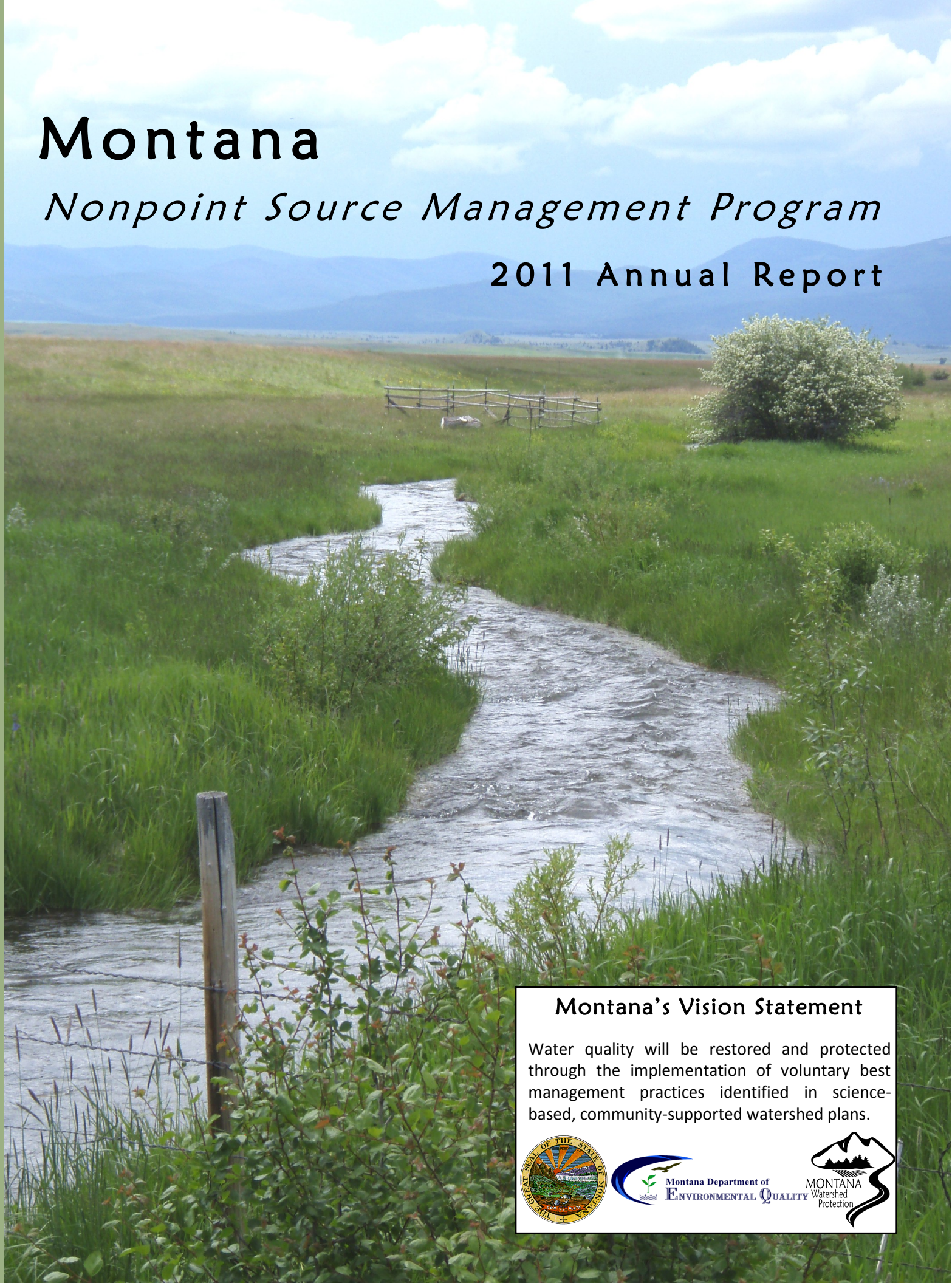
Montana

Nonpoint Source Management Program

2011 Annual Report



Montana's Vision Statement

Water quality will be restored and protected through the implementation of voluntary best management practices identified in science-based, community-supported watershed plans.

Montana Department of Environmental Quality

MONTANA Watershed Protection

Prepared By

Water Quality Planning Bureau

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Nonpoint Source Management Program 2011 Annual Report

The purpose of the Montana Nonpoint Source (NPS) Management Program Annual Report is to inform the public about the annual progress toward fulfilling the goals of the NPS Management Plan, while also satisfying the requirements of Section 319 of the federal Clean Water Act of 1987, which requires states to: 1) assess waterbodies for NPS pollution effects, 2) develop programs to manage those effects, 3) implement those programs, and 4) report on NPS program implementation to the public and to the U.S. Environmental Protection Agency (EPA).

2011 Highlights from the Nonpoint Source Management Program

Goal: Complete Water Quality Plans and necessary TMDLs
The Watershed Management Section received EPA approval for more than 130 Total Maximum Day Loads (TMDLs) in three TMDL Project Areas in 2011.

Goal: Begin review and revision of the Montana Nonpoint Source Management Plan
Watershed protection staff began working with partners to review language, priorities, and best management practices for the 2012 update.

Goal: Conduct Water Quality Assessments
The Water Quality Monitoring and Assessment Section assessed seven waters in 2011. These assessments will be reflected in the 2012 Water Quality Integrated Report.

Goal: Increase Section 319 funds to on-the-ground projects
DEQ awarded more than $1 million to local projects, including 10 projects in watershed restoration, 2 for groundwater, and 5 for education and outreach.

Goal: Increase efficiency of the Section 319 grant process in Montana
The Watershed Protection Section launched new electronic forms for the Section 319 grant application, which facilitated the application process for both applicants and reviewers.

Goal: Provide support for and promote the development and coordination of watershed groups
The Montana Watershed Coordination Council, together with the Montana Association of Conservation Districts and the Montana Conservation Corps, successfully launched the Big Sky Watershed Corp, an AmeriCorps program for watershed groups in Montana.

Implementation of the Montana NPS Management Plan

by the Water Quality Planning Bureau and Collaborating Partners

The watershed planning approach provides a coordination tool for all stakeholders interested in conserving water resources in Montana. The involvement of DEQ, watershed groups, conservation districts, agencies, tribes, academia, and non-governmental organizations in the watershed approach allows for a broad distribution of information. The goal of this approach is to increase public understanding and participation in water quality and nonpoint source issues.

DEQ's Water Quality Planning Bureau (WQPB) manages the Montana NPS Management Program. WQPB's mission is to assure that water quality is maintained and improved so that state waters can support all their beneficial uses. This is accomplished through an integrated approach based on water quality standards development, monitoring and assessment, and development and implementation of water quality plans and TMDLs (Appendix A).

This document highlights important and notable actions taken to achieve the NPS Plan's 5-year goals in three categories: resource, policy, and education and outreach (Appendix B). The highlighted activities include work done by the WQPB, interagency councils, watershed groups, and other agencies and organizations in 2011 to promote collaboration, foster water resource awareness, and protect and improve water quality in Montana.

Montana Department of Environmental Quality
Water Quality Planning Bureau

Water Quality Standards

The Water Quality Standards Section (WQS) develops water quality criteria to identify the level of water quality necessary to protect the beneficial uses of a stream, river, lake, or groundwater resource that contribute to human wellbeing. Examples of beneficial uses include drinking water, recreation, and fish and aquatic life. The NPS program seeks to protect and restore these beneficial uses. Unlike the other sections in the WQPB, WQS does not receive any Section 319 funding; however, WQS's work is instrumental to the rest of the NPS Management Program in Montana.

WQS completed three significant technical projects pertaining to numeric nutrient standards. First, the 3-year nutrient-addition field study carried out in Carter County was completed. This year's focus was follow-up monitoring; no nutrients had been added to the stream. Data analysis is pending, but all obvious visual indicators suggested that the stream had returned to conditions observed before nutrient dosing began. The final technical report on the project will be initiated in 2012.

Second, WQS completed an assessment methodology for determining nutrient effects in wadeable streams. The method goes beyond a simple evaluation of nutrient concentrations by considering the water quality parameters nutrients generally affect (e.g., algae levels and dissolved oxygen concentrations). Data are then combined in a decision matrix to determine if there are any nutrient effects. The method has undergone public comment, and the final version should be released shortly.

Third, WQS released its first recommendations for numeric nutrient standards for a large river, the lower Yellowstone River. This multi-year collaborative project between the Water Quality Standards Section and the Information Management and Technical Services Section is one of the first efforts nationally to derive numeric nutrient criteria for a large river using a mechanistic computer model. The technical report underwent peer review and public comment in November 2011.

WQS emphasized working through implementation processes that needed to be detailed before recommending the standards to the Board of Environmental Review (BER) for adoption. In 2012, DEQ expects to present a nutrient standards package to BER.

WQS developed a new Observed/Expected biological water quality indicator to evaluate macroinvertebrate populations in western Montana streams. This indicator was built using macroinvertebrate data collected from high-quality reference sites. WQS will use these populations as a benchmark to establish expectations for healthy stream communities. Future macroinvertebrate sample collections will be compared with reference populations for aquatic life use-support determinations.

WQS is also developing biological indicators for different stressor-specific assessment methods that will be used to evaluate streams. WQS tested and added a biological indicator to the draft nutrient assessment method. EPA and WQS tested a modified version of the Hilsenhoff Biotic Index (HBI) that is calibrated for nutrient effects on macroinvertebrates. The tests revealed that the modified HBI was an effective biological measure of nutrient effects on macroinvertebrates in mountain streams. DEQ will use water quality data with the HBI scores to determine if mountain streams are affected by nutrients. WQS is in the early stages of developing a macroinvertebrate indicator for use in the draft sediment-specific assessment method. WQS completed the first round of sampling for this year and anticipates another round in summer 2012 to complete the dataset.

Water Quality Monitoring and Assessment

The Water Quality Monitoring and Assessment Section (WQMAS) monitors water quality conditions and trends statewide and assesses sources and severity of pollution problems by (a) operating statewide water quality monitoring networks, (b) conducting inventories of pollution sources, and (c) identifying impaired waterbodies.

WQMAS assessed seven waters, which will be reflected in the 2012 Water Quality Integrated Report, to be submitted to EPA in April 2012, with approval anticipated in June 2012. In addition to these assessments, WQMAS also supported the development of water quality standards by sampling two prairie streams in eastern Montana. These sampling events were a collaborative effort between DEQ and the Carter Conservation District. Six streams were also sampled in western Montana to address 303(d) list comments or public requests. In support of TMDL development, more than 40 streams were sampled in several TMDL project areas, including Boulder-Elkhorn, Lower Blackfoot, Upper Clark Fork, Clark Fork-Drummond, Middle Clark Fork, Rock, and Flathead.

WQMAS supported TMDL development by providing training on various monitoring techniques, which included use of field equipment, such as temperature data loggers. WQMAS provided input on monitoring design, methods, field manual preparation, and field training for WQPB and DEQ staff, as well as for general stakeholders.

In addition, WQMAS continues working with two other sections, Standards and Information Management and Technical Services, to develop a nutrient model for a segment of the Missouri River (from Three Forks to Canyon Ferry Lake). The field component was completed in 2011; the nutrient development component is expected to be completed in late 2012 or early 2013.

Watershed Management

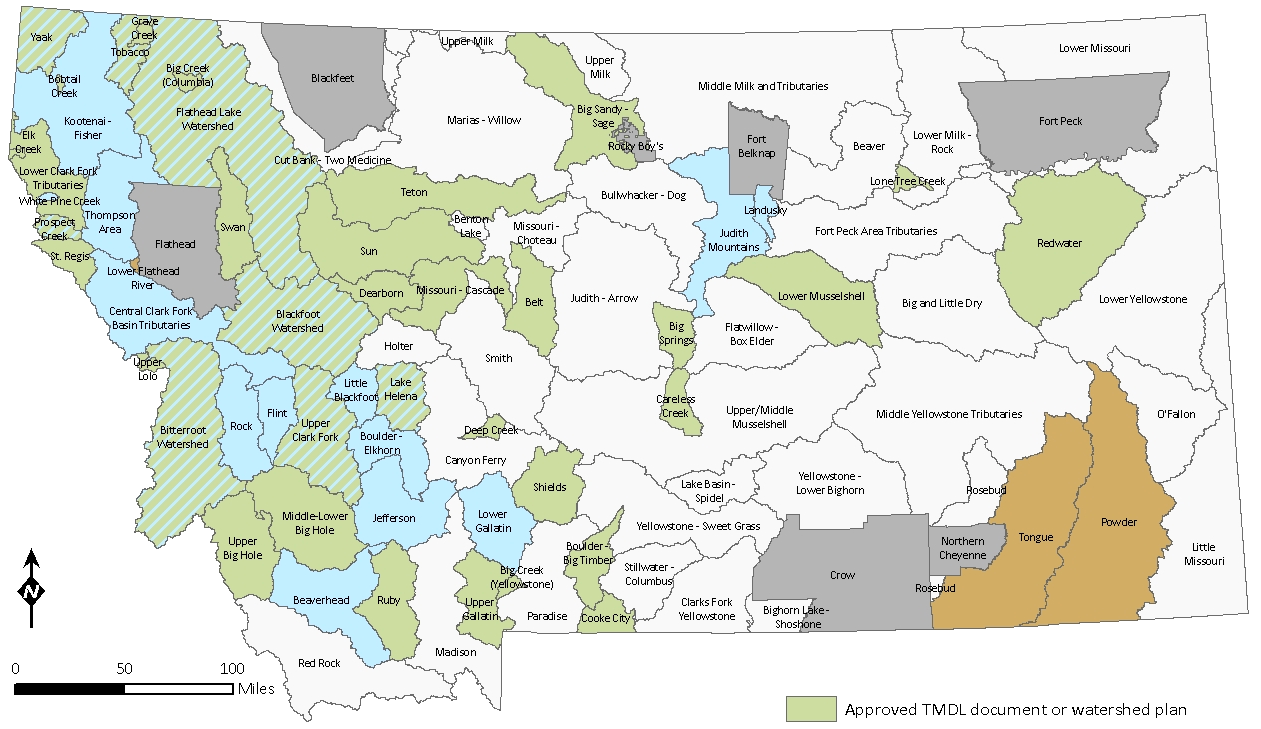
The Watershed Management Section (WMS) develops scientifically defensible Total Maximum Daily Loads (TMDLs) for impaired waters on Montana's 303(d) list. A TMDL refers to the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. A TMDL is sometimes expressed as a reduction in pollutant loading that results in meeting water quality standards. The term TMDL is also used to refer to the written document containing the TMDLs. TMDL documents in Montana typically include the framework for a restoration strategy, including implementation and monitoring recommendations. EPA-approved TMDL documents can be used by watershed groups and conservation districts to develop watershed restoration plans.

In Montana, TMDLs are developed at a watershed scale to include the complete area that contributes a pollutant to a stream. TMDL project areas (PAs) are established to facilitate this approach and as a way to group TMDL development for multiple waterbodies with similar impairment causes. The map shows Montana's PAs and their status relative to TMDL development, with a focus on 3 years of TMDL development planning through 2014.

In 2011, EPA approved TMDLs for metals in the Missouri–Cascade–Belt PA, sediment and temperature in the Bitterroot PA, and sediment in the Tobacco PA. Two additional documents are nearing completion, with EPA approval anticipated for 2011. These include metals, nutrients, and sediment in the Little Blackfoot PA and metals in the Landusky PA. Because each TMDL document includes multiple TMDLs, the total anticipated number of completed TMDLs exceeds 130 for the 2011 calendar year .

Additional TMDLs scheduled for completion in 2012 include sediment and metals for the Flint PA; sediment and temperature for the Beaverhead PA; temperature for the Jefferson PA; sediment, metals, nutrients, and temperature in the Boulder –Elkhorn PA; and sediment, nutrients, and pathogens in the Lower Gallatin PA. These PAs include more than 180 individual TMDLs that would be completed during 2012.

Montana TMDL Project Areas & 2014 TMDL Completion Schedule



TMDLs are specific to a waterbody segment - pollutant combination. Some planning areas with completed TMDLs may still require TMDL development for additional waterbody - pollutant combinations. Contact the DEQ at 406-444-5317 or refer to the final TMDL documents at http://deq.mt.gov/wqinfo/TMDL/finalReports.mcpx for additional details.

In addition to the watersheds shown on this map, some large rivers and their associated reservoir systems represent separate TMDL project areas. These include the Clark Fork River, the Missouri River, and the Yellowstone River. Pre-TMDL development support work is underway in the Yellowstone River and Missouri River, while the Clark Fork River has a combination of approved and in-progress TMDLs scheduled for completion in 2014.

Watershed Protection

The Watershed Protection Section (WPS) works to protect and restore water quality from the effects of nonpoint source (NPS) pollution. NPS pollution is the state's single largest source of water quality impairment. Unlike pollution from industrial and sewage treatment plants (point sources), NPS pollution comes from many widespread sources and can be generated by most land-use activities. NPS pollution is created when runoff water moves over and through the ground, picking up and carrying natural and human-caused pollutants into lakes, rivers, wetlands, and underground sources of drinking water. Common NPS pollutants include sediments, nutrients, heavy metals, pesticides, pathogens, oils, and salts.

WPS receives federal Clean Water Act (CWA) Section 319 funding to support activities addressing NPS water quality problems. In October 2011, WPS closed out the fiscal year 2006 Section 319 projects grant from EPA. This grant, for $1,358,265, allowed DEQ to support 23 NPS projects throughout Montana between 2006 and 2011. In 2011, WPS also closed out the state fiscal year 2010 Department 319 Staffing and Support grant ($1,365,600 of federal funds and $904,400 in state match).

In 2011, DEQ allocated more than $1 million to local projects by awarding $1,093,500 in Section 319 NPS project grants, funding 10 watershed restoration, 2 groundwater, and 5 education and outreach projects (Appendix C). Non-federal in-kind matches for these projects totaled $869,597. For the fiscal year 2012 call for Section 319 grant applications, WPS used new electronic forms for both the project proposal and final application stages. These new application forms greatly reduced the amount of time required by both applicants and reviewers to complete the application process and were well received.

During 2011, WPS managed more than 50 active Section 319 contracts that implemented the state's NPS Management Plan. WPS closed 24, 319 contracts and expects to close 14 more by mid-February 2012. In 2011, WPS revised its Final Report and Status Report guidance and developed a template for grantees to use when requesting reimbursement. These new documents will simplify and standardize reporting.

Beginning in July 2010, DEQ contracted the Soil and Water Conservation Districts of Montana, Inc. (SWCDMI) to manage the Section 319 Mini-Grants Program. Through this program, up to $2,000 per project is available to support local groups engaged in water quality and NPS pollution education efforts. SWCDMI works with the Montana Watershed Coordination Council's (MWCC) Education and Outreach Committee to review applications. SWCDMI awarded 11 mini-grants in February and another 5 mini-grants in September, for a total of $25,602 in 2011. For a complete list of mini-grants awarded in 2011 see Appendix E.

WPS continued working with watershed groups to develop Watershed Restoration Plans (WRPs). CWA Section 319 has funded 16 groups to develop WRPs. WQPB accepted two WRPs in Montana for the Teton River and the Lower Clark Fork River tributaries and provided comment on at least six other reports. DEQ anticipates accepting another five WRPs in 2012. WRPs are an important planning document for groups doing on-the-ground watershed restoration and must contain nine essential elements as specified by EPA:

1. An identification of the causes and sources of water quality impairment,
2. An estimate of the load reductions and management measures necessary to meet standards,
3. A description of the NPS management measures that will need to be implemented,
4. An estimate of the amounts of technical and financial assistance needed,
5. An information/education component,
6. A schedule for implementing the NPS management measures,
7. A description of interim measurable milestones,
8. A set of criteria that can be used to determine whether loading reductions are being achieved over time,
9. A monitoring component to evaluate the effectiveness of the implementation efforts over time.

WPS completed TMDL Implementation Evaluations (TIEs) in four watersheds: Big Creek (tributary to North Fork Flathead River), Cooke City, Deep Creek (near Townsend), and Upper Lolo Creek. These evaluations summarize restoration activities completed in the project areas since TMDL approval. The evaluations also consider recent monitoring data to determine if water quality is improving and/or if TMDL targets are being met. The Big Creek TIE lead to a reassessment of the sediment impairment and proposed formal delisting in the 2012 Water Quality Integrated Report. Final evaluations are published on the Nonpoint Source Program website (http://deq.mt.gov/wqinfo/nonpoint/NonpointSourceProgram.mcpx).

WPS developed a Restoration Project Field Evaluation form and tested it on restoration projects in the Ruby and Swan watersheds. Feedback from users has been positive, generating valuable discussions about what constitutes a successful project at varying spatial and temporal scales.

WPS began another review and update of the Montana Nonpoint Source Management Plan (NPS Plan). The NPS Plan is the guiding document for nonpoint source management in Montana and is required to be updated every 5 years; the last NPS Plan was approved by EPA in 2007. WPS is working with partners to review language, priorities, and best management practices (BMPs) for the update. WPS anticipates a public comment period in the spring of 2012, with a final document submitted to EPA and available for the public in June 2012.

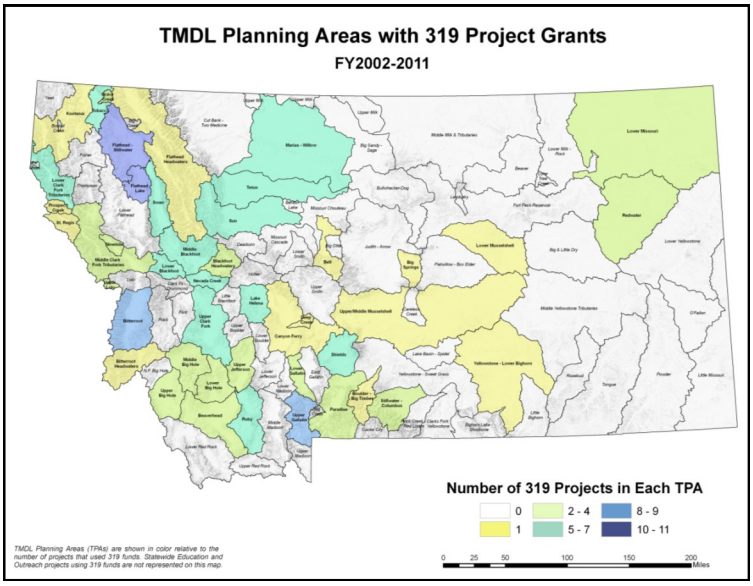
In 2011, WPS participated in various partner agency meetings. In April, WPS worked with the US Forest Service to hold the annual DEQ-Forest Service coordination meeting in Missoula. Topics from DEQ and the Forest Service included regional updates on forests and TMDLs, assessment procedures, requirements, permits, TMDL Implementation Evaluations, and opportunities for improved coordination. WPS also coordinated with the Forest Service and Bureau of Land Management by reviewing and commenting on six proposed projects, as well as participating in the Forestry BMP Work Group.

DEQ stayed informed of Natural Resource Conservation Services (NRCS) activities through participation in two State Technical Advisory Committee meetings. Additionally, two WPS staff participated in the development of an NRCS modeling tool for Montana District Conservationists. The NRCS MontFarm model will be used in rating and prioritizing the pollution potential of animal feedlots for funding under the Environmental Quality Incentive Program (EQIP) and Conservation Security Program (CSP).

WPS partnered with the Montana Natural Heritage Program to provide two geographic information system training events. The first training in May focused on collecting data in the field using handheld GPS units. The second training in November centered on data manipulation and map making. Both trainings were well attended, and WPS anticipates offering additional trainings in 2012.

WPS continues to use and promote the Nonpoint Source Wiki (http://montananps319grants.pbworks.com), a Web forum where stakeholders and the public can participate in discussions, leave comments, and ask questions about NPS issues. The wiki also facilitates the review of Section 319 grant applications by providing an easily accessible forum to post and retrieve grant documents and comments.

WPS developed a logo and message for its program. “Clean Water Starts With Me” will be used at educational events to help spread the message about clean water and healthy watersheds in Montana. This branding will also help to bridge the spaces between Montana’s citizens, DEQ, and the Watershed Protection Program, which works with groups and individuals to benefit everyone.



Success Story: Forestry Best Management Practices

Big Creek, North Fork of the Flathead River, Montana

The Big Creek watershed, located in the Rocky Mountains of northwestern Montana, includes Upper and Lower Big Creek, Hallowat Creek, and Skookoleel Creek. Big Creek is a 15.7-mile-long tributary to the North Forth of the Flathead River, and is designated for aquatic life and cold-water fishery use. Many stream segments in the Big Creek watershed contain important spawning habitat for the endangered bull trout.

Sediment from forest logging roads and other ground disturbing activities in the Big Creek watershed degraded water quality in Big Creek. As a result, DEQ added Big Creek to Montana's Clean Water Act (CWA) 1996 Section 303(d) List of impaired waters. A number of partners, including federal, state, and local agencies, a private entity, nonprofit groups, and the public, collaborated to implement erosion control best management practices (BMPs) and other stream restoration projects in the Big Creek watershed. Recent monitoring data from Big Creek show improvements in aquatic life and overall water quality. On the basis of these data, in 2012 DEQ will be removing the segment from the State's list of impaired waters for sediment.

Success Story: Abandoned Mine Cleanup

New World Mining District near Cooke City, Montana

In the beautiful, rugged Beartooth Mountains just north of Yellowstone National Park lie the scars of more than 100 years of mining exploration. For decades, many of the local streambeds were coated in thick orange, yellow, and white ooze composed of iron and aluminum oxides laced with toxic heavy metals. Abandoned mine adits (tunnels) along the mountainsides discharged highly acidic and mineralized water into drainages. However, some of the damage is now being reversed.

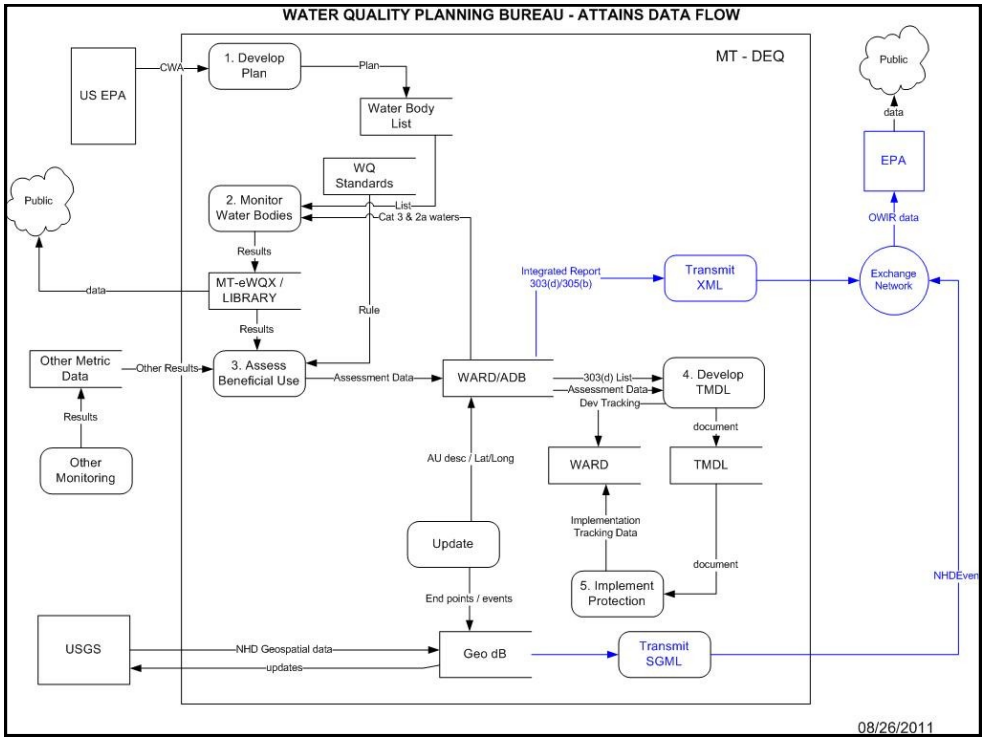
In 1996, the US Forest Service signed a settlement agreement with Crown Butte Mining, Inc., transferring ownership of much of New World Mining District's properties to the Forest Service and setting aside $22.5 million for cleanup within the district and the surrounding areas.

A recent TMDL Implementation Evaluation determined that much of the cleanup work has now been completed, and water quality in adjacent streams is steadily improving. In addition, DEQ's Abandoned Mines program has begun work on the McLaren Tailings cleanup project, which will remove thousands of cubic yards of mine waste from the banks of Soda Butte Creek, just south of the New World Mining District. Through the combined efforts of state and federal agencies, private companies, citizens, and environmental groups, water quality in the Beartooth Mountains is improving.

Photos show Soda Butte Creek upstream (top) and downstream (bottom) of the McLaren Tailings in 2008.

Information Management and Technical Services

The Information Management and Technical Services Section (IMTS) provides information management and technical service support for the Nonpoint Source Program and for the entire Water Quality Planning Bureau (WQPB). Support includes developing data/information systems and managing and administering water quality metric data, water quality assessments, contracts, bibliographic references, the water quality library, and the inventory of monitoring equipment. IMTS also provides project management support, IT coordination, mentoring for other state environmental agency data management programs, and water quality/watershed modeling support for TMDL and water quality standards development.



IMTS's Data Management manages and administers eight relational databases and nine information system applications. These databases support the Clean Water Act (CWA) Section 305(b) assessments and 303(d) listing decisions, water quality metric data, contracts, bibliographic references, and an inventory of monitoring equipment. Via the Internet, IMTS publishes the state's biennial water quality Integrated Report, solicits public comments on draft reports and documents, and enables water quality library queries. It also provides administrative support for WQPB's wiki sites maintained for the Section 319, TMDL, and water quality standards programs. IMTS Data Management provides support for analyzing stream temperature data and processing water quality metric data from EPA's WQX and USGS's NWIS data systems. In addition, IMTS Data Management provides reporting tools from the program's water quality assessment and water quality metric databases. Data Management also supports five geodatabases that contain Montana's surface water use classifications, water quality monitoring and references sites, point source outfalls, and 305(b) assessment units. These geodatabases will be published on the state's GIS Data Portal (http://gisportal.msl.mt.gov/GPT9/catalog/main/home.page).

In January 2011, Montana's 2010 Integrated Report, and accompanying 303(d) list, was approved by EPA Region 8. Also during 2011, IMTS Data Management prepared the state's 2012 Draft Water Quality Integrated Report, with a public comment period set for January and February 2012.

In August 2005, IMTS Data Management began developing a data system for managing water quality assessments and tracking TMDL development and implementation. The system will integrate EPA's Assessment Database with state requirements for documenting water quality assessments and tracking restoration activities (i.e., TMDL development through restoration). Phase 1 of the project, developing the Water Quality Assessment, Reporting, and Documentation (WARD) system, was completed at the end of 2007. Clean up and certification of the initial data migration for 1,105 individual water quality assessment files and the associated library references required a significant amount of work. The initial migration was completed February 24, 2010, and the data system was used for the 2010 Water Quality Integrated Report.

IMTS Data Management continues to research and plan for Phase 3: development of the WARD data system. The major components of Phase 3 will be 1) the ability to submit ATTAINS assessment and geospatial data for Integrated Reporting using EPA's Exchange Network, 2) the implementation of EPA's Integrated Report review process (once defined), and 3) the elimination of data redundancies between the state's WARD and EPA's Assessment Database, achieving a singular state-maintained system for documenting and reporting state assessment data and information.

IMTS Data Management completed a Bureau-level Standard Operating Procedure (SOP) for document production and publication. The SOP provides explicit guidance for internally and externally published documents; defines standard formats, style, and word usage; and provides document templates. The SOP has improved WQPB's efficiency and consistency in producing and publishing documents and reports.

IMTS Data Management processed 203 unique water quality data packets into its water quality metric database: Montana EQuIS (Environmental Quality Information System) for WQX (MT-eWQX). Of these 203 packets, 175 were new data inserts and 27 were data updates that revised or corrected one or more data elements of previously loaded data. Two hundred seventy three data packets were submitted to EPA's STORET National Data Warehouse via the state's Exchange Network node. The 30 data packets not submitted included three data sets received during the 2012 Integrated Report "call for data" and 27 for data collected by the state, EPA, and/or Exxon Mobile during the Silvertip Pipeline oil spill into the Yellowstone River in July 2011. These data were loaded into DEQ's Remediation Division database organization (MDEQ_REM_WQX). Neither the "call for data" nor remediation datasets are considered appropriate for state submittal to the STORET National Warehouse.

IMTS's Modeling provided modeling support for TMDL planning in the Bitterroot River (nutrients and temperature), Little Blackfoot River (nutrients and sediment), Flint Creek (nutrients), and Flathead basin (nutrients), as well as stormwater analysis for the Lower Gallatin TMDL and on-site system loading analysis to groundwater in the Helena valley. Additionally, IMTS Modeling released for public comment its final report for the Yellowstone River QUAL2K model supporting numeric nutrient standards development. The modeling program also published the new statewide average annual precipitation distribution for the 1981 to 2010 period. This map is available at: http://gisportal.msl.mt.gov/GPT9/catalog/main/home.page (search term: precipitation).

Quality Assurance and Quality Control

The Quality Assurance and Quality Control Section (QAQC) supports the Nonpoint Source Program and WQPB and its contractors by describing the management and technical procedures that will assure the quality of environmental information used to support decisions. This is referred to as a "quality system." It provides WQPB with a practical framework for managing the quality of activities, resulting in environmental determinations and controls.

QAQC continued to support WQPB in building processes used to support the development of water quality criteria, reporting the condition of the state's waters, developing Total Maximum Daily Loads (TMDLs), implementing best management practices (BMPs), and determining the effectiveness of implementation strategies.

One of the most significant accomplishments in 2011 was the revision of DEQ's Water Quality Assessment Method. Currently, DEQ has developed assessment methods for nutrients, sediment, and metals pollutant groups, which represent the most common pollutants impairing Montana's surface waters. Each pollutant method provides for a structured and consistent approach to assessments and will allow DEQ to make reproducible and defensible decisions about beneficial use-support. Temperature and Electrical Conductivity/Sodium Adsorption Ratio (EC/SAR) methods are in development.

QAQC coordinates with agencies, conservation districts, watershed groups, and other entities to ensure quality data that can be used in water quality assessments and through TMDL development and implementation projects funded by Section 319 grants. As the state's monitoring strategy is implemented, numerous project-specific quality assurance project plans (QAPPs) and sampling and analysis plans (SAPs) are developed with assistance from QAQC. When new or modified methods and processes are developed, QAQC must draft or revise many of WQPB's standard operating procedures.

All volunteer monitoring groups that receive Section 319 funding are required to submit a QAPP and/or SAP before monitoring. A General QAPP was developed by the MSU Water Quality Program, Montana Watercourse, and DEQ to provide general data quality guidelines and a basic framework for training members of a volunteer monitoring group. The goal of a volunteer monitoring group may be to evaluate the effectiveness of implementation efforts or trend analysis. Volunteer monitoring groups are encouraged to develop clear and thorough QAPPs because they serve as the blueprint for the project by outlining the goals and objectives of the project. In addition, SAPs document the procedural and analytical requirements for projects. Using these planning documents increases the validity of the data; quality data facilitates better watershed decisions making.

QAQC collaborated in the development of 3 QAPPs/SAPs and 13 SAPs, for a number of conservation districts, watershed groups, and volunteer monitoring groups. These projects focused on volunteer monitoring for baseline water quality and trend analysis, monitoring for effectiveness of restoration activities and pollutant load reductions, and monitoring to characterize groundwater and surface water interactions:

- Gallatin Groundwater Project QAPP/SAP
- Northwest Montana Lakes Volunteer Monitoring Network QAPP/SAP
- Shields River Watershed Baseline Water Quality Investigations QAPP/SAP
- Big Spring Creek Stream Restoration Project SAP
- Deep Creek/Teton Watershed Project SAP
- Helena Area Groundwater Project Phase II SAP
- Jack Creek Water Quality Monitoring SAP
- Laird Creek SAP
- Lindbergh Lake SAP
- Lower Wise River Monitoring SAP
- Mattie V Creek Monitoring SAP
- Madison Stream Team Water Quality Monitoring SAP
- Sage Creek SAP
- Sun River Watershed Monitoring SAP
- Upper Big Hole River Success Monitoring SAP
- West Fork Nitrogen Monitoring Project SAP

Collaborating Partners

The Water Quality Planning Bureau has met nonpoint source goals and successfully maintained the viability of watershed groups across the state by supporting and coordinating with organizations such as the Montana Watershed Coordination Council, Montana Watercourse, Montana State University Extension, Montana Association of Conservation Districts, Montana Wetland Council, and various Montana state agencies.

Volunteer Monitoring Partnership

In 2010, DEQ initiated a Section 319 grant with Montana Watercourse (MTWC) at Montana State University to coordinate a volunteer water monitoring program. This program provides technical training and guidance to groups interested in conducting water quality monitoring, manages the volunteer monitoring (VM) database, and provides education and outreach activities to citizens. In 2011, DEQ continued to work with MTWC to coordinate the VM program.

For 2012, MTWC plans to continue its work with school groups to identify viable service learning programs for volunteer monitoring. So far Fairfield, Flathead, Whitehall, and Livingston school districts have expressed interest in spring 2012 programs. MTWC will develop a Call for Proposals for service learning projects during the coming quarter and review and announce two service learning "winners" in late winter. Projects must be completed by June 2012.

DEQ also works with Montana State University Extension Water Quality (MSUEWQ) on their 2011 Section 319 grant, which involves volunteer monitoring of *E. coli* levels in surface waters for the Madison and Gallatin rivers (on the 303(d) list for fecal bacteria impairments).

DEQ's Volunteer Monitoring Support Program

DEQ has been fortunate to have MSUEWQ assist with developing monitoring projects and writing sampling and analysis plans for three VM projects groups during 2011. MTWC has agreed to work with VM groups receiving funding under DEQ's VM Support Program to upload water quality data into DEQ's water quality database (eWQX). Having a single point of contact to route water quality data from VM groups into the eWQX database will increase the efficiency of making the data publicly available.

Four groups were awarded funding for laboratory sample analysis in 2011. Appendix F summarizes the VM projects that were active during 2011. Of these projects, five groups are focusing on chemical and physical parameters, while one group focused on biological analysis (e.g., aquatic macroinvertebrate community health).

DEQ's Volunteer Monitoring Support Program Goals:

1) *Provide support for volunteer monitoring groups in the state*
   The Watershed Protection Section (WPS) continued to work with MSUEWQ, MTWC, and several individual volunteer groups to advance water quality protection goals. DEQ sent out a new request for proposals to labs during spring 2011 and used a VM stakeholder workgroup to select the contracted lab. DEQ is pleased to report that contract rates for individual lab analyses are lower under the current contract than for the previous one. $15,000 in Section 319 funding was made available during 2011 for collecting chemical data in lakes and streams as well as biological data from streams.

2) *Work with MWCC's Water Quality Monitoring Workgroup to strengthen the lab support program*
   The MWCC workgroup did not meet during 2011; however, WPS will participate in the next meeting early in 2012 in order to discuss potential ways for strengthening volunteer monitoring in the state.

3) *Increase participation in the lab analysis support grant program*
   Participation in the volunteer support program increased from three VM groups in 2010 to six groups in 2011.

4) *Work with DEQ's QA Officer, MSU Extension Water Quality, and MWCC's Water Quality Monitoring Workgroup to develop a Sampling and Analysis Plan template that will facilitate the planning of sampling efforts by volunteer monitoring groups.* WPS hopes to achieve this goal in 2012.

5) *Establish a volunteer monitoring network that would: 1) perform long-term monitoring of the success of individual restoration projects at the site scale and 2) select TMDL target parameters to assess reach and waterbody scale effectiveness of water quality restoration activities and progress toward meeting water quality standards.*
   These ideas will be vetted through MWCC's Water Quality Monitoring Workgroup early in 2012, as well as the MSUEWQ VM forum in the fall 2012.

Montana Watershed Coordination Council

The Montana Watershed Coordination Council (MWCC) is a statewide information and support network created to support and advance local watershed work. MWCC links local watershed groups, natural resource agencies, and private organizations with the goal of enhancing, conserving, and protecting natural resources and sustaining the high quality of life in Montana for present and future generations. MWCC provides a forum for organizations to share resources, identify and capitalize on opportunities for collaboration, and avoid duplication of efforts.

In 2011, MWCC was lead by two co-chairs and a steering committee; there is also a Funding Committee and two initiative based committees: Water Resources and Education and Outreach, both of which are chaired by DEQ's Nonpoint Source staff. Within these two committees there are multiple work-groups, many of which are led by DEQ staff. These work groups offer forums for agencies, academia, conservation districts, watershed groups, and nonprofit organizations to discuss issues and offer solutions to water resource needs in Montana.

For the past 2 years MWCC has contracted the services of a part-time coordinator, which provides a consistent point of contact and helps facilitate the growth of the organization. The work of the coordinator is partially supported with Section 319 funds from DEQ.

In January 2011, MWCC hosted a full council meeting in Helena titled "A Lesson in Legislation." Topics for this council meeting included tips on testifying before a legislative committee, how to design a successful legislative bill, navigating the Legislative Automated Workflow System (LAWS), and presentations on bills of interest in the 2011 session.

In May 2011, MWCC partnered with the Montana Wetland Council to plan and host the 2011 Joint Wetland and Watershed Stewardship Awards Ceremony. Every 2 years the two councils jointly honor wetland and watershed stewardship in Montana. The Montana Watershed Stewardship Award recognizes innovative, locally-led approaches to restoring and enhancing Montana's watersheds. The 2011 Watershed Stewardship Award went to the Sweet Grass County Conservation District for promoting the health and viability of the Boulder River and the Sweet Grass and Swamp Creek watersheds. The 2011 Agency Award went to Joel Chavez, Superfund Project Manager, and Tim Reilly, Project Officer, from DEQ, for the Silver Bow Creek Restoration project, which has gone far beyond procedural requirements in both quantity and quality of aquatic restoration.

MWCC launched its new website (www.mtwatersheds.org), giving MWCC a more approachable and established presence on the Internet. The website was also designed to allow online registration and payment for MWCC membership, trainings, and events.

In August, the Water Activities Work Group (WAWG) of the Water Resources Committee participated in a watershed tour of the Ruby River. The group visited three major projects, including the Miller Ranch Restoration, the Sauerbier Feedlot relocation project, and a large wetland restoration project outside of Sheridan.

Also in August, both the WAWG and the Education and Outreach Committee met with DEQ to review the draft Section 319 grant applications. Because these groups consist of members of various watershed groups, state agencies, and other organizations that have a diverse interest in water quality, they are in a unique position to offer feedback on these draft applications.

The main MWCC training event for 2011 was the Fall Coordinator Training, held in September at the BBar Ranch near Emigrant, Montana. The theme of the 3-day training was "Effective Fundraising." More than 25 people attended and learned how to build and strengthen their organization's fundraising plan. MWCC is expecting to host a Spring Coordinator Training in 2012; the central theme will be water quality monitoring. For more information, please visit www.mtwatersheds.org.

The Montana Association of Conservation Districts and MWCC joined forces with the Montana Conservation Corps to develop and launch the Big Sky Watershed Corps (BSWC). In October, this new AmeriCorps program placed 10 members with watershed groups and conservation districts in Montana. These college graduates are currently serving with their host sites for a 46-week term until August 2012. The primary goal for the BSWC program is to improve watershed health and protection through member development, volunteer recruitment, and education and outreach. Through data collection, water monitoring, watershed restoration, and project plans, these members and their work will have a positive effect on water quality and water quantity issues. For information on specific members and host sites, visit www.mtwatersheds.org/Services/BigSkyWatershedCorps.html.

In 2012, MWCC hopes to develop a renewed level of participation and direction for the organization. To kick start this process the Steering Committee began a review of its operating guidelines in 2011. The guidelines are the basis for how MWCC operates and aid the organization as it continues to grow in Montana. The proposed revisions will be discussed at the annual general meeting, scheduled for January 12, 2012, at the Montana FWP Wildlife Discovery Center at Spring Meadow Lake in Helena.

Montana Wetland Council

The Montana Wetland Council is an active network of diverse interests that cooperates to conserve and restore Montana's wetlands and riparian ecosystems. The Council's mission is to coordinate efforts to protect, conserve, and enhance Montana's wetland and riparian resources for present and future generations. The Council coordinated more than 500 Montanans in the planning process to create "A Strategic Framework for Wetland and Riparian Area Conservation and Restoration in Montana 2008–2012."

Montana's overarching wetland goal is "No overall net loss of the state's remaining wetland resource base (as of 1989) and an overall increase in the quality and quantity of wetlands in Montana." Council participants work to implement the Strategic Framework and meet three times each year to exchange information and find solutions to complex wetland and riparian issues. The Council's listserv has grown to more than 700 individuals and all are encouraged to participate. The Montana Wetland Program is part of the Technical and Financial Assistance Bureau of DEQ's Planning, Prevention and Assistance Division and leads the Montana Wetland Council.

In 2011, DEQ's Wetland Program hosted three day-long Wetland Council meetings focusing on different topics. Approximately 50–100 people attended each meeting and came away with information and contacts to help address wetland and riparian management issues. Meeting topics focused on:

January 6 – Beavers, water storage, and wetland development: ephemeralization of streams and the role of beavers in wetland development and keeping water on the landscape. Six speakers gave presentations on a range of science and management topics related to ephemeral streams, beaver reintroduction experiences in Montana, and working with landowners to incorporate beavers as a restoration tool in Montana and neighboring Canada. A Beaver Working Group was created and work is ongoing to further explore using beavers as a wetland and watershed restoration tool.

May 23 – Wetland and Watershed Stewardship Award Ceremony in the State Capitol. The Montana Wetland Council and Montana Watershed Coordination Council jointly hold a biennial celebration to recognize wetland and watershed stewards in Montana as part of National Wetland Month celebrations. Wetland award winners included the Flathead River to Lake Initiative Partnership and ranchers Henry and Trish Gordon from Blaine County. The keynote emphasized the vital importance of restoring nature's infrastructure as a cost-effective approach for ecosystem recovery and watershed services. The joint Council meeting included presentations on innovative wetland and watershed restoration and protection approaches.

September 27 – 2011 floods in Montana and the effects on wetlands, riparian areas, floodplains, and stream channels. The meeting explored the record high waters in Montana and the long duration of high flows, which changed many floodplains, wetlands, channels, islands, and other aspects of stream morphology. Floods also affected weed infestations, sediment transport, erosion, and irrigation infrastructure. Financial and ecological needs compel us to understand the 2011 floods and the effects on aquatic and related riparian resources. Financial and ecological needs also compel us to continue to advance the protection of the natural and beneficial function of floodplains and reduce flood risk. Presentations included the Yellowstone Oil Spill, Milltown channel and floodplain restoration, Musselshell flooding, and USGS flood gauging data. These presentations helped to inform the subsequent Council discussion on floodplain protection.

In 2011, the Wetland Program completed six wetland and riparian contracts and in-house projects that furthered the goals of Montana's Strategic Framework:

- Researched and produced a final report titled "Montana Floodplain Management Assessment: Strengthening Policies and Programs that Reduce Flood Risk and Protect Floodplains."
- Conducted a channel migration study for the Helena Valley to assist local governments with science-based natural resource information for sound riparian protection and land-use decision-making.
- Reviewed and provided formal comments on the US Army Corp of Engineers' reissuance of nationwide permits, general conditions, and definitions and provided separate comments on their proposed regional conditions.
- Participated in National Wetland Condition Assessment field assessments to improve the science of wetland decision-making and provided grant oversight.
- Completed wetland and riparian mapping for Gallatin County.
- Conducted one wetland plant identification training and one ecological integrity assessment training for groups participating in a Wetlands and Watershed Restoration Project.

Other wetland and riparian contracts and in-house projects that were initiated in 2011 and are ongoing include:

- Developing Wetland Program Plans to guide DEQ's wetland program and integrate wetlands more fully into other DEQ water programs.
- Developing an In Lieu Fee aquatic mitigation program as an additional option for CWA permittees to comply with the federal Mitigation Rule.
- Initiating the US Army Corps of Engineers' Silver Jackets program in Montana to implement recommendations from the 2011 Floodplain Assessment report.
- Demonstrating approximate floodplain mapping for four rural local governments on the Big Hole River and developing standards and guidance for regulatory floodplain mapping.
- Investigating and updating DEQ's 401 certification program and process to strengthen and enhance wetland protection at the state level.
- Researching options regarding wetland water quality standards and their necessity to further protect wetlands in Montana.
- Demonstrating how incorporating wetlands into Watershed Restoration Plans can be used to address known water quality impairments identified through the TMDL process.
- Developing and providing one of three professional wetland science continuing education courses through the Extended University at Montana State University.

Looking Forward

DEQ continues to demonstrate that the Montana Nonpoint Source Management Program is committed to and capable of addressing nonpoint source pollution in Montana and that a voluntary, incentive-based approach works well in this state. The state has many committed partner agencies, non-governmental organizations, and concerned citizens who participate in addressing nonpoint source water quality pollution protection and restoration.

Priorities for 2012 include:

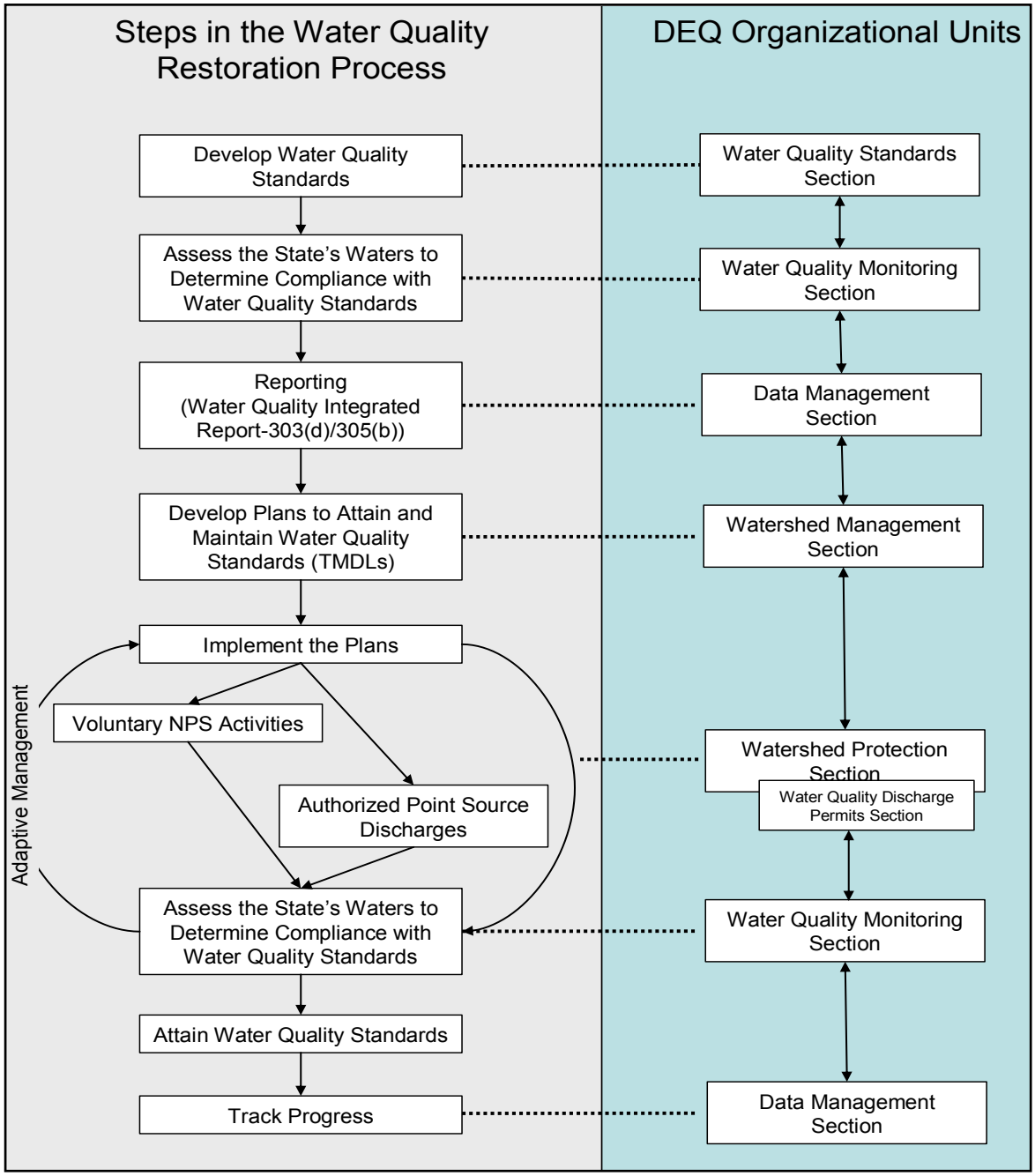
- the release of final numeric nutrient standards for wadeable streams
- the submittal of 2012 Water Quality Integrated Report to EPA
- the completion of 180 individual TMDLs
- the review and acceptance of five Watershed Restoration Plans
- the completion of TMDL Implementation Evaluations
  - Big Spring Creek
  - Blackfoot headwaters
  - Careless Creek
  - Elk Creek
  - Ruby River
  - Swan River
- the submittal of the 2012 Nonpoint Source Management Plan

Areas of concern in the near future include the potential for new EPA guidance and reporting requirements for Section 319 programs. DEQ will continue to monitor and stay involved with any proposed changes for the Section 319 program.

Another major concern is the potential decrease in Section 319 funding to Montana from the federal government. In 2011, the Montana Section 319 program suffered a 12.5% cut in overall funding from fiscal year 2010. In Montana, federal Section 319 funds are essential in providing a clean and healthful environment; funds go to on-the-ground projects in communities throughout the state, creating jobs while protecting and restoring Montana's irreplaceable natural resources. Without this funding none of this would be possible. Potential negative effects from the proposed budget cuts for Section 319 may be compounded by possible decreased federal funding to other natural resource agencies, including the Natural Resource Conservation Service, US Forest Service, Environmental Protection Agency, and others. WQPB is working diligently to determine the best ways to limit and absorb these cuts with the least effect to water resources in Montana.

APPENDICES

Appendix A – Water Quality Planning Bureau Integrated Approach



1. The Water Quality Standards Section defines the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect waterbodies from pollutants.
2. The Water Quality Monitoring and Assessment Section monitors water quality conditions and trends statewide and assesses sources and severity of pollution problems.
3. The Data Management Section reports assessment findings.
4. The Watershed Management Section develops TMDL plans for waters not meeting standards.
5. The Watershed Protection Section supports the implementation of TMDLs.
6. Water Quality Standards developed by the Water Quality Standards Section are used throughout DEQ, such as in the Montana Pollutant Discharge Elimination System program, to ensure clean water protection by all permitted point-source dischargers.

Appendix B – Montana Nonpoint Source Management Program's 5-Year Goals and Action Plan

The Montana Nonpoint Source (NPS) Management Program's goal is to provide a clean and healthy environment by protecting and restoring water quality from the effects of nonpoint sources of pollution. The short-term (5-year) goal of Montana's NPS Management Program is to demonstrate significant progress in protecting and restoring Montana's water quality from nonpoint sources of pollution as measured by achieving the actions outlined in the NPS Management Plan. These actions focus on three specific areas: resource-specific goals, policy-specific goals, and education and outreach-specific goals.

Resource-Specific 5-Year Goals for the State's Nonpoint Source Plan

5-Year Goal	Measurable Outcome
Complete Water Quality Plans and necessary TMDLs	In 2011, EPA approved TMDLs for metals in the Missouri–Cascade–Belt PA, sediment and temperature in the Bitterroot PA, and sediment in the Tobacco PA. Two additional documents are nearing completion, with EPA approval anticipated for 2012. These include metals, nutrients, and sediment in the Little Blackfoot PA and metals in the Landusky PA. Because each TMDL document includes multiple TMDLs, the total anticipated number of completed TMDLs exceeds 130 for calendar year 2011.
Conduct water quality assessments state-wide	In 2011, WQMAS assessed seven waters. These assessments will be reflected in the 2012 Water Quality Integrated Report, to be submitted to EPA in April 2012; approval is anticipated in June 2012.
Review/update Integrated Water Quality Report (305(b)/303(d))	In January 2011, Montana's 2010 Integrated Report, and accompanying 303(d) list, was approved by EPA Region 8. Also during 2011, IMTS Data Management prepared the state's 2012 Draft Water Quality Integrated Report, with a public comment period set for January and February 2012.
Reference site monitoring and assessment	No activity in 2011.
Increase DEQ internal monitoring support for TMDL program	As part of the support for TMDL development, more than 40 streams were sampled in the following TMDL Planning Areas: Boulder-Elkhorn, Upper Clark Fork, Lower Blackfoot, Clark Fork-Drummond, Rock, and Flathead. In 2011, WQMAS supported TMDL development by providing training on various monitoring techniques, which included use of field equipment, such as temperature data loggers.
Work with watershed groups to develop watershed restoration plans	In 2011, WPS continued to work with watershed groups to develop Watershed Restoration Plans (WRPs). CWA Section 319 has funded 16 groups to develop WRPs. In 2011, WQPB has accepted two WRPs in Montana (the Teton and Lower Clark Fork rivers) and provided comment on at least six other reports.
Implement restoration projects identified in Water Quality Plans/ TMDLs	In 2011, WPS continued to work with watershed groups to develop Watershed Restoration Plans (WRPs). CWA Section 319 has funded 16 groups to develop WRPs. In 2011, WQPB has accepted two WRPs in Montana (the Teton and Lower Clark Fork rivers) and provided comment on at least six other reports. WPS and EPA created a spreadsheet with information on projects throughout the state linked to TMDL implementation. The spreadsheet is being revised to populate WQPB's Waterbody Assessment and Reporting Database (WARD).
Monitor Section 319 restoration activities for effectiveness and pollutant load reductions	QAQC collaborated in developing 3 QAPPs/SAPs and 13 SAPs for a number of conservation districts, watershed groups, and volunteer monitoring groups. These projects focused on volunteer monitoring for baseline water quality and trend analysis, monitoring for effectiveness of restoration activities and pollutant load reductions, and monitoring to characterize groundwater and surface water interactions. For a complete list of projects see page 11.
Establish a statewide monitoring strategy for monitoring of Section 319 and other watershed restoration activities for practice effectiveness, load reductions, and in-stream water quality achievements	QAQC carries out the water quality monitoring strategy for WQPB that includes monitoring of intermittent streams and the development of processes. The state's Monitoring Strategy was delivered to EPA in 2009. As the monitoring strategy is implemented, numerous project-specific QAPPs and SAPs will be developed with the assistance of QAQC.

Conduct 5-year reviews of completed and implemented TMDLs	In 2011, WPS completed TMDL Implementation Evaluations in four watersheds: Big Creek (tributary to North Fork Flathead River), Cooke City, Deep Creek (near Townsend), and Upper Lolo Creek. These evaluations summarize restoration activities completed in the project areas since TMDL approval. These evaluations also consider recent monitoring data to determine if water quality is improving and/or if TMDL targets are being met. The evaluation of Big Creek led to a reassessment and formal delisting for the sediment impairment. Final evaluations are published on the Nonpoint Source Program website (http://deq.mt.gov/wqinfo/nonpoint/NonpointSourceProgram.mcpx).
Collaborate with federal, state, and local agencies to promote conservation tillage (no-till, direct seed), vegetated filter strips, and riparian buffers	DEQ is currently working with the Montana Department of Fish, Wildlife, and Parks; the Army Corps of Engineers; and the Natural Resource Conservation Service to promote conservation tillage and riparian buffers on stream restoration projects.
Review SMZ for protection of water quality, 2 facets: 1) restored watershed monitoring, 2) collaborative research projects (i.e. DNRC & Plum Creek)	No Activity in 2011.
Overlap priority areas with USFS/DNRC using GIS for coordinating watershed planning process (needs assessment versus existing budgets)	The Watershed Protection Section is participating in the Multi-Agency Integrated Restoration Strategy (MA-IRS) being coordinated by the Department of Natural Resources and Conservation. In 2011, the MA-IRS determined that the foundation for good coordination was in place and would move away from the formal process.
Work with MSU Extension, DNRC, USFS, NRCS, and BLM to develop a targeted list of BMPs for grazing (those that achieve water quality standards)	Watershed Protection is participating in the Animal Feeding Operations/Confined Animal Feeding Operation Partnership and also providing Section 319 funds to support MSU Extension for grazing BMPs.
Provide reviews and comment on outside agency proposed projects	WQPB continues to provide reviews and comments on partner agency projects and proposals as appropriate.
Develop, maintain, and enhance Clean Water Act Information Center public access to data system	WQPB administered the Clean Water Act Information Center, which provides public access to Montana's Water Quality Integrated Report (305(b) and 303(d) lists).
Administer STORET water quality database system/Administer Web-based STORET Interface Module for non-DEQ STORET data submittals	The Montana EQuIS (Environmental Quality Information System) for WQX (MT-eWQX) replaced STORET in 2010. IMTS integrated EPA's Water Quality Exchange (WQX) database elements and state-specific data elements into the core EQuIS database schema and continues to manage this database.
Initiate monitoring project for "large rivers" (e.g., Missouri, Yellowstone)	WQMAS continues working with the Standards and Information Management and Technical Services sections to develop a nutrient model for a segment of the Missouri River (Three Forks to canyon Ferry Lake). The field component was completed in 2011. The nutrient development component is expected to be completed in late 2012 or early 2013.

Policy Directed 5-Year Goals for the State's Nonpoint Source Plan	
5-Year Goal	**Measurable Outcome**
Provide Section 319 funding to projects that implement NPS and TMDL water quality restoration strategies	DEQ allocated more than $1 million to local projects by awarding $1,093,500 in Section 319 NPS project grants to fund 10 projects in watershed restoration, 2 in groundwater, and 5 in education and outreach (Appendix C). Non-federal in-kind matches for these projects totaled $869,597.
Develop and implement DEQ water quality improvement MOUs with agencies, including USFS, BLM, DNRC, MDT, and MFWP	Watershed Protection developed an MOU between DEQ and the Bureau of Land Management that identifies the commitments for communicating and acting on nonpoint source water quality issues. The goal of the MOU is "to maintain or restore water quality on lands managed or influenced by the Bureau of Land Management." WPS is in the process of re-energizing a partnership between DEQ and MDT.

Assist in efforts to develop a cumulative impact assessment strategy for groundwater impacts in high density septic/ development areas	The Watershed Protection Section is working with Lewis and Clark County on a groundwater Section 319 grant that may be useful as a model for other areas. The grant provides Lewis and Clark County with funding to assist in developing a program to ensure proper maintenance of septic systems by homeowners. Inadequate or lack of septic system maintenance affects drinking water and the environment. The county is also exploring the effects and sources of groundwater pollution and developing a manual that will identify BMPs and the associated estimated load reductions.
Assist in the review of subdivision stormwater rules.	No activity in 2011.
Implement collaborative monitoring processes with federal, state, and local agencies on federal and state land projects, focusing on riparian zone management in achieving water quality standards	WQPB implemented collaborative monitoring with the Bureau of Land Management, US Forest Service, Tri-State Water Council, US Geological Survey, University of Montana, and a number of conservation districts, watershed groups, and non-profit organizations. These partnerships are important because they are often maintained from TMDL development through the implementation of projects funded by Section 319 grants administered by the Watershed Protection Section.
Continue water quality participation in the ITEEM process by collaborating with the IRTWG group	Led by Montana Department of Transportation, this effort is to better coordinate and plan for environmental effects on large-scale transportation corridors. In 2011, DEQ participated in the Corridor Planning Study for MT-1 West of Anaconda to Georgetown Lake.
Develop numeric nutrient water quality standards and implementation procedures for surface waters	In 2011, WQS completed three significant technical projects pertaining to numeric nutrient standards. First, the 3-year nutrient-addition field study carried out in Carter County was completed. Second, WQS completed an assessment methodology for determining nutrient effects in wadeable streams. Third, WQS released its first recommendations for numeric nutrient standards for a large river—the lower Yellowstone. The release of final numeric nutrient standards for wadeable streams has been delayed until 2012. In 2011, emphasis was placed on working through implementation processes that needed to be detailed before the adoption of the nutrient criteria. This work is progressing rapidly; work will resume to finalize the criteria immediately following the completion of the implementation components. In 2012, DEQ expects to present a nutrient standards package to the Board of Environmental Review.
Develop a technical basis for a lake classification system based on nutrient status	In 2009, WQS began putting into a database all available lake data that had been collected since 2003. This is a first step toward the analytical phase in which DEQ will begin to work on an empirically-based lake classification system. The analytical phase of the lake classification system has been postponed until 2012.
Circulate numeric standards for all pesticides identified in Montana groundwater and surface water.	WQS produces Department Circular DEQ-7, which contains numeric water quality standards for Montana's surface water and groundwater. The numeric water quality standards in DEQ-7 have been established for pollutants that are categorized as toxic, carcinogenic, bioconcentrating, radioactive, nutrient, or harmful. The 2010 revisions included: • the adoption of surface water and groundwater standards for 18 new pesticides and their associated metabolites recently detected in Montana's groundwater • the addition of five new human health standards for pesticides • the revision of six human health NRWQC for pesticides, modified by EPA to reflect new scientific information • the revision of six aquatic life standards for pesticides and insecticides to reflect the incorporation of frequency and duration into the numeric standards • changes in the footnotes to add averaging periods and allowable exceedance frequencies for aquatic life numeric standards • a rewrite of the introduction and changes to the format of Circular DEQ-7.
Develop biocriteria for wadeable streams	Since 2004, WQMAS and WQS have been developing diatom biocriteria. A sediment and nutrient model is available for all MT ecoregions, with the exception of the Middle Rockies, to be used as a diagnostic indicator in our new stream assessment methodologies.

Develop Standard Operation Procedures (SOP) for monitoring intermittent streams	WQS is developing biological indicators for different stressor-specific assessment methods that will be used by WQPB to evaluate streams. WQS tested and added a biological indicator to the draft nutrient assessment method. EPA and WQS tested a modified version of the Hilsenhoff Biotic Index (HBI) that is calibrated for nutrient effects on macroinvertebrates. DEQ will use water quality data with the HBI scores to determine if mountain streams are being affected by nutrients. WQS in the early stages of developing a macroinvertebrate indicator for use in the draft sediment-specific assessment method.
Review and recommend revisions or updates to Montana's Groundwater Plan	Groundwater Plan update by Department of Natural Resources and Conservation currently on hold while pursuing development of State Water Plan.
Form an MS4 task force to promote and coordinate stormwater management activities	No activity in 2011.

Education and Outreach 5-Year Goals for the State's Nonpoint Source Plan	
5-Year Goal	**Measurable Outcome**
Provide support and promote the development and coordination of watershed groups through MWCC activities, training workshops, advertising campaigns, etc.	MWCC is led by two co-chairs and a steering committee; there is also a Funding Committee and two initiative-based committees: Water Resources and Education and Outreach, both of which are chaired by DEQ NPS staff. MWCC also has a part-time coordinator, which provides a consistent point of contact and helps facilitate the growth of the organization. This position is partially funded using Section 319 money from DEQ.
Support the certification of volunteer monitors in watershed groups	DEQ has a Section 319 grant with Montana Watercourse (MTWC) to coordinate a volunteer water monitoring program that provides technical training and guidance to groups interested in conducting water monitoring. MTWC also manages the volunteer monitoring database and provides education and outreach activities to citizens interested in becoming volunteers.
Improve DEQ website for public access to information on NPS Program	WPS continues to use and promote the Nonpoint Source wiki, a website designed to allow stakeholders and the public to participate in Web-based discussions, leaving comments or asking questions about NPS issues. The wiki also facilitates the review of Section 319 grant applications each fall by providing an easily accessible forum to retrieve and post grant documents. To help improve access, the wiki address is now included on WPS promotional items.
Develop educational campaign: Urban growth and development issues (e.g., stormwater runoff, septic system maintenance, transportation infrastructure, low impact development)	Montana Watercourse, with agency participation, has been planning for a second Stormwater Conference to be held in Kalispell in 2012.
Develop educational campaign: Riparian and wetland buffer protection	In 2008, WPS awarded a Section 319 grant to the Flathead Conservation District for a Riparian Buffer Education Campaign. The campaign used television, radio, and print media in multiple counties to communicate information about riparian stewardship and BMPs. In early 2010, WPS increased the total funding for that grant to help pay for a comprehensive effectiveness evaluation of the campaign. This project was finalized in 2011.
Develop educational campaign: Small farm and ranch conservation. Work with NRCS, DNRC, MSU Extension, and Farm Bureau	DEQ is working with the Montana Association of Conservation Districts (MACD) on a Section 319 grant contract to address NPS pollution from small livestock operations. The contract will provide funds to hire a Conservation Advisor for Livestock Operations (CALO), who will assess on-ranch management practices associated with animal feeding operations and provide mini-grant opportunities for ranchers to reduce NPS pollution from their operations. This project has the potential to be expanded to a broader segment of the state.
Work with Statewide organizations (e.g., MEEA, Project WET) to establish and expand water curriculum in schools	WPS manages the Section 319 grant administered by Montana Watercourse that works with the Office of Public Instruction, Project WET, Project Webfoot, Project Learning Tree, the Watershed Education Network, and others to hold workshops and develop curriculum for the K–12 audience.
Develop and promote BMP training for road maintenance personnel using Local Technical Assistance Program (LTAP) and other venues	No activity in 2011.

Appendix C – Fiscal Year 2011 Section 319 Project Summaries

Project Name	Project Sponsor	DEQ Project Officer	319 Funds	Non-Federal Match Funds	Total Project Cost
Watershed Restoration Projects					
Big Spring Creek Machler Restoration	Fergus CD	M. Ockey	$185,000.00	$125,000.00	$310,000.00
Muddy Creek Nonsupporting to supporting	Sun River Watershed Group	M. Ockey	$100,000.00	$86,000.00	$186,000.00
Deep Creek/Teton River - Phase II	Teton River Watershed Group	M. Ockey	$67,500.00	$71,000.00	$138,500.00
Elk Creek Restoration	Lower Clark Fork Watershed Group	P. Lizon	$19,000.00	$12,667.00	$31,667.00
Big Hole Watershed Restoration	Big Hole Watershed Committee	M. Kelley	$83,500.00	$55,667.00	$139,167.00
Lake Helena Watershed Restoration Project	Lewis & Clark Co WQ Protection District	R. Ray	$160,000.00	$113,860.00	$273,860.00
Grave Creek Revegetation Treatments Project	Kootenai River Network, Inc.	R. Ray	$23,000.00	$15,340.00	$38,340.00
Corder Ditch Abandonment project	Craighead Institute	M. Kelley	$80,000.00	$131,000.00	$211,000.00
Flathead Lakeshore Water Quality Protection	Flathead County	P. Lizon	$123,000.00	$82,000.00	$205,000.00
Haskill Creek - Reimer Reach	Flathead Conservation District	P. Lizon	$30,000.00	$20,000.00	$50,000.00
		Watershed Restoration Projects Sub-Total	*$871,000*	*$712,534*	*$1,583,534*
Groundwater Projects					
Gallatin Ground Water Project	Gallatin Local Water Quality District	M. Kelley	$70,000.00	$47,225.00	$117,225.00
Clark Fork Watershed Septic Maintenance	Tri-State Water Quality Council	P. Lizon	$20,000.00	$19,680.00	$39,680.00
		Groundwater Projects Sub-Total	*$90,000*	*$66,905*	*$156,905*
Information & Education Projects					
Education & Outreach Mini-Grants	SWCDMI	L. Andersen	$30,000.00	$20,000.00	$50,000.00
Strengthening Watershed Communities Through E&O	SWCDMI	R. Ray	$25,000.00	$16,700.00	$41,700.00
Apsáalooke Watershed Education Outreach Program	Little Big Horn College	L. Andersen	$7,000.00	$6,458.00	$13,458.00
Riparian, Stormwater and NPS Outreach	MTWC	L. Andersen	$48,000.00	$32,000.00	$80,000.00
Volunteer Monitoring for E. coli	MSU Extension Water Quality	P. Lizon	$22,500.00	$15,000.00	$37,500.00
		Information and Education Projects Sub-Total	*$132,500*	*$90,158*	*$222,658*
		TOTAL	**$1,093,500**	**$869,597**	**$1,963,097**

Appendix D – Section 319 Projects Closed in 2011

Contractor	Project Title	Funding	Closed Date
Ruby Valley Conservation District	Ruby Three Forks Corral	$65,000.00	1/4/2011
Houston Engineering	TMDL Source Assessment Asst	$31,200.00	2/14/2011
WET	Boulder-Elkhorn TPA	$44,697.04	2/24/2011
Blackfoot Challenge	Blackfoot TMDL	$64,400.00	2/28/2011
Soil & Water Conservation Districts of Montana	Montana Watershed Coordination Council- Coordination	$20,000.00	3/7/2011
Flathead Conservation District	Riparian Buffer Education	$140,000.00	3/16/2011
PBS&J	Boulder Elkhorn TPA	$30,522.00	3/29/2011
PBS&J / Atkins	Shields River Ws Nutrient Monitoring	$23,458.09	4/26/2011
Confluence	Boulder Elkhorn TPA	$25,975.00	5/10/2011
Lewis & Clark County Water Quality Protection District	Helena Area Groundwater PRJ	$29,997.91	5/11/2011
PBS&J	Beaverhead TPA Roads Assessment	$19,793.30	5/17/2011
Confluence	Beaverhead TPA	$25,975.00	6/24/2011
Great Gallatin Watershed Council	Lower Gallatin TMDL	$115,000.00	6/30/2011
Jefferson River Watershed Council	Phase IV TMDL Development Upper Jeff River TPA	$107,999.90	6/30/2011
Montana DNRC - FBC	Groundwater Monitoring Flathead	$25,000.00	7/6/2011
Blue Water Task Force	Upper Gallatin TMDL	$99,000.00	7/19/2011
Blue Water Task Force	Upper Gallatin TMDL	$75,000.00	7/19/2011
Kootenai River Network	Grave Creek	$130,000.00	7/21/2011
Kootenai River Network	Grave Creek	$30,000.00	7/21/2011
Bitter Root Water Forum	Bitterroot Assessments	$52,755.13	8/12/2011
Watershed Consulting	Beaverhead TPA Sediment & Habitat SAP & Field Assessment	$11,909.00	8/12/2011
MSU Watercourse	NPS Riparian Wetland Buffer Education Campaign	$51,997.70	8/17/2011
Ravalli County	Bitterroot Hazardous Waste Disposal	$29,192.40	8/17/2011
Lolo Watershed Group	Lolo TMDL Coordination	$10,000.00	8/25/2011

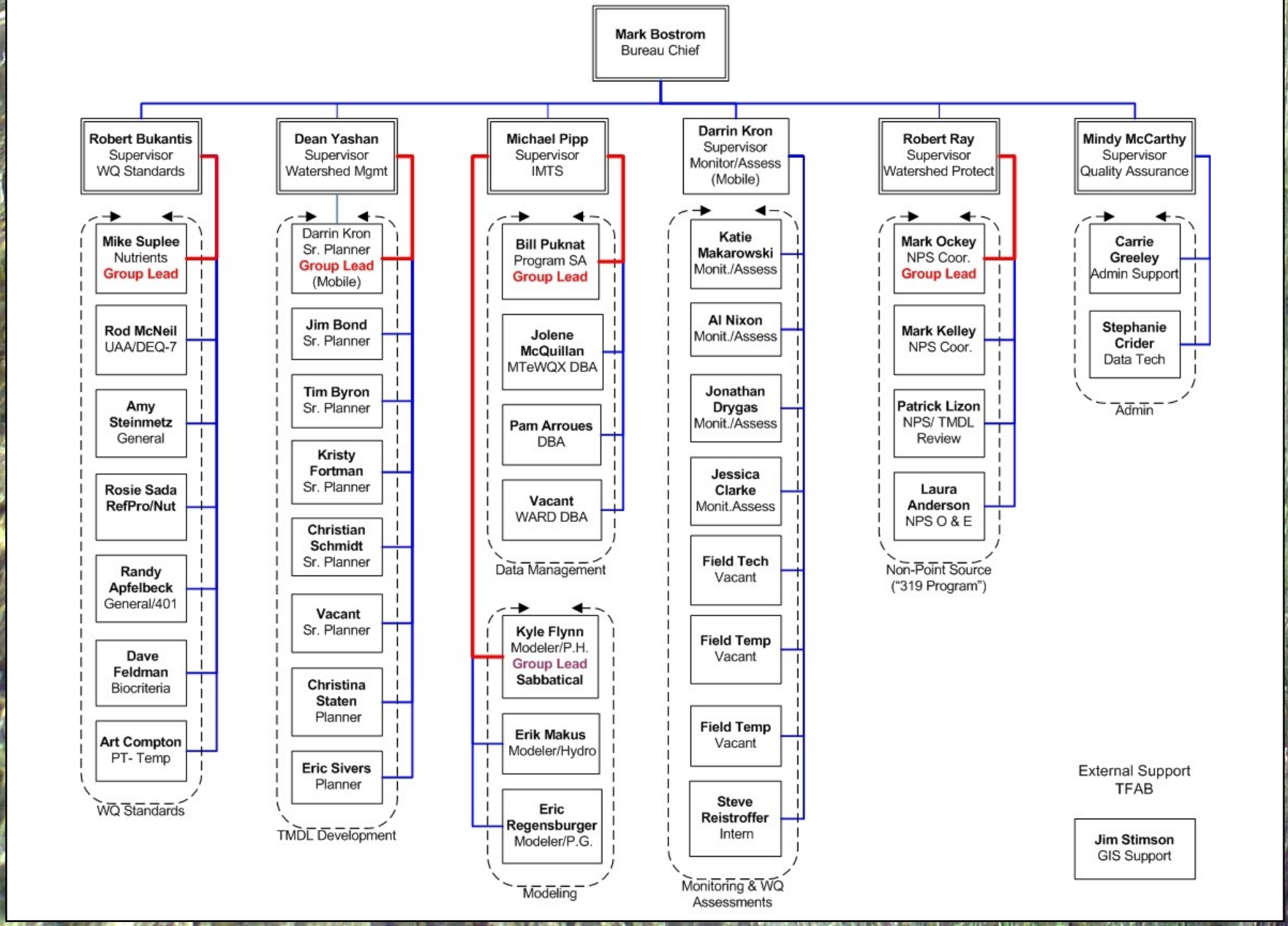
Appendix E – Section 319 Mini-Grant Projects in 2011

Contract	Project Sponsor	Project Title	Funding
Mini-Grants Awarded in February 2011 by SWCDMI (DEQ contract #210145)			
SWCDMI-MG11-05	Bitter Root Water Forum	Sula Community Engagement	$1,500
SWCDMI-MG11-06	Broadwater Conservation District	Deep Creek Streambank Re-vegetation	$1,195
SWCDMI-MG11-07	Clark Fork Watershed Education Program	Anaconda HS Environmental Club	$1,500
SWCDMI-MG11-08	Greater Gallatin Watershed Council	Sacajawea Middle School Rain Garden	$1,500
SWCDMI-MG11-09	Helena School District #1, SACC	What's In a Body of Water	$1,500
SWCDMI-MG11-10	Lewis & Clark Conservation District	EVMS Flood Awareness Day	$1,500
SWCDMI-MG11-11	Lolo Watershed Group	Ebb & Flow: Understanding Streambank Stabilization	$1,500
SWCDMI-MG11-12	Madison Conservation District	Jack Creek Water Monitoring Project	$1,500
SWCDMI-MG11-13	Park County Environmental Council	Protecting Shields Valley Water Resources	$1,500
SWCDMI-MG11-14	Ruby Valley Conservation District	2011 Welcome to the Neighborhood	$1,500
SWCDMI-MG11-16	Trout Conservancy	Alternative Beaver Management & Reintroduction	$1,461
Mini-Grants Awarded in September 2011 by SWCDMI (DEQ contract #211070)			
SWCDMI-MG12-01	Bitter Root Water Forum	Revegetation on East Fork	$1,947
SWCDMI-MG12-02	Blue Water Task Force	Ophir School Rain Garden	$2,000
SWCDMI-MG12-03	Future West	After the Floods Workshop	$2,000
SWCDMI-MG12-04	Hyalite Elementary School	Riparian Classroom Celebration	$1,500
SWCDMI-MG12-05	Montana 4 H Foundation	Water Days on Crow Indian Reservation	$2,000
Calendar Year 2011 Total			**$25,602**

Appendix F – Volunteer Monitoring Support Grants in 2011

Sponsor	Project	Project Description	Funding Award	Award Date
Lindbergh Lake HOA	Lindbergh Lake Volunteer Monitoring	The Lindbergh Lake Homeowner's Association (LLHOA) has sampled nutrient parameters in Lindbergh lake on and off since 1989. The funding will cover lab analysis of nutrient and chlorophyll-a concentrations at three locations in the lake as well as at a site in the river outlet during the summers of 2011 and 2012.	$775	July-11
Trout Unlimited	Mattie V Creek Volunteer Monitoring	Trout Unlimited was awarded funding for aquatic macroinvertebrate community analysis of samples collected from Mattie V Creek in the Ninemile Creek drainage west of Missoula. Macroinvertebrate samples were collected from fixed sites in a control reach and a restored reach both before and after stream rehabilitation work occurred in response to legacy effects of placer mining. Samples will be analyzed by Dave Stagliano, aquatic ecologist with the Montana Natural Heritage Program.	$1,380	September-11
Madison Watershed Partnership	Madison Stream Teams Volunteer Monitoring	The newly formed Madison Stream Team Program, under the direction of Madison Watershed Partnership Coordinator Sunni Heikes-Knapton, received funding to sample nutrients and metals in five streams during fall 2011 and spring/summer 2012. MSU EWQ assisted with developing the DEQ approved SAP. The five streams being sampled are on Montana's 303(d) list of impaired waters with TMDL development forthcoming. The Stream Teams are collecting data associated with the 303(d) listed causes of impairment, which will aid subsequent TMDL development for these streams which currently have limited data availability.	$2,500	October-11
Apsáalooke Water and Wastewater Authority	Bighorn River Watershed Volunteer Monitoring	The Apsáalooke Water and Wastewater Authority of the Crow Tribe of Native Americans was awarded lab analysis funding to assist with obtaining a baseline water quality data for ground and surface water prior to the forthcoming operation of a large industrial plant that will convert coal to liquid fuels. MSUEWQ will assist the Crow Tribe with developing the SAP.	$2,000	November-11

Appendix G – Water Quality Planning Bureau Organizational Chart



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