include enforcement, permitting, or public drinking water programs, which are small compared with the \$53 million figure. The \$53 million cost is more than double that from FY 2006 and FY 2007 (\$23.3 million), mostly because of a one-time injection of funds from The American Recovery and Reinvestment Act of 2009 into point-source efforts.

While the benefits of clean water and a healthy environment may be challenging to quantify in pure economic numbers, their derived benefits and importance to all people, flora, and fauna cannot be understated. Several aspects of water quality management programs are designed to prevent the deterioration of current conditions. Without water quality management, the benefits of aesthetics, recreational activities, and drinking water supplies, to name a few, would be diminished or lost.

Section 4 Surface Water Monitoring and Assessment

Discusses DEQ's monitoring programs for surface waters and public water supplies. DEQ assesses the quality of the state's surface waters and determines whether waters are supporting their beneficial uses and meeting water quality goals. This section lists monitoring objectives and discusses partnerships and cooperative agreements that aid in coordinating monitoring efforts with other state and federal agencies as well as with watershed groups. Also discussed is how DEQ identifies and collects data and evaluates it for quality control. A detailed list of monitoring networks and projects is included, as well as a breakdown of waterbody assessment records and what they contain. Water quality reporting categories are discussed in detail.

Tables summarize water quality status on 1,172 assessment units (AUs) for this reporting period, which includes 1,100 rivers/streams and 72 lakes/reservoirs. A total of 3,418 AU/cause combinations are identified as limiting Montana's surface water quality. Montana's 2014 303(d) List includes 1,171 specific pollutant listings on 480 assessment units that need a TMDL.

Figures 1 and 2 present a condition summary for all waters within the state's jurisdiction as of the 2014 reporting period:

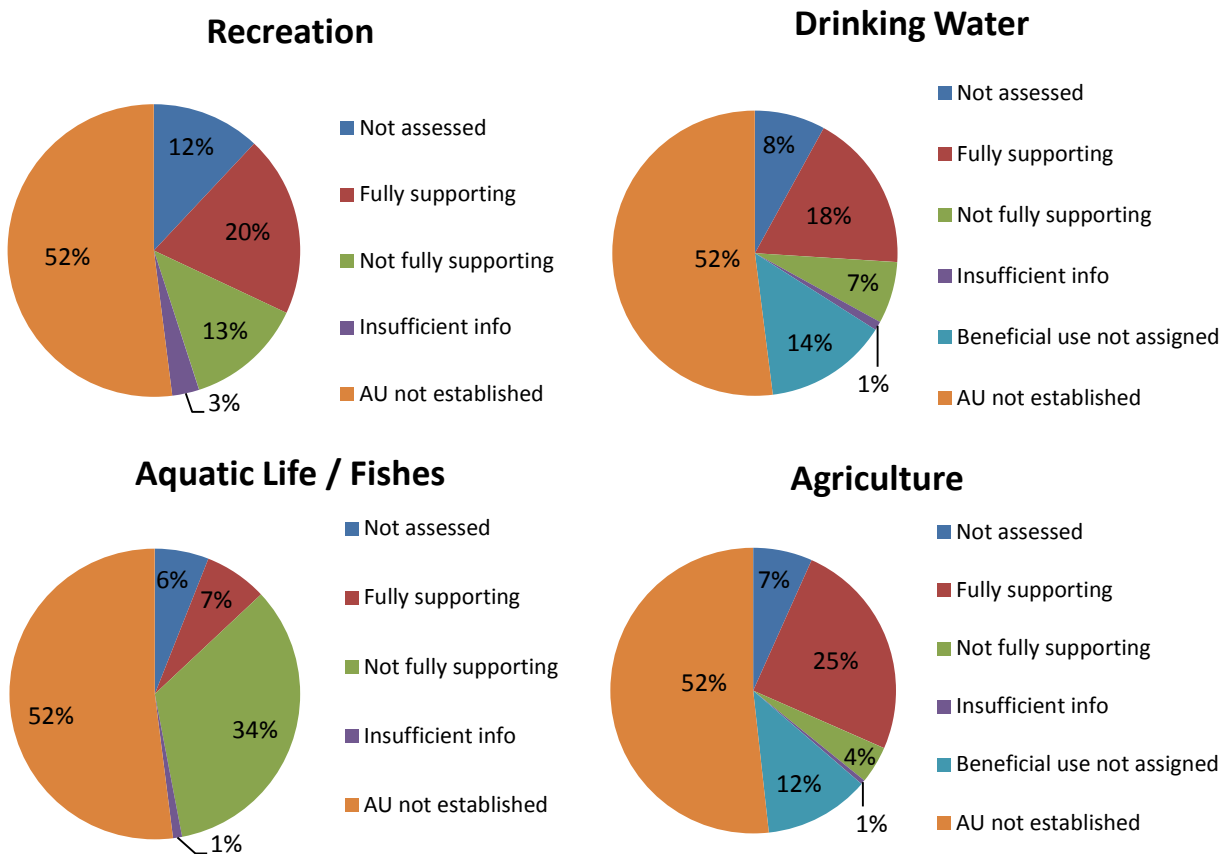


Figure 1. River & Stream Assessment Units (AUs)

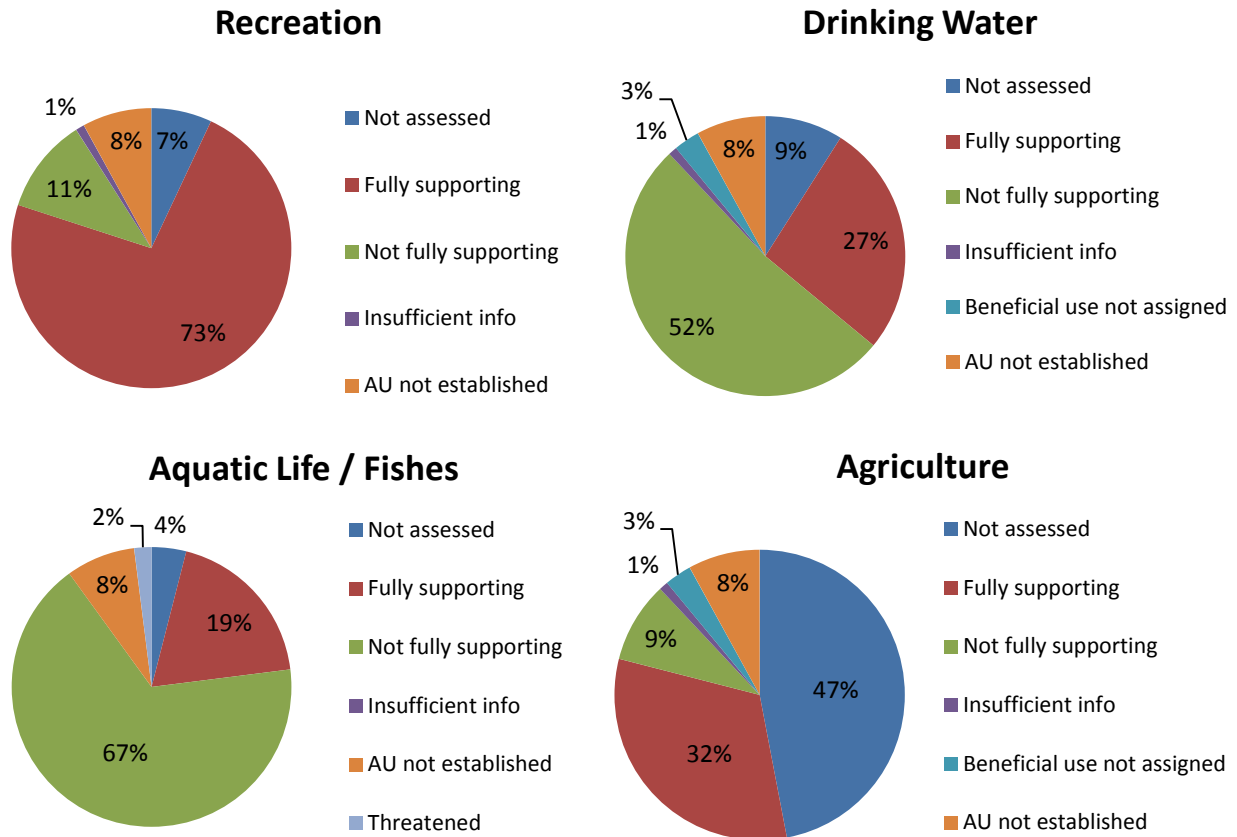
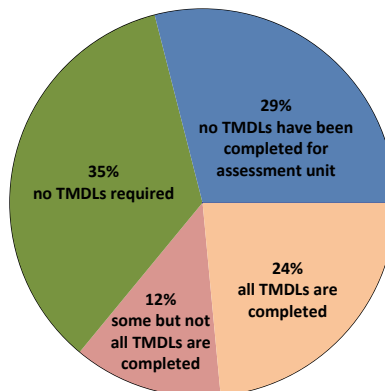


Figure 2 Lake & Reservoir Assessment Units (AUs)

Of the 73 specific limiting causes listed in 2014, the two most common were sediment-related (pollutant) and alterations of streamside vegetative covers (pollution). The top 10 most common causes include sediment, nutrients, and metals-related pollutants and habitat or streamflow-related pollution.

Of the 1,172 total waterbody assessment units, 835 have one or more limited beneficial uses.

- 278 assessment units have all necessary TMDLs completed, up from 176 in 2012 Integrated Report
- 144 assessment units have one or more, but not all necessary TMDLs completed



1,172 Waterbody Assessment Units

During the 2014 reporting cycle, 496 pollutant cause listings were removed from the 2012 303(d) List. Of these,

- 307 causes were removed (delisted) because of approved TMDLs; however, these causes still limit the beneficial use
- 173 causes were removed (delisted) because water quality standards were achieved
- 16 causes were removed (delisted) because the original basis for listing was incorrect; 13 of the 16 were subsequently relisted for the preferred pollutant cause for TMDL development

Section 4 also discusses DEQ's Wetland Program in detail, public health issues, drinking water system rule violations, and the source water protection program.

Section 5 Groundwater Monitoring and Assessment

Discusses the monitoring and assessment efforts in Montana by other state and federal agencies. Results noted are from the Montana Bureau of Mines and Geology's monitoring and assessment work, as well as other state and locally-managed groundwater protection programs. Groundwater resources, quality, and its uses are noted, along with figures for groundwater well records and withdrawal amounts by use. Pollutants and their sources are noted in maps and tables, and remediation strategies are listed. Also discussed is the interaction between groundwater and surface waters.

Section 6 Review of Montana's Assessment Process and Assessment Data

Describes the current state of improvements to DEQ's water quality program, including assessment, data management, and reporting abilities and systems. DEQ has assessment methods for nutrients, sediment, and metals, which are the most common pollutants impairing Montana's surface waters. Methods are rigorously evaluated using a data quality assessment process. This section also includes tables listing general quality control of data, changes, and corrections to assessment units for the 2014 reporting cycle.

Section 7 Public Participation

Notes legal procedures for inviting public comments on the IR and includes all public comments made as well as DEQ's responses to each. DEQ received a total of three comments on the 2014 IR and edited the data in response to them. Edits are included.

Section 8 References

Lists all cited and non-cited references used to compile the 2014 IR.

Section 9 Glossary

Includes a table listing commonly used terms and their detailed definitions.