
DEQ
Montana Department of
Environmental Quality
Edit ×
Montana Nonpoint Source Program
2019 Annual Report

Overview

Nonpoint source pollution (NPS) is Montana's largest source of water quality impairment. Unlike pollution from industrial and sewage treatment plants (point sources), NPS pollution comes from widespread sources and can be generated by most land-use activities.

(Infographic by EPA, click to play "What's wrong with this picture?")

Overview

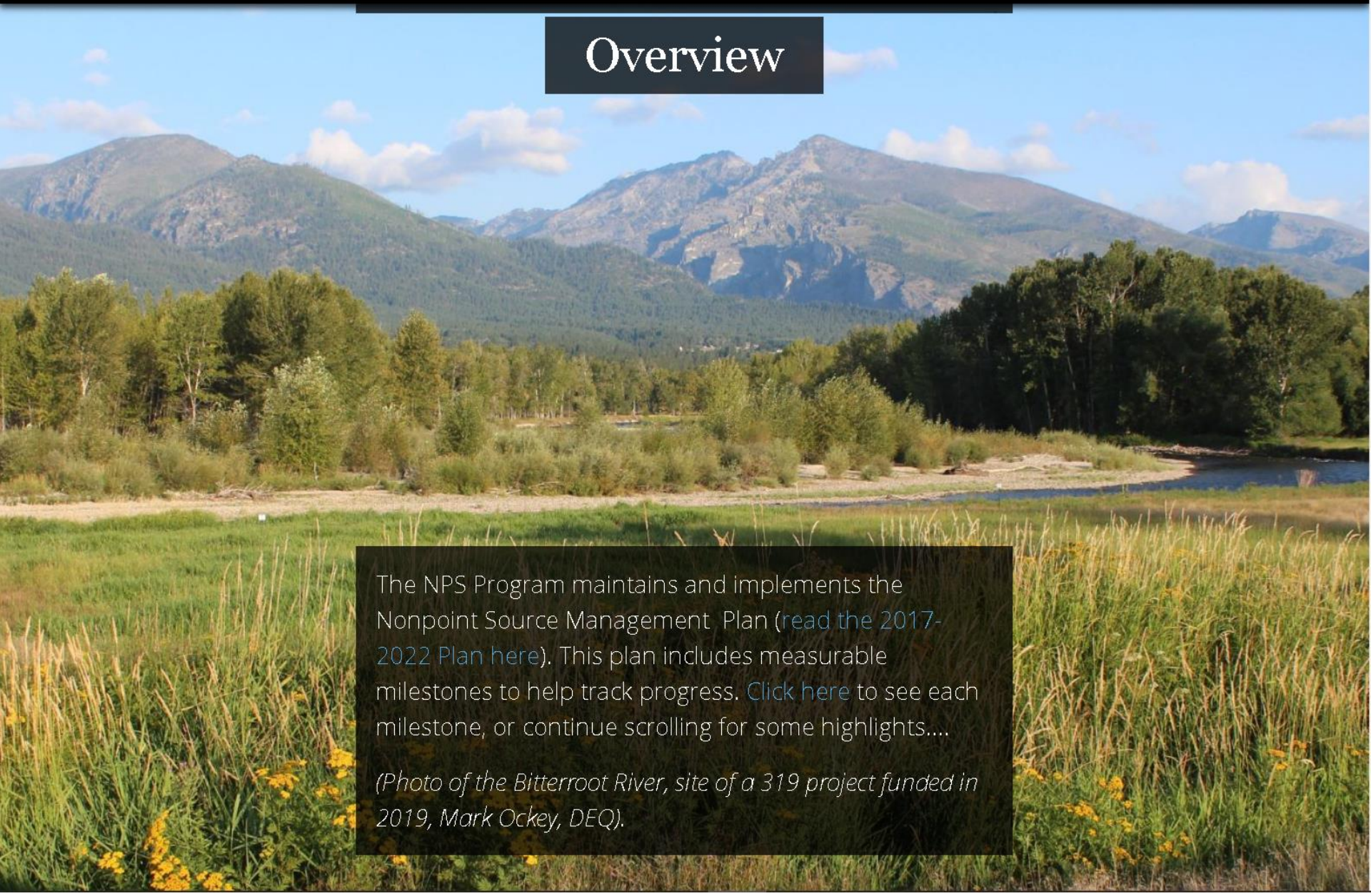
Each year, EPA awards federal Clean Water Act Section 319 funding to DEQ to address NPS pollution.

In June 2019, the FY2018 program grant closed. The two year grant for $1,064,500 included a state match of $709,667 and covered 16.5 staff positions and support activities.

NPS project funding is managed by DEQ, but local partners implement the projects. In June 2019, the FY2014 projects grant closed. This grant for $961,146 allowed DEQ to support 34 NPS projects of varying size between 2014 and 2019. Local partners matched $1,940,979 (67%) in non-federal match funds, well above the required 40%.

(Photo of the Snowcrest Range, Eric Regensburger, DEQ)

Overview



The NPS Program maintains and implements the Nonpoint Source Management Plan (read the 2017-2022 Plan here). This plan includes measurable milestones to help track progress. Click here to see each milestone, or continue scrolling for some highlights....

(Photo of the Bitterroot River, site of a 319 project funded in 2019, Mark Ockey, DEQ).

Overview

Measurable Milestone Highlight #1

The Watershed Protection Section published the Big Spring Creek and Cramer Creek TMDL Implementation Evaluations, and Monitoring and Assessment published the Clark Fork River Nutrient Water Quality Status and Trends Report in 2019. The documents provide recommendations for streams that may now be meeting state water quality standards, or streams that need more time or additional conservation practices applied.

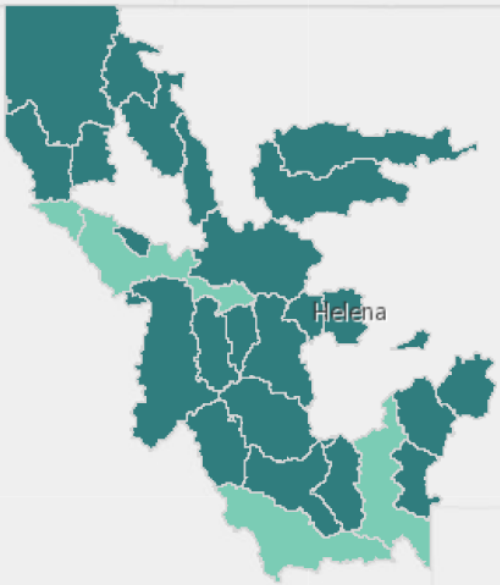
The 2017 NPS Management Plan specifies a goal of "at least 15 reviews completed" by 2022. These documents make 5 since this goal began.

Overview

Measurable Milestone Highlight #2:

319 restoration projects implemented in 2019 will result in 3.5 miles of riparian buffer improvement. This brings the total up to 7.7 miles of riparian buffer improvement since beginning the 2018-2022 goal "fund 10 miles of riparian buffer enhancement through 319 contracts."

Overview



Measurable Milestone Highlight #3:

The Lower Clark Fork Watershed Group updated their Watershed Restoration Plan. As part of this update, stakeholders convened multiple times to agree upon a prioritized list of specific projects for future implementation.

The 2017 NPS Management Plan specifies a goal of "12 new or updated DEQ-accepted WRPs by 2022." This WRP update is the 5th since this goal began.

Dark blue watersheds have developed or updated their WRP. Light blue watersheds have a WRP in progress. Visit this webpage to view WRPs or contact us if you are interested in improving water quality.

Montana Nonpoint Source Program

Overview

DEQ's Water Quality Planning Process

1 Monitor Water Quality

Collect data about water quality

2 Characterize Water Quality

Describe and compare water quality conditions across the project area

3 Assess Water Quality

Determine whether waters are "impaired" (fail to meet one or more water quality standards and do not fully support beneficial uses)

4 Identify Sources of Pollution

Estimate amount of pollution from identified sources

5 Develop Total Maximum Daily Loads (TMDLs)

Determine reductions needed for impaired waters to meet water quality standards, and recommend pollution reduction strategies

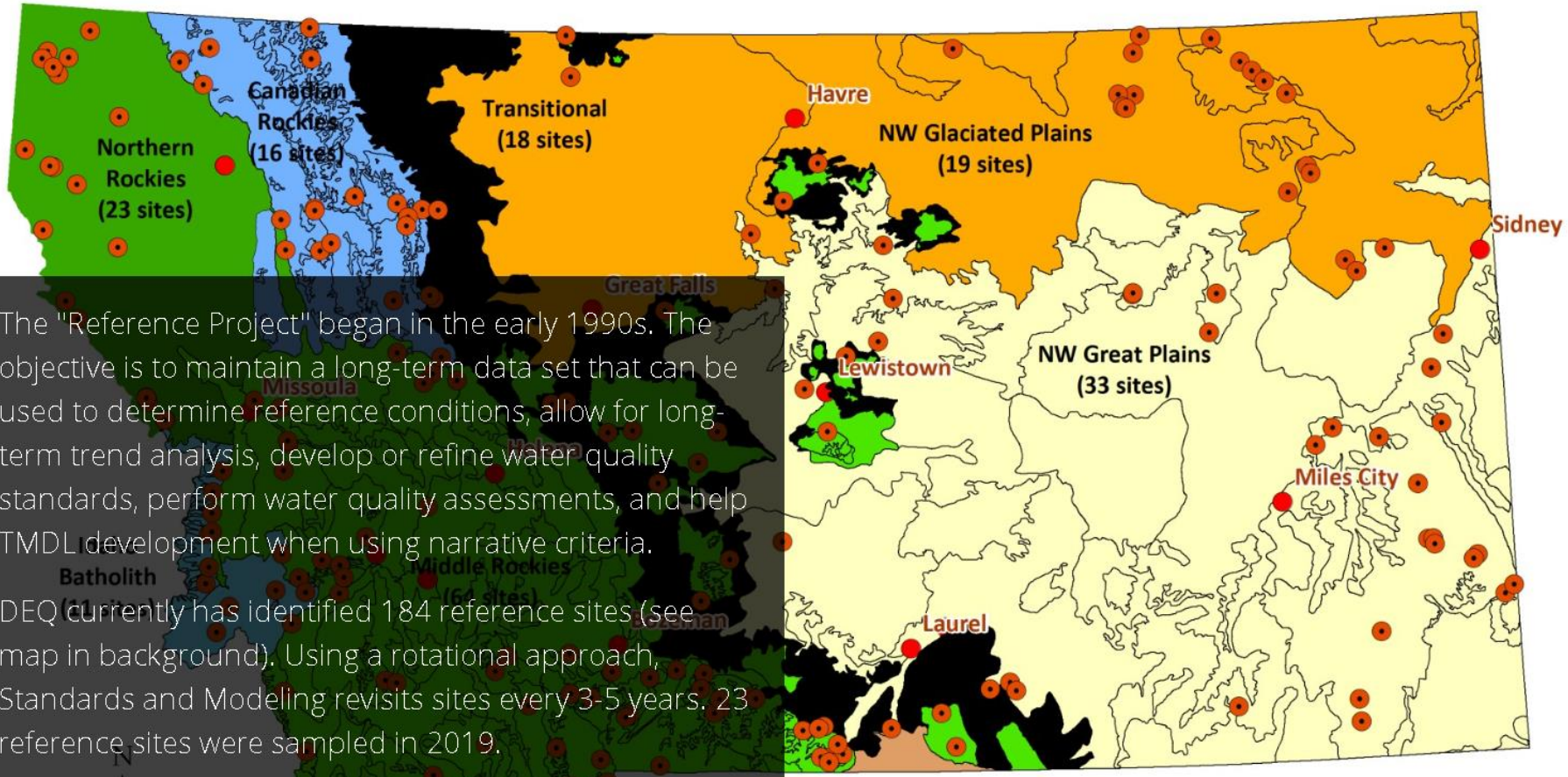
6 Support Watershed Restoration

NPDES Permit Revisions

Support locally-led efforts to reduce pollution and restore watershed health with technical resources and funding

The goal of Montana's NPS Program is to protect and restore water quality from the harmful effects of NPS Pollution. We achieve this through collaboration between multiple programs at the Department of Environmental Quality and external partners. Continue through this storymap to learn more about each program and a small selection of partners.

Standards and Modeling Section

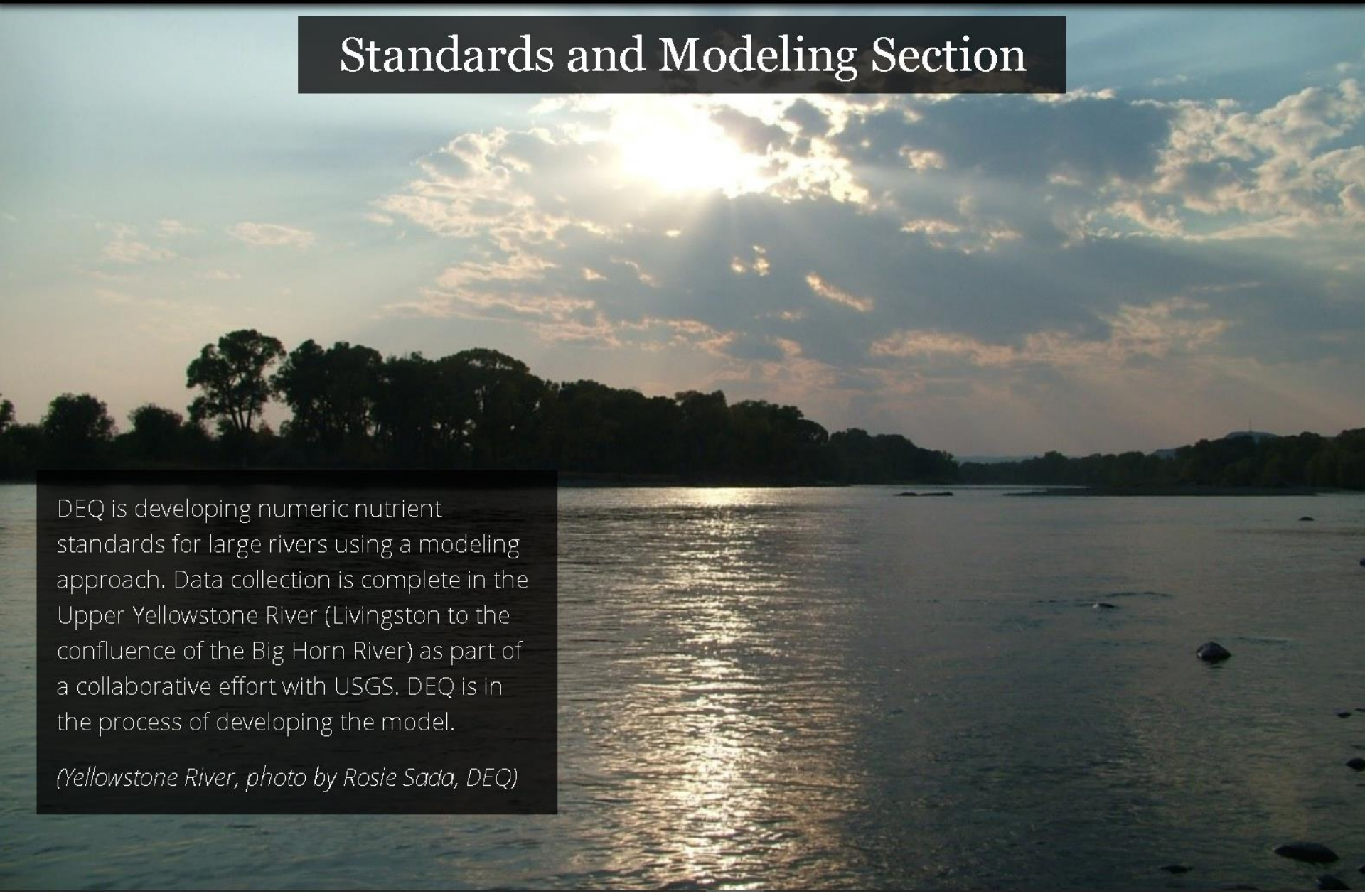


The "Reference Project" began in the early 1990s. The objective is to maintain a long-term data set that can be used to determine reference conditions, allow for long-term trend analysis, develop or refine water quality standards, perform water quality assessments, and help TMDL development when using narrative criteria.

DEQ currently has identified 184 reference sites (see map in background). Using a rotational approach, Standards and Modeling revisits sites every 3-5 years. 23 reference sites were sampled in 2019.

Data collection includes physical, chemical and biological parameters. DEQ provides field training and hires seasonal field crews through a collaborative effort with the University of Montana.

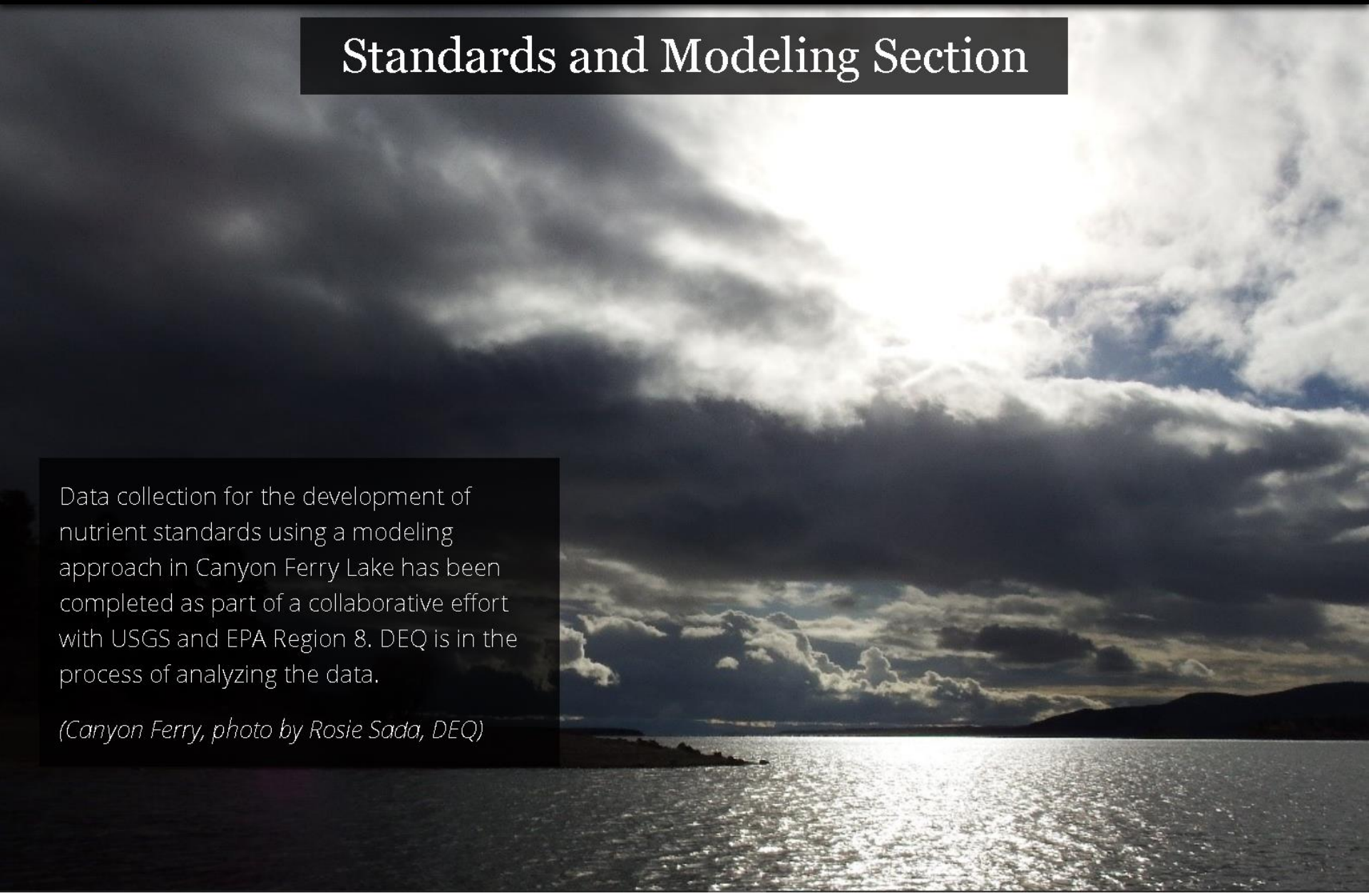
Standards and Modeling Section



DEQ is developing numeric nutrient standards for large rivers using a modeling approach. Data collection is complete in the Upper Yellowstone River (Livingston to the confluence of the Big Horn River) as part of a collaborative effort with USGS. DEQ is in the process of developing the model.

(Yellowstone River, photo by Rosie Sada, DEQ)

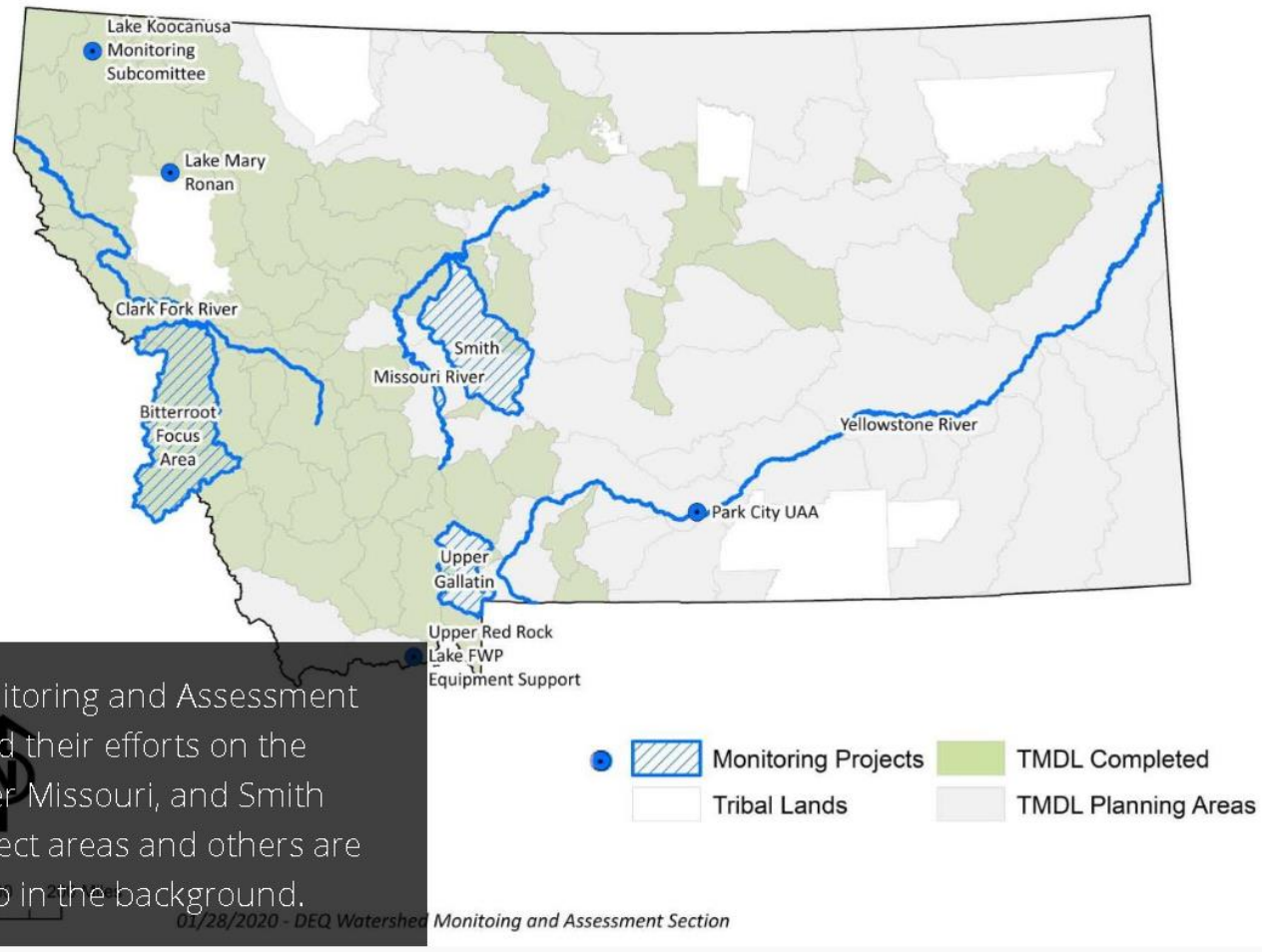
Standards and Modeling Section



Data collection for the development of nutrient standards using a modeling approach in Canyon Ferry Lake has been completed as part of a collaborative effort with USGS and EPA Region 8. DEQ is in the process of analyzing the data.

(Canyon Ferry, photo by Rosie Sada, DEQ)

Monitoring and Assessment



During 2019, Monitoring and Assessment (MAS) staff focused their efforts on the Yellowstone, Upper Missouri, and Smith Rivers. These project areas and others are shown on the map in the background.

Monitoring and Assessment

For the 2020 Integrated Reporting cycle, MAS completed 303(d)/305(b) assessments for 45 waterbody segments, including approximately 400 individual waterbody-pollutant combinations in the following project areas: Red Rock Creek Watershed, Beaverhead Watershed, Cooke City area, and a few other scattered watersheds and waterbodies.

(Photo of monitoring Trail Creek in the Red Rock, DEQ)

Volunteer Monitoring

DEQ continues to provides training and invest technical and financial resources for volunteer monitoring (VM) as a way to engage local communities in investigating and addressing water quality issues. VM programs heighten awareness of locally-relevant water resource priorities while providing meaningful educational opportunities for participants. VM programs can also increase the amount of credible data that is available to inform watershed restoration planning.

(Photo from an algae sampling training.)

Volunteer Monitoring

In 2019, DEQ's Monitoring and Assessment Section awarded $21,031 to nine VM programs through the Volunteer Monitoring Lab Analysis Support Program. These funds offset the cost of having an accredited laboratory analyze water quality samples collected by VM programs. Each VM project that was awarded funding developed a sampling and analysis plan which includes quality control measures to ensure their data are credible and aligns with project objectives.

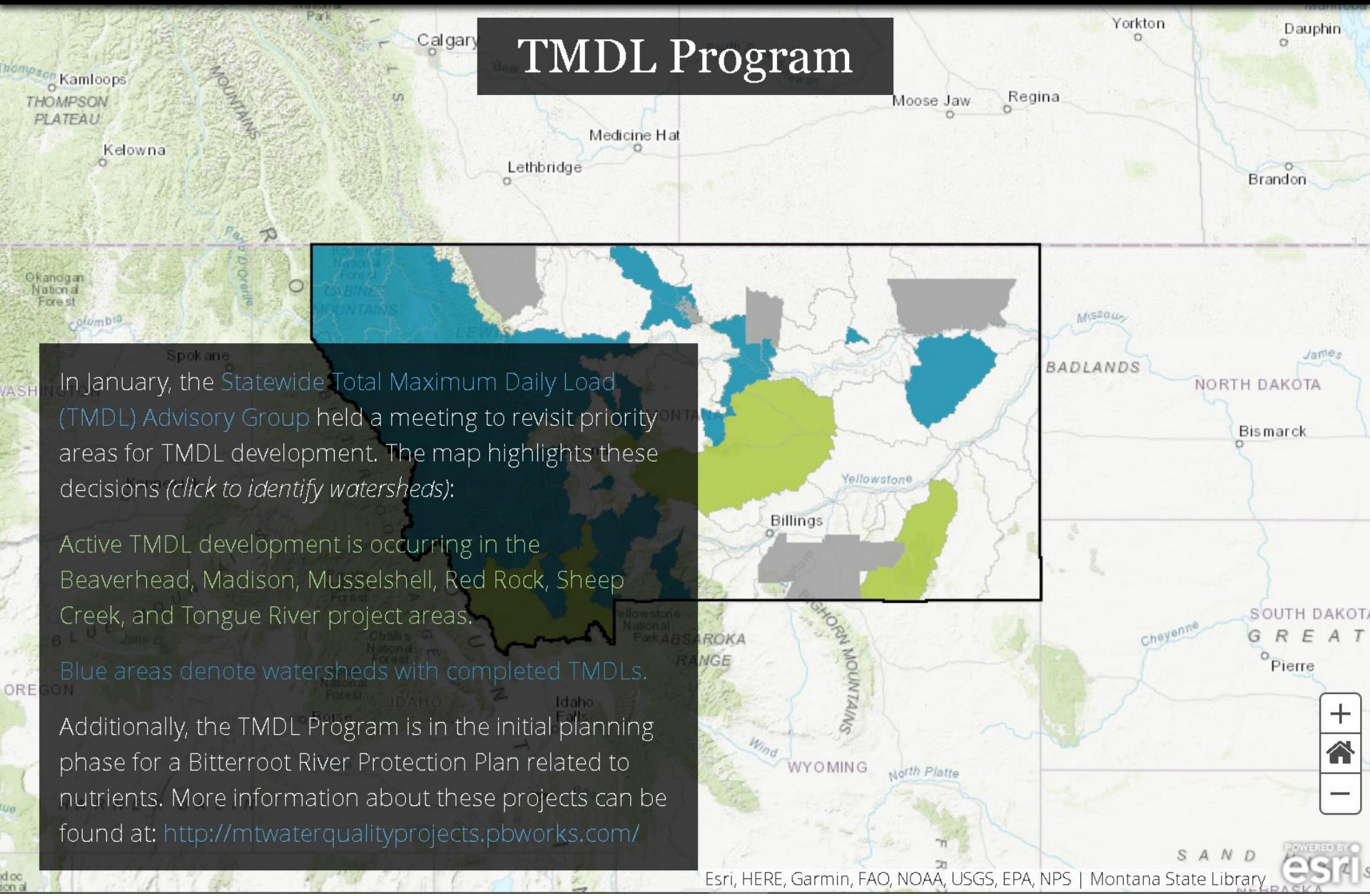
Click on each dot to learn more about each VM Program.

Volunteer Monitoring

Monitoring and Assessment continues to explore new ways to support VM efforts. In 2019, these included:

- Expanded the inventory of monitoring equipment available for loan to VM programs
- Created guidance documents to assist VM groups with developing monitoring objectives, selecting relevant parameters, and identifying relevant monitoring methods
- Provided in-person trainings to volunteers and program coordinators
- Contracted with VM programs to support water quality investigations
- Partnered with MSU Extension Water Quality Program to support VM programs through training, guidance documents, and data management tools
- Actively participated in the Montana Watershed Coordination Council (MWCC) Water Committee.

TMDL Program



In January, the Statewide Total Maximum Daily Load (TMDL) Advisory Group held a meeting to revisit priority areas for TMDL development. The map highlights these decisions *(click to identify watersheds)*:

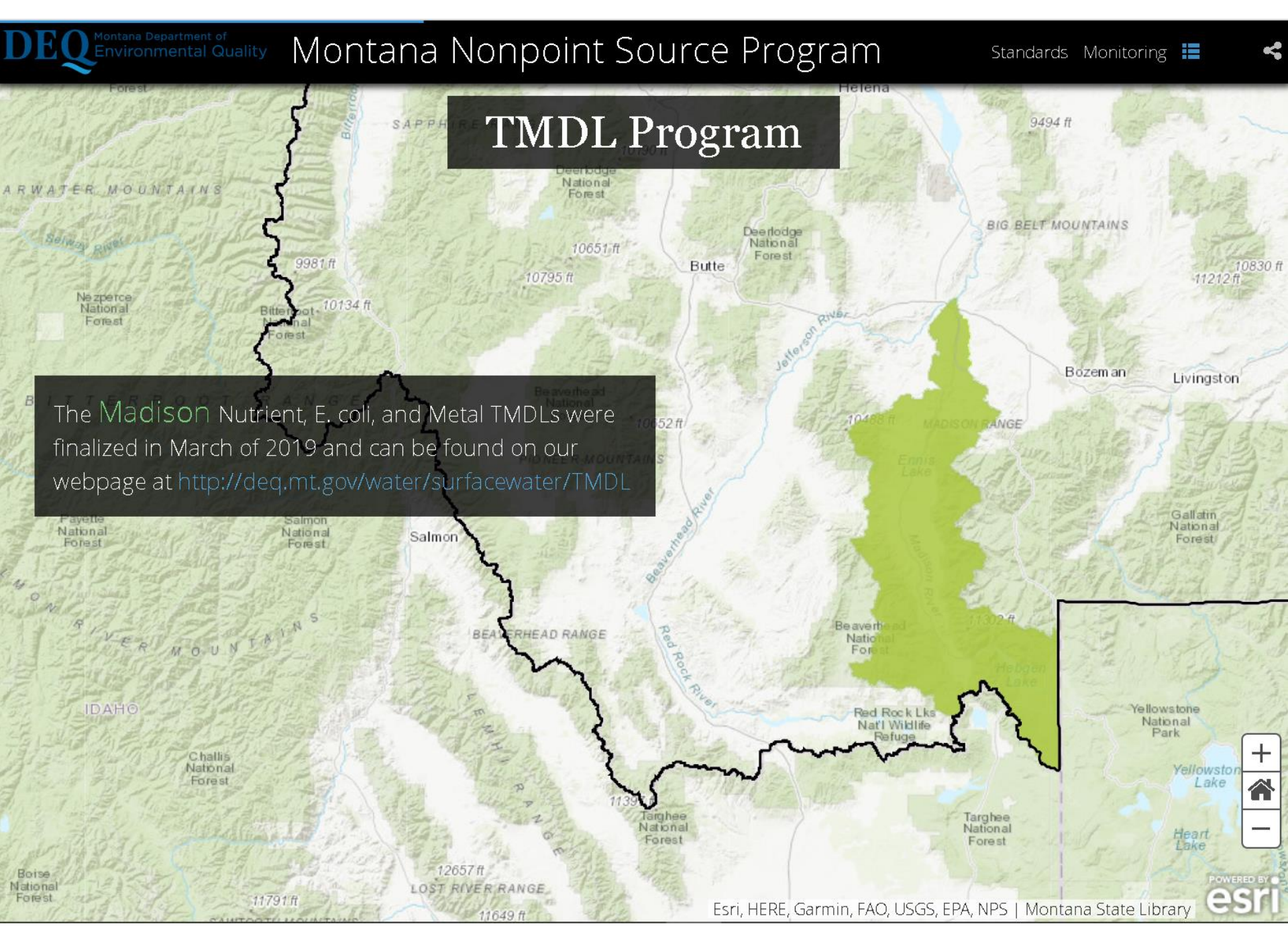
Active TMDL development is occurring in the Beaverhead, Madison, Musselshell, Red Rock, Sheep Creek, and Tongue River project areas.

Blue areas denote watersheds with completed TMDLs.

Additionally, the TMDL Program is in the initial planning phase for a Bitterroot River Protection Plan related to nutrients. More information about these projects can be found at: http://mtwaterqualityprojects.pbworks.com/

TMDL Program

The Madison Nutrient, E. coli, and Metal TMDLs were finalized in March of 2019 and can be found on our webpage at http://deq.mt.gov/water/surfacewater/TMDL

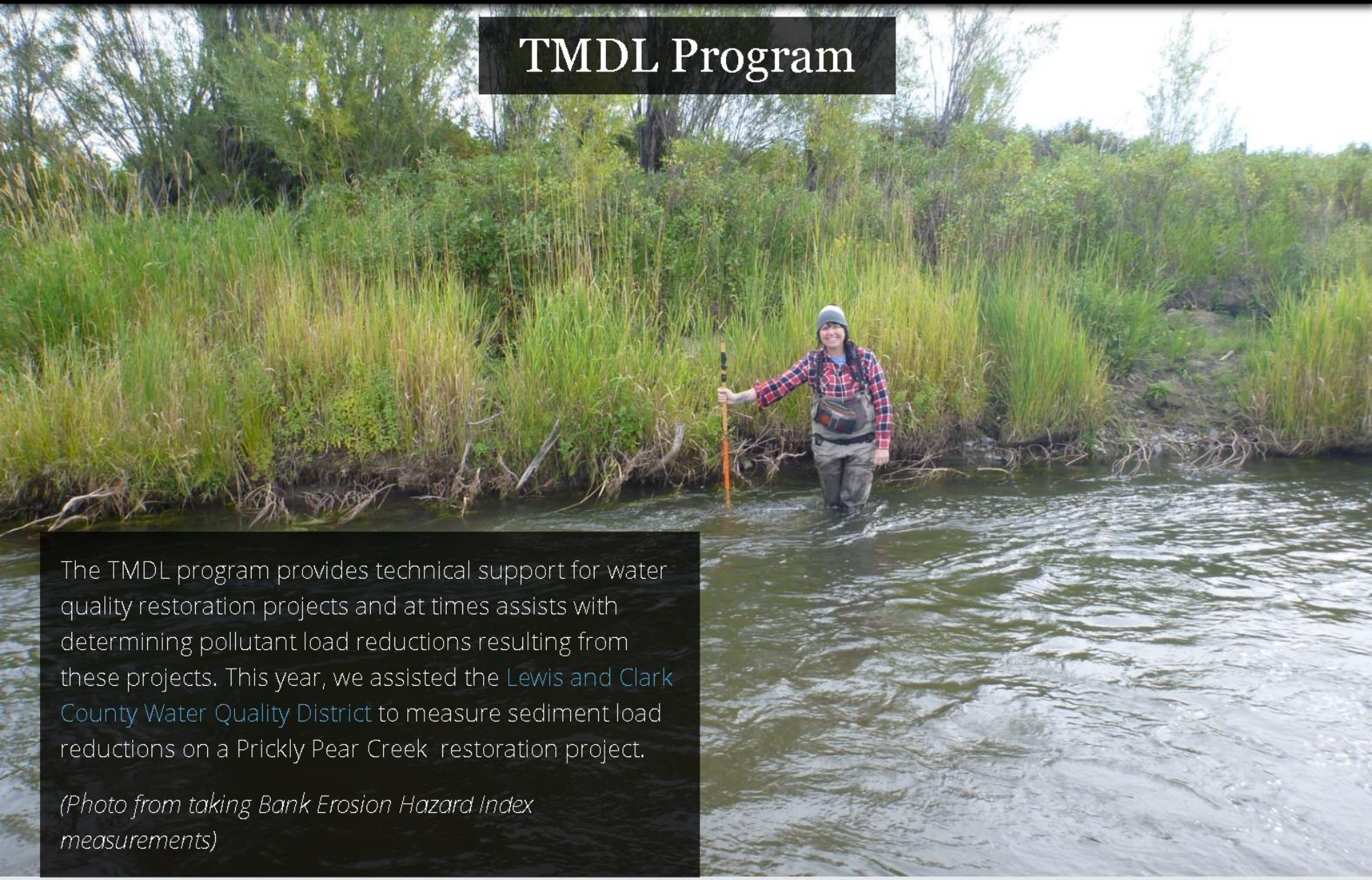


TMDL Program

Montana Watershed Management (TMDL) Strategic Plan

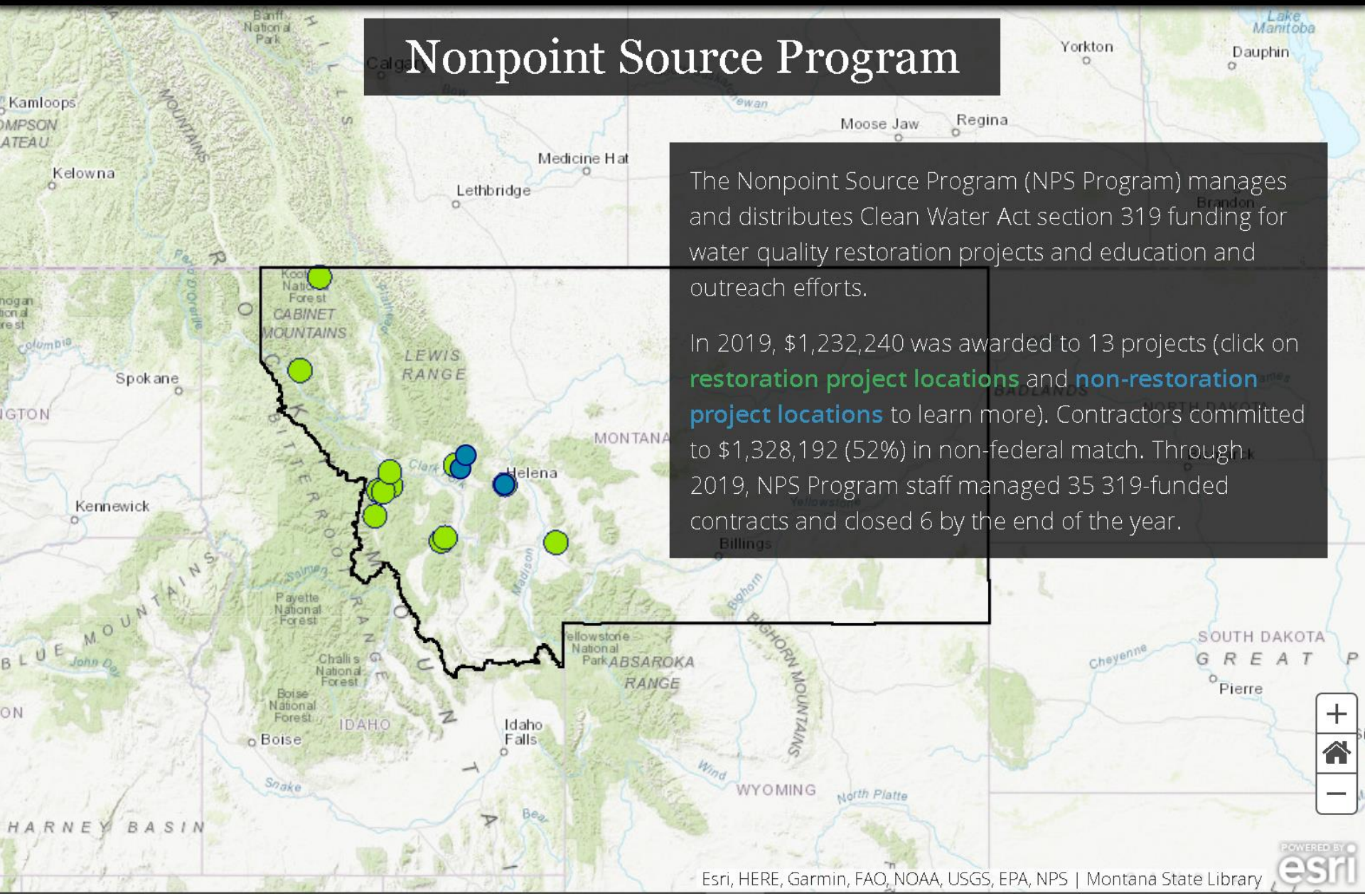
In consultation with our agency partners, the TMDL program developed a 20-year strategic plan to drive our objectives and better define our work products. View the full plan or a one-page summary of the plan at: http://mtwaterqualityprojects.pbworks.com

TMDL Program



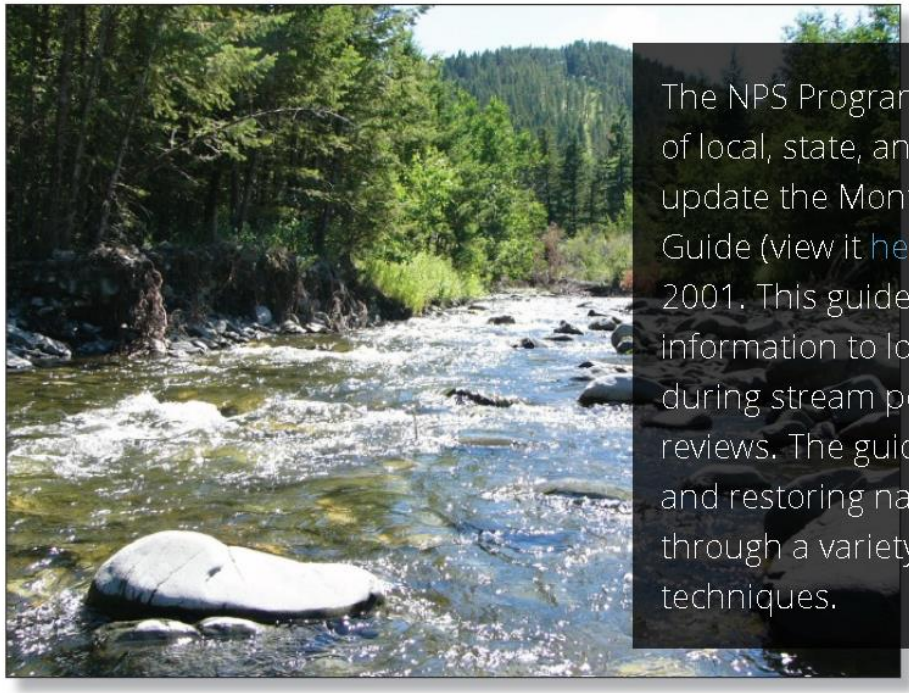
The TMDL program provides technical support for water quality restoration projects and at times assists with determining pollutant load reductions resulting from these projects. This year, we assisted the Lewis and Clark County Water Quality District to measure sediment load reductions on a Prickly Pear Creek restoration project.

(Photo from taking Bank Erosion Hazard Index measurements)


Nonpoint Source Program
The Nonpoint Source Program (NPS Program) manages and distributes Clean Water Act section 319 funding for water quality restoration projects and education and outreach efforts.
In 2019, $1,232,240 was awarded to 13 projects (click on restoration project locations and non-restoration project locations to learn more). Contractors committed to $1,328,192 (52%) in non-federal match. Through 2019, NPS Program staff managed 35 319-funded contracts and closed 6 by the end of the year.
Banff National Park
Calgary
Yorkton
Dauphin
Lake Manitoba
Kamloops
Kelowna
Moose Jaw
Regina
Medicine Hat
Lethbridge
Brandon
Spokane
CABINET MOUNTAINS
LEWIS RANGE
MONTANA
Helena
Kennewick
Billings
Payette National Forest
Challis National Forest
Boise National Forest
Yellowstone National Park
ABSAROKA RANGE
BIGHORN MOUNTAINS
SOUTH DAKOTA
Cheyenne
Pierre
Boise
IDAHO
Idaho Falls
WYOMING
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS | Montana State Library

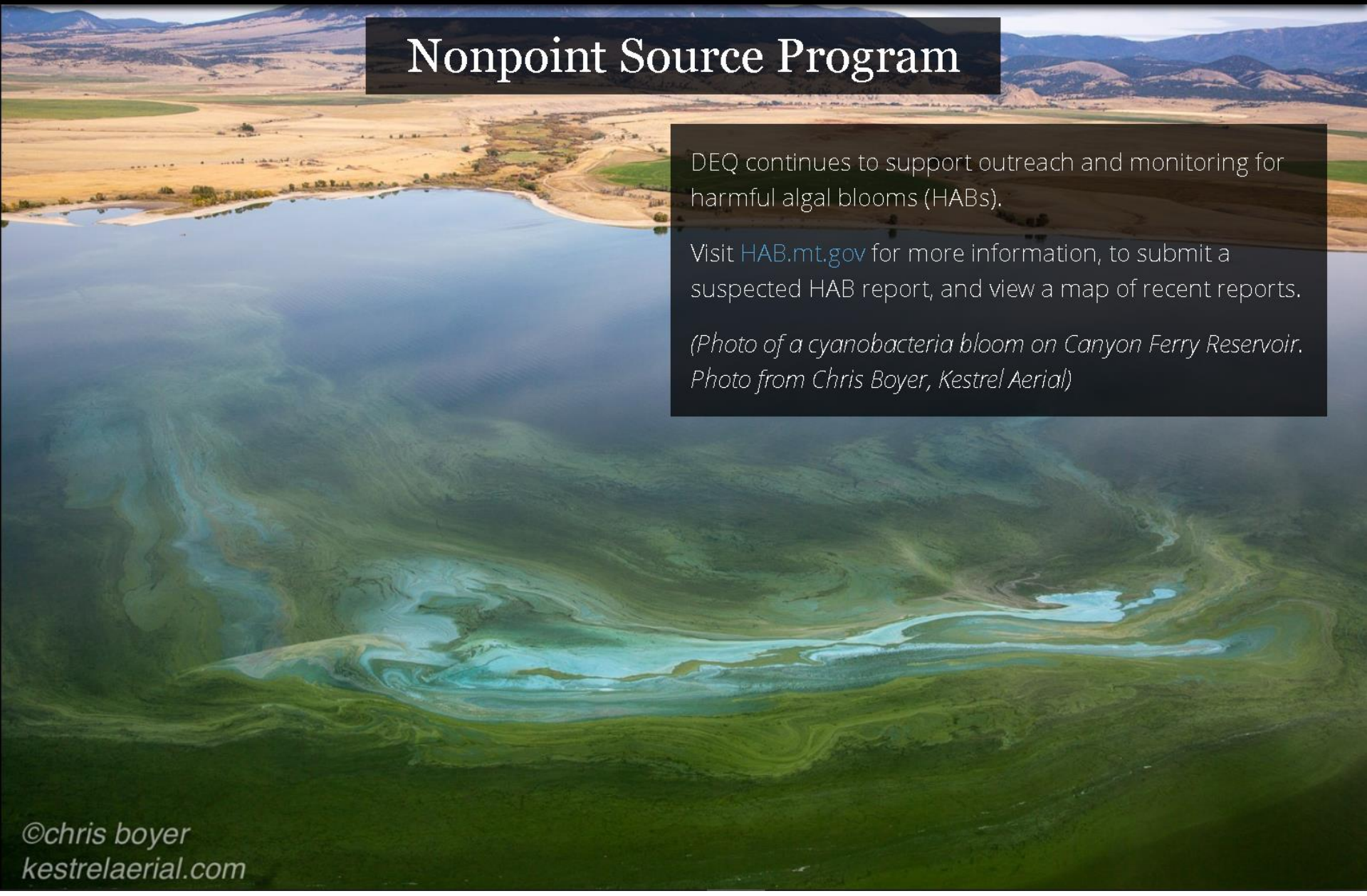
Montana Stream Permitting Nonpoint Source Program

A Guide for Conservation District Supervisors and Others



The NPS Program coordinated a workgroup of local, state, and federal agencies to update the Montana Stream Permitting Guide (view it here) for the first time since 2001. This guide provides tools and information to local Conservation Districts during stream permitting site visits and reviews. The guide emphasizes protecting and restoring natural stream processes through a variety of practices and techniques.

Conservation Districts Bureau
Montana Department of
Natural Resources and Conservation
January 2020



Nonpoint Source Program

DEQ continues to support outreach and monitoring for harmful algal blooms (HABs).

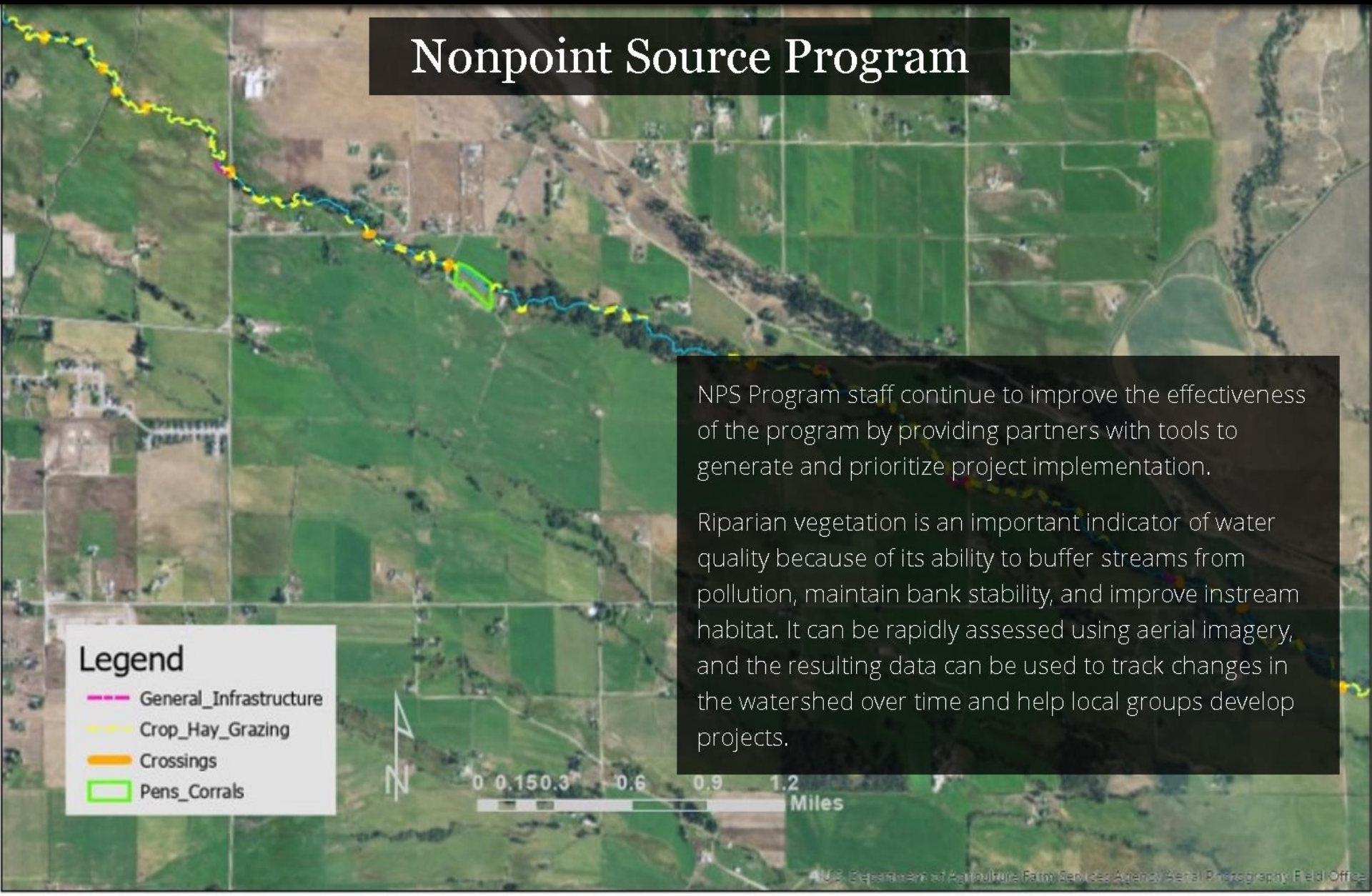
Visit HAB.mt.gov for more information, to submit a suspected HAB report, and view a map of recent reports.

(Photo of a cyanobacteria bloom on Canyon Ferry Reservoir. Photo from Chris Boyer, Kestrel Aerial)

Nonpoint Source Program

NPS Program staff continue to improve the effectiveness of the program by providing partners with tools to generate and prioritize project implementation.

Riparian vegetation is an important indicator of water quality because of its ability to buffer streams from pollution, maintain bank stability, and improve instream habitat. It can be rapidly assessed using aerial imagery, and the resulting data can be used to track changes in the watershed over time and help local groups develop projects.



Nonpoint Source Program

Sponsored by the Lower Clark Fork Watershed Group

2007 As-built ... post-construction

Plugged channel

Reactivated meander

NPS Program staff also focus on compiling successes and lessons learned by evaluating the long-term effectiveness of past 319 projects.

Staff revisited 4 projects in 2019 that were completed 3-12 years ago to determine if projects were still achieving their intended goals. *Important lessons learned include:*

-Some projects may not achieve large pollution load reductions, but they may occur in locations that provide huge education and outreach opportunities.

-"Reference conditions" may be more difficult to achieve depending on the land use context that projects occur in. For example, vegetation under a powerline corridor (photo in background) will likely never achieve reference conditions of the cedar forests upstream.

319 Projects Closed in 2019

The Nonpoint Source Program closed six 319 contracts in 2019, totalling $548,192 (click on **restoration project dots** and **non-restoration project dots** to learn more).

Contractors leveraged $1,401,852, or 72%, in non-federal match, far exceeding the 40% match requirement.

These projects reduced pollution by:

147 tons sediment/year,

151 lbs nitrogen/year,

and 36 lbs phosphorus/year.

319 Projects C

Deep Creek watershed, photo by the Broadwater Conservation District

The Deep Creek project improved 29 irrigation systems, with four producers switching their irrigation source from Deep Creek to a canal. This increased summertime stream flow by 3 cfs and improved fish passage. Additionally, landowners installed riparian fencing along 2.6 miles of Deep Creek and 42 off-stream stock water systems. These activities helped decrease summertime stream temperatures by 2 degrees F. Since 1991, brown trout spawning has increased 400%.

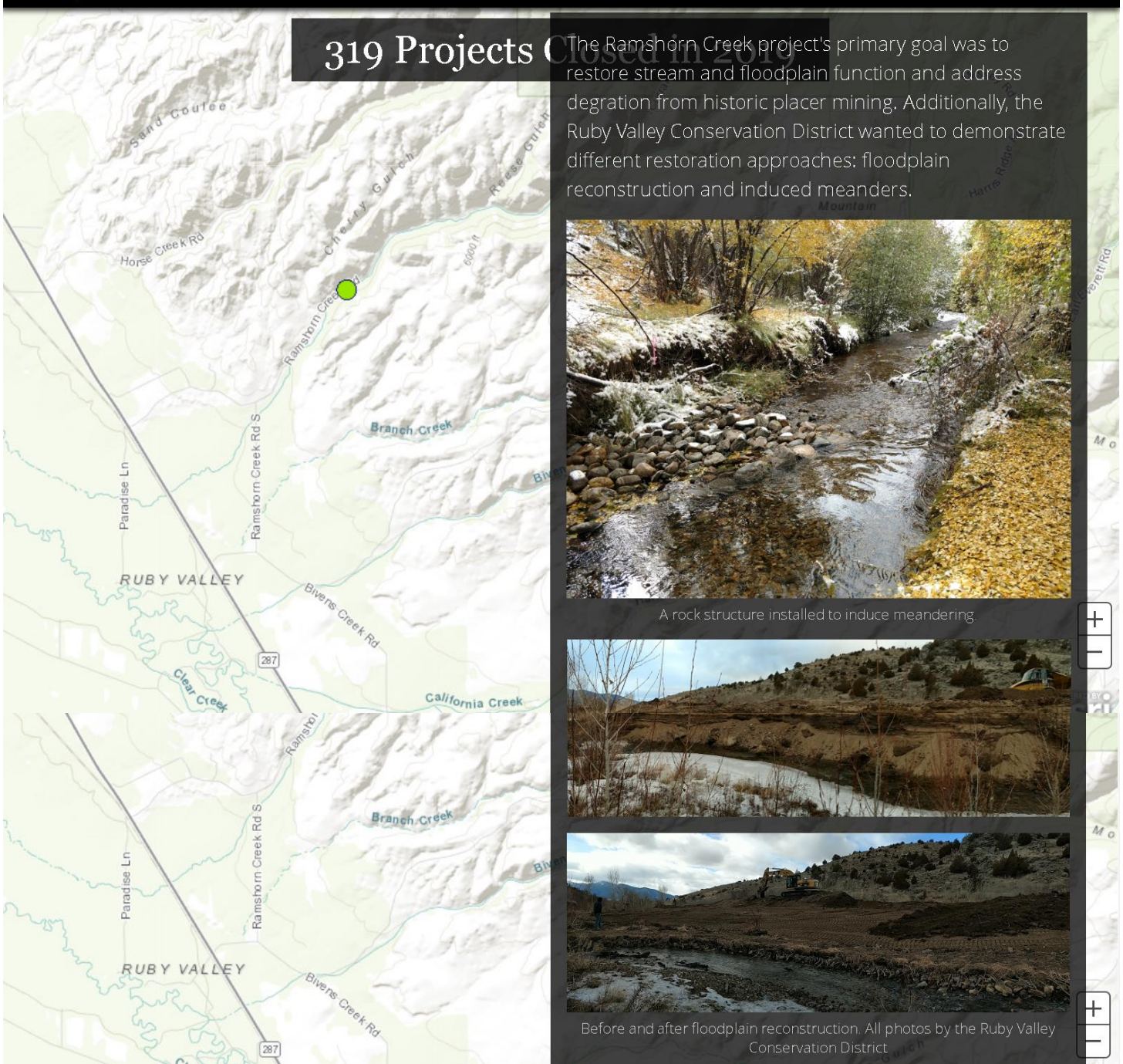
Deep Creek was removed from the list of impaired waters for sediment in 2016. This would not have been possible without the Natural Resource Conservation Service (NRCS) and their National Water Quality Initiative (NWQI) program.

319 Projects Closed in 2019

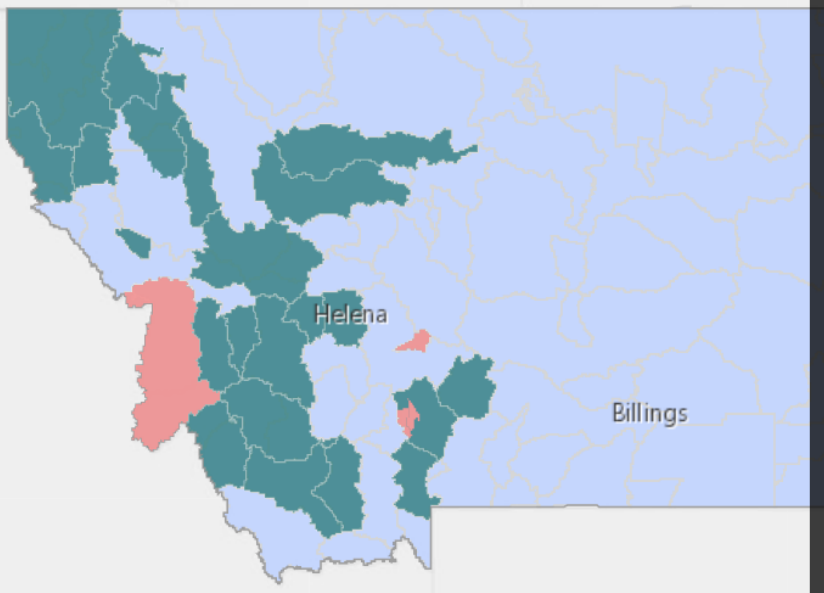
The Ramshorn Creek project's primary goal was to restore stream and floodplain function and address degration from historic placer mining. Additionally, the Ruby Valley Conservation District wanted to demonstrate different restoration approaches: floodplain reconstruction and induced meanders.

A rock structure installed to induce meandering

Before and after floodplain reconstruction. All photos by the Ruby Valley Conservation District



NPS Program Strategic Plan



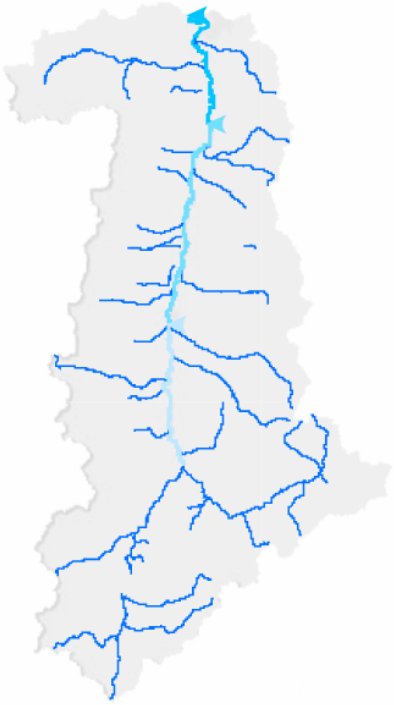
In 2019 the Nonpoint Source Program began a new approach at improving water quality by establishing three priority categories for Montana's watersheds.

Non-Watershed Restoration Plan (WRP) Watersheds do not have a WRP, and therefore are not eligible for 319 funding. The NPS Program focuses on developing WRPs, technical advising, identifying funding, supporting education and outreach, and more in these watersheds.

In **WRP Watersheds**, core support activities, such as providing funding, developing TIEs, and reporting on success stories, will continue.

For 2-3 years, a **Focus Watershed**, will receive a majority of nonpoint source program technical and financial support. The focus watershed approach aims to generate momentum and influence measurable progress towards reducing NPS pollution. The National Resource Conservation Service's National Water Quality Initiative watersheds are considered a focus. The NPS Program Strategic Plan identifies characteristics for selecting a DEQ Focus Watershed.

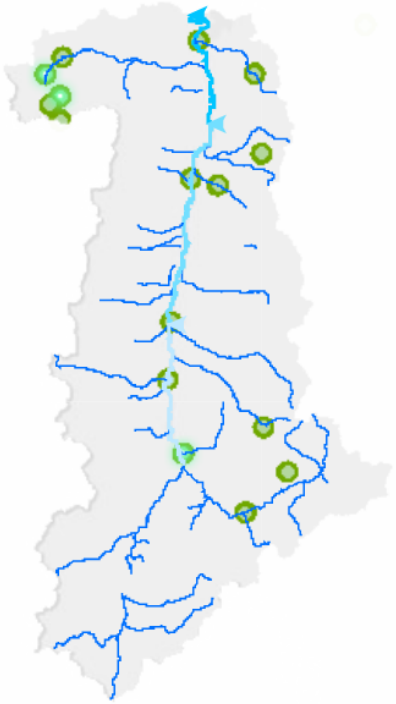
NPS Program Strategic Plan



DEQ selected the Bitterroot River Watershed as the first Focus area.

In 2019, DEQ distributed $23,974 to 5 different local entities to conduct pre-project planning and update the WRP.

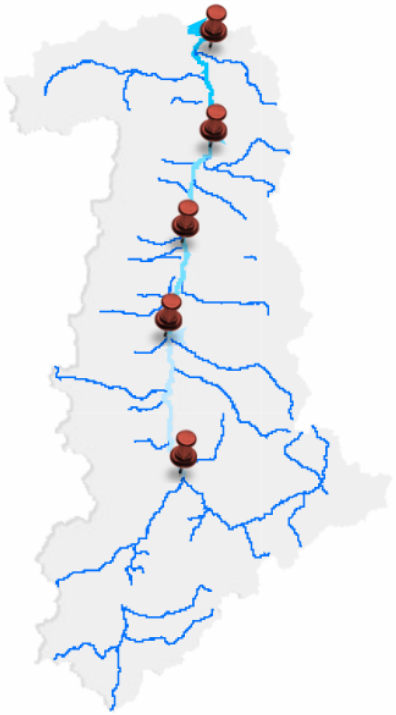
NPS Program Strategic Plan



In 2019, DEQ awarded $671,139 in 319 funds to local groups implementing restoration projects in the Bitterroot. That's more than the watershed has received in total the previous 6 years!

Click on each point to learn more about past and ongoing 319 restoration projects.

NPS Program Strategic Plan



DEQ began long term nutrient monitoring along the Bitterroot mainstem, in partnership with the Clark Fork Coalition, the Bitterroot River Protection Association, and the University of Montana. Data will inform trends and will be reported every 5 years.

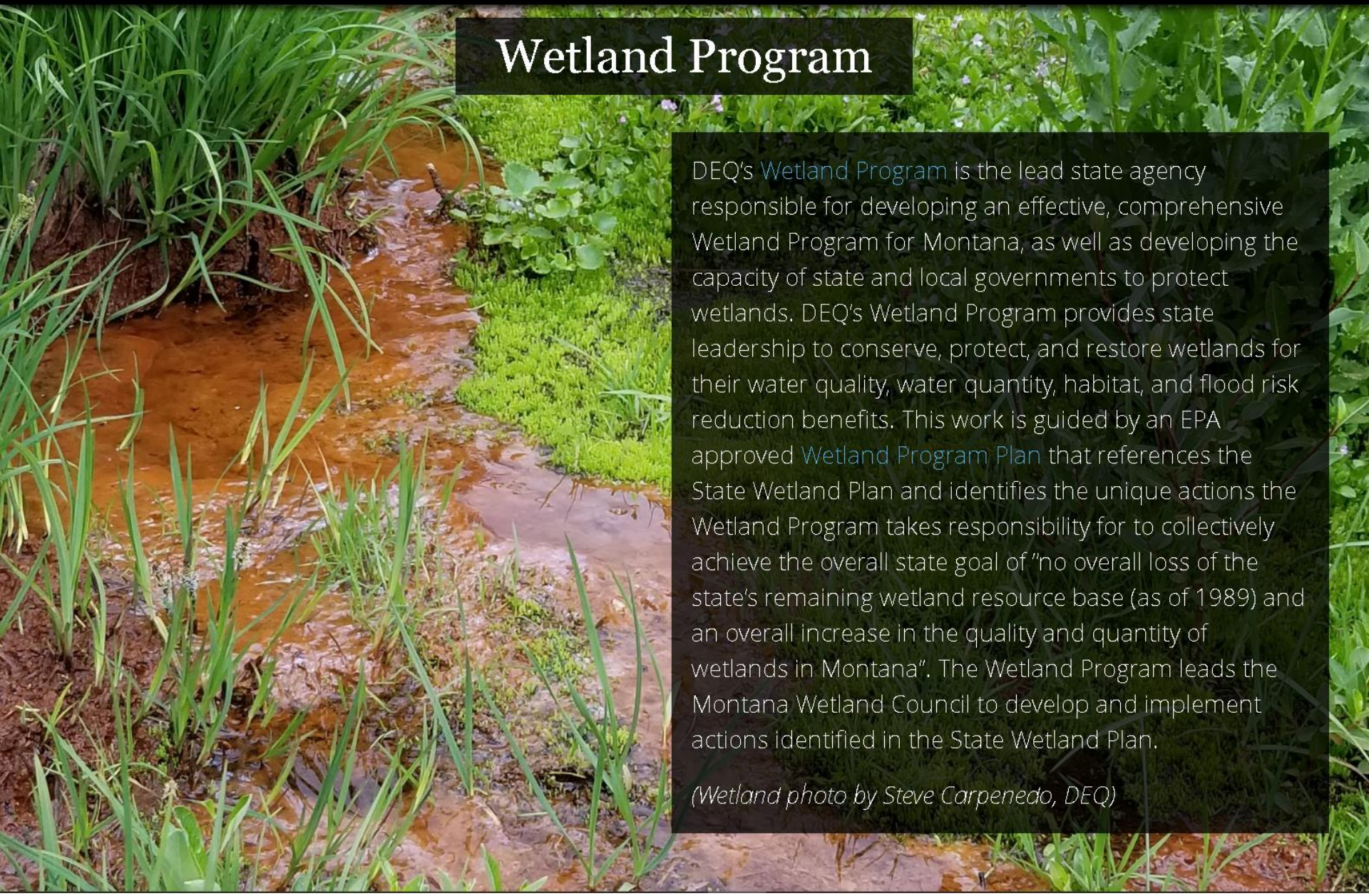
Red pins represent monitoring locations.

NPS Program Strategic Plan

A TMDL Implementation Evaluation (TIE) is in the works for the Bitterroot headwaters. TIEs inform local stakeholders what restoration or management actions are still needed to achieve water quality standards, and they inform DEQ which streams may now be meeting water quality standards.

(Photo of cross section measurement collection on Reimel Creek.)

Wetland Program



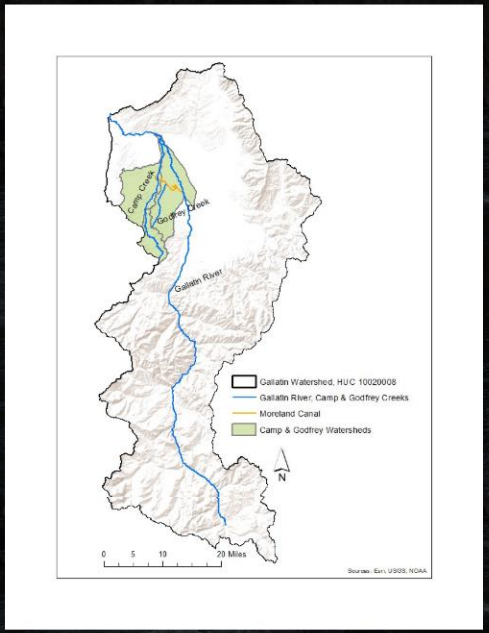
DEQ's Wetland Program is the lead state agency responsible for developing an effective, comprehensive Wetland Program for Montana, as well as developing the capacity of state and local governments to protect wetlands. DEQ's Wetland Program provides state leadership to conserve, protect, and restore wetlands for their water quality, water quantity, habitat, and flood risk reduction benefits. This work is guided by an EPA approved Wetland Program Plan that references the State Wetland Plan and identifies the unique actions the Wetland Program takes responsibility for to collectively achieve the overall state goal of "no overall 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". The Wetland Program leads the Montana Wetland Council to develop and implement actions identified in the State Wetland Plan.

(Wetland photo by Steve Carpenedo, DEQ)

Supporting our Partners

The NPS Program works with local, state, and federal partners to provide necessary resources to address NPS pollution. There are far too many important partners to cover here.

DEQ helps provide technical and project support for the USDA Natural Resource Conservation Service, especially in their National Water Quality Initiative watersheds. NWQI continued in the Camp and Godfrey watersheds in 2019. NWQI is a critical initiative for improving water quality and investing in agricultural lands.



In 2019, DEQ and the USFS renewed their Memorandum of Understanding. The MOU documents the cooperation required to implement the Montana NPS Management Plan on Forest Lands in Montana.

(Photo of the Yellowstone River, DEQ)

Partners - SWCDM

SOIL & WATER CONSERVATION DISTRICTS of MONTANA

Created in 1972, SWCDM is a nonprofit association governed by a statewide board of directors who also serve as district supervisors in their own jurisdictions. Conservation Districts have a decades-long history of conserving Montana's resources by matching the needs of local people with technical and financial resources, and initiating good conservation practices to benefit all Montanans.

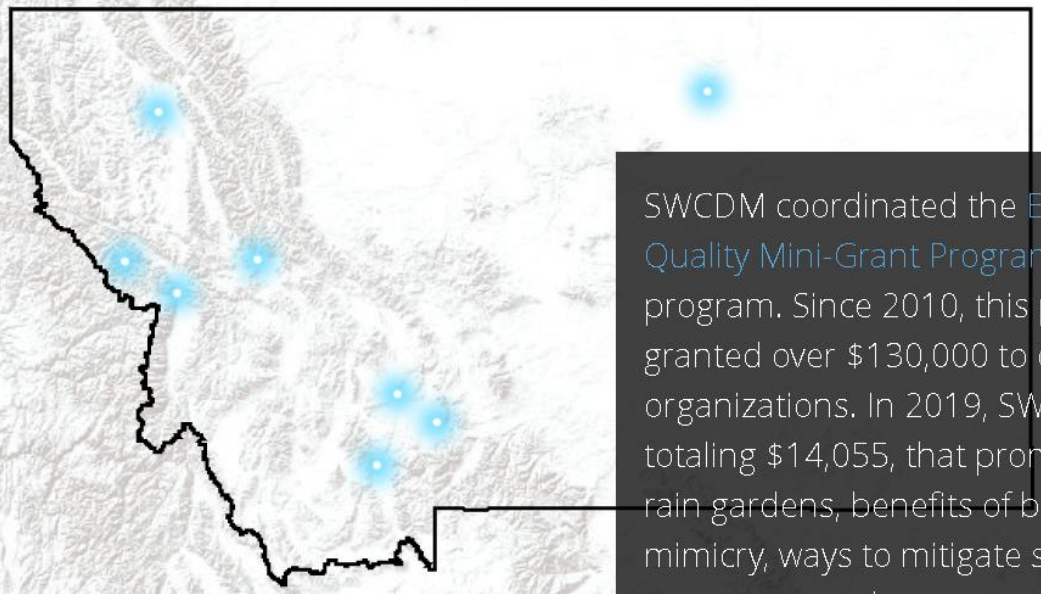
Partners - SWCDM

In 2019, SWCDM worked with a landowner and the Lower Clark Fork Watershed Group to provide 50% cost-share for grazing management and riparian fencing though the Ranching for Rivers program. In 2020, SWCDM will solicit interest from Conservation Districts and Watershed Groups to work with landowners interested in implementing these types of projects.

Riparian fencing installed through the Ranching for Rivers Program.

(Off-stream waterer photo from NRCS)

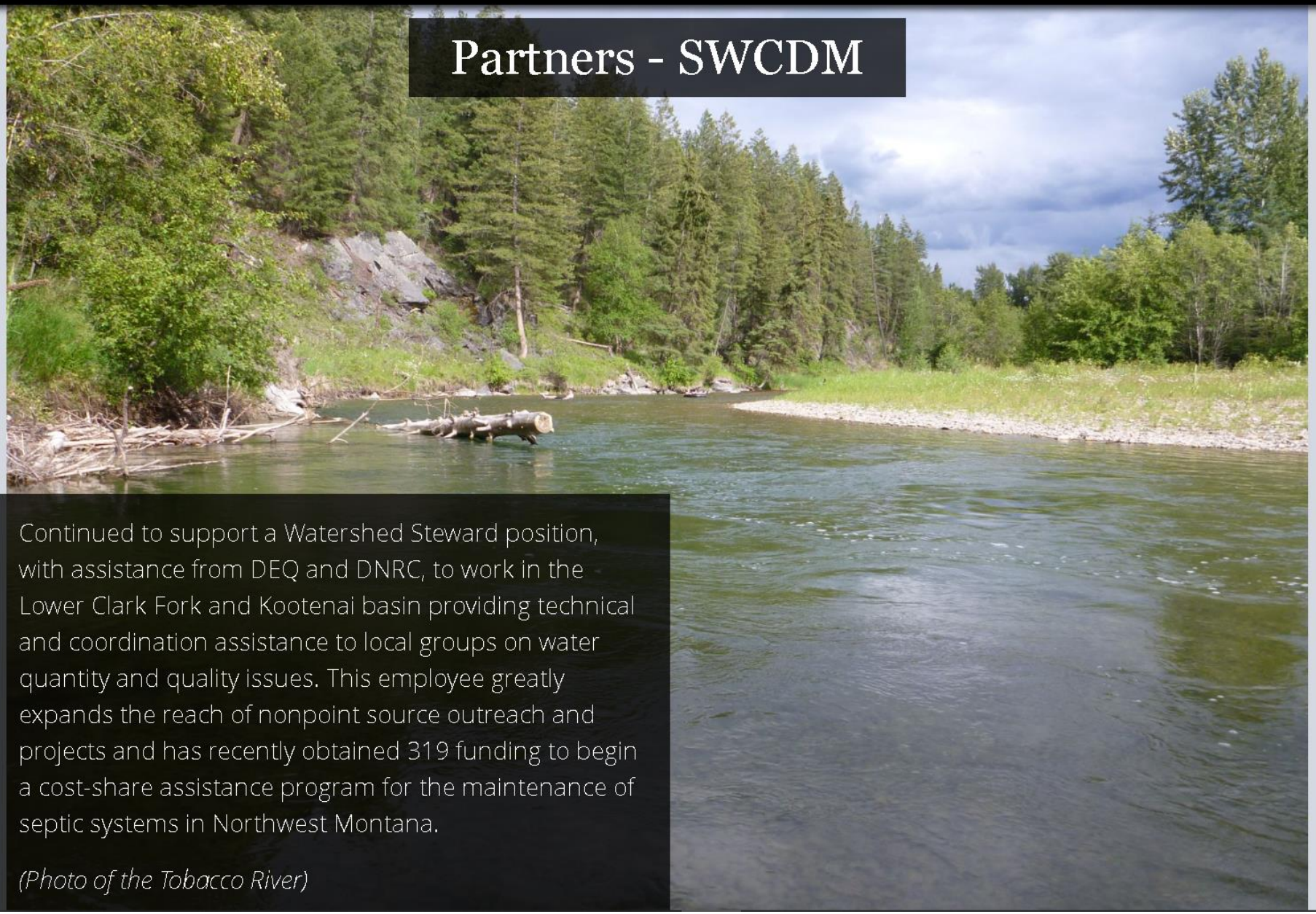
Partners - SWCDM



SWCDM coordinated the Education and Outreach Water Quality Mini-Grant Program through the NPS 319 program. Since 2010, this program has successfully granted over $130,000 to over 60 unique Montana organizations. In 2019, SWCDM awarded 8 new projects, totaling $14,055, that promoted the implementation of rain gardens, benefits of beaver activity and beaver mimicry, ways to mitigate sulfate and provide livestock water sources, host conservation tours, and more! SWCDM will have another Call for Applications in the spring of 2020.

(Click on each point to learn more about the minigrant.)

Partners - SWCDM



Continued to support a Watershed Steward position, with assistance from DEQ and DNRC, to work in the Lower Clark Fork and Kootenai basin providing technical and coordination assistance to local groups on water quantity and quality issues. This employee greatly expands the reach of nonpoint source outreach and projects and has recently obtained 319 funding to begin a cost-share assistance program for the maintenance of septic systems in Northwest Montana.

(Photo of the Tobacco River)

Partners - MWCC

The Montana Watershed Coordination Council's (MWCC) mission is "Uniting and supporting Montana's watershed communities to promote healthy and productive landscapes."

We do this by supporting, connecting, inspiring, and representing Montana's watershed communities and conservation partners.

MONTANA **WATERSHED**
COORDINATION COUNCIL

Partners - MWCC

The MWCC **Watershed Fund** provides direct support to community-based Watershed Partners for capacity-building, professional development, and on-the-ground projects on private land.

In 2019, the Watershed Fund delivered $134,370 in **project funding** from NRCS and DEQ to implement conservation and restoration. (Click each point on the map to learn more.) Local conservation groups leveraged this support with an additional $307,000

Photo is before and after a streambank restoration project was implemented by the Madison Conservation District, an example of one project supported by the Watershed Fund.

Partners - MWCC

In 2019, the Watershed Fund also provided $114,000 in capacity and professional development to support 17 organizations:

1. Big Hole Watershed Committee
2. Bitter Root Water Forum
3. Blackfoot Challenge
4. Blackfeet Nation Fish & Wildlife, in partnership with the Center for Large Landscape Conservation
5. Clearwater Resource Council
6. Crown Managers Partnership
7. Gallatin River Task Force
8. Gallatin Watershed Council
9. Kootenai River Network
10. Lake County Conservation District
11. Lolo Watershed Group
12. Lower Clark Fork Watershed Group
13. Montana Aquatic Resources Services
14. Musselshell Watershed Coalition
15. Ruby Valley Conservation District
16. Sheridan Conservation District
17. Sun River Watershed Group

Partners - MWCC

Over 100 watershed conservation partners convened for MWCC's **Annual Meeting and Watershed Day**. These events provided opportunities for conservation professionals to learn about innovative approaches to implementing watershed conservation efforts, as well as educate local elected representatives on important watershed conservation initiatives. Additionally, MWCC partnered with the Montana Wetland Council to present awards to their 2019 Watershed and Wetland Stewards.

(Photo of Emeritus Executive Director at the Capitol for the 2019 Annual Meeting)

Partners - MWCC

Over 80 attendees participated in the 2019 **Watershed Tour**, which highlighted the watershed approach to natural resource management in the Missouri Headwaters. On this three-day tour, participants learned from 9 local organizations who are actively navigating the changing landscape on which their communities rely.

(Photo from the 2019 Watershed Tour, along the Ruby River).

Upper Clark Fork Watershed

Partners - MWCC

MONTANA WATERSHED COORDINATION COUNCIL
MONTANA WATERSHED STORIES

"These streams connect us to the bigger world. What we do here will impact someone further down the line."

MWCC's Watershed Stories share the impact that individuals and organizations have on watershed health across Montana. Through personal stories, MWCC hopes to increase awareness and broaden support for local watershed groups across the State. In 2019, MWCC worked with two watershed communities: the Upper Clark Fork and Granite Headwaters.

KATE MATTERN
SCIENCE TEACHER
ANACONDA HIGH SCHOOL

Kate Mattern is teaching in hip waders, immersed in Warm Springs Creek where it runs through Anaconda's Washoe Park.

Soon, her Anaconda High Advanced Biology students are soaking in a growing knowledge of the creek, too. Some help collect macroinvertebrates - insects whose presence or absence reveals the health of a stream. Others exclaim over the stoneflies, mayflies, and tiny fish their peers collect.

Kate's enthusiasm for the creek and its connection to the Upper Clark Fork Watershed seems to have rubbed off.

Partners - MWCC

2019 marked the 8th year of the Big Sky Watershed Program. This AmeriCorps program is a partnership between MWCC, Montana Conservation Corps, and Soil & Water Conservation Districts of Montana. Through State agency partner support, MWCC provided host site funding support for 11 members in 2019.

(Photo of Big Sky Watershed Corps member and volunteers)

Partners - Wetland Council

The Montana Wetland Council is an active network of diverse interests that works cooperatively to conserve and restore Montana's wetlands and riparian ecosystems. The Council meets two to three times per year, has an active listserv and website, and welcomes all to participate in the collaborative work of wetland and riparian protection, restoration, and management.

(Wetland photo by Steve Carpenedo, DEQ)

Partners - Wetland Council

The Montana Wetland Council and its partners are currently updating their State Wetland Plan for 2020 – 2030. The State Wetland Plan is an action-oriented plan directed by working groups that prioritizes and directs collaborative efforts in conserving and restoring wetlands and riparian areas utilizing resources both internal and external to DEQ.

Click to view the 2013-2017 State Wetland Plan.

(Wetland photo by Steve Carpenedo, DEQ)

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Work accomplished in 2019 could not have been done without the support of our partners and the people of Montana.

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Table 8-1: Interim Outcome - Water quality standards have been developed				
No.	***Key Partner(s)***	***Actions***	***Measurable Milestones***	***2019 Accomplishments***
1	DEQ Standards and Modeling Section	Re-evaluate the chemical, physical, and biological condition of reference sites	• At least 100 reference sites re-evaluated	DEQ continues the long-term project of re-visiting reference sites. In 2019, 23 reference sites were sampled. In 2013, DEQ established a rotational approach to re-visit sites at least every three to five years. The objective of this approach is to have a long-term data set to determine reference condition and allow for long-term trend analysis. Data are being used to refine or develop water quality standards, carry out water quality assessments, and help with TMDL development when using narrative criteria. From 2013-2019, 176 established reference sites and 2 candidate reference sites have been visited using this approach.
2	DEQ Standards and Modeling Section	Develop nutrient models for large rivers (e.g., Missouri, Yellowstone)	• Models developed for at least 2 large river segments	DEQ is developing nutrient criteria for large rivers using QUAL-2K model. Data collection has been completed in the upper Yellowstone River (Livingston to the confluence of the Big Horn River); Middle Missouri River (Wolf Creek to Loma) and upper Missouri River (Toston dam to Canyon Ferry Lake). Nutrient criteria development for the upper Yellowstone is expected to be completed by 2022. Upper Missouri River and Middle Missouri River nutrient criteria is expected to be completed in 2023.
3	DEQ Standards and Modeling Section	Develop technical basis for a lake classification system based on nutrient status	• Demonstrated progress in developing numeric nutrient and transparency lake water quality standards	Lake classification system is not yet in place. Nutrient standards work in Canyon Ferry Reservoir will be DEQ's first effort to develop such standards in a reservoir.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
4	DEQ Standards and Modeling Section, MT Department of Agriculture	Develop and circulate numeric standards for all pesticides identified in Montana groundwater and surface waters	• Adoption of numeric standards for all pesticides within 4 years of DEQ notification of detection in state waters	With each triennial review of Montana's water quality standards, existing and new pesticide human health advisories are updated/adopted. The next triennial review will be completed in 2020.
Table 8-2: Interim Outcome - Montana's waters have been assessed to determine compliance with water quality standards and compiled in updated Integrated Report				
No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
5	DEQ Monitoring and Assessment	Conduct statewide water quality assessments.	• Musselshell watershed, Beaverhead watershed, Big Creek and Jim Creek assessment projects will be completed for the 2018 Integrated report	The 2018 Integrated Report is complete, and the 2020 Integrated Report is upcoming.
6	DEQ Monitoring and Assessment Section, watershed groups	Assess water quality status and trends in priority areas through fixed station monitoring	• Fixed station monitoring continues on the Clark Fork River through contracted efforts and annual reports are provided on the Clark Fork Coalition website	Continued monitoring on the Clark Fork River. In partnership with the Clark Fork Coalition, DEQ released a 5-year trend report (https://clarkfork.org/our-work/what-we-do/monitor-watershed-health/nutrient-monitoring/) and water quality trend monitoring summary pamphlet. In 2019, DEQ also initiated Bitterroot River nutrient trend monitoring through local partnerships.
			• Fixed station reports will be completed by DEQ for the Musselshell River and the Red Rock River during 2017 and shared with each watershed group and other DEQ programs	Monitoring efforts continued in these areas: Lake Koocanusa selenium, Sun River Nutrients, Smith River temperature, and Tongue River Salinity

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
7	DEQ Standards and Modeling Section	Address septic influence on surface water quality	• Septic influence characterized in 3 TMDL or other water quality protection documents	The Madison TMDL Document, approved in 2019, and Beaverhead TMDL Document, in production, model septic influence. Septic influence was also modeled for portions of the Lower Gallatin and Musselshell watersheds; publications are forthcoming.
8	DEQ Information Management and Technical Services Section	Review/update Water Quality Integrated Report (305(b)/303(d))	• Updated reports in 2018, 2020, and 2022	On track for a 2020 Integrated Report submittal to EPA
9	DEQ Information Management and Technical Services Section	Develop, maintain, and enhance Clean Water Act Information Center (CWAIC online) to provide public access to water quality assessment information.	• System operable and available to public	DEQ continues to support the Clean Water Act Information Center (CWAIC), which provides information about the quality of Montana's surface waters, displays resultsof water quality assessments, and provides access to Montana's biennial Water Quality Integrated Report. A new ESRI-based information system will be built during 2020 to replace the CWAIC system.
10	DEQ Information Management and Technical Services Section	Update the program's WQ assessment, TMDL, and implementation tracking system (WARD)	• Integrated Report submitted to EPA in a timely manner	WARD was updated from the Oracle platform to a .NET platform. Updates were also completed to ensure compatability with ATTAINS.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
Table 8-3: Interim Outcome – TMDLs have been completed for required waterbodies				
No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
11	DEQ Watershed Protection Section, EPA	Complete Water Quality Improvement Plans (WQIPs) and necessary TMDLs	• At least 150 additional TMDL pollutant-waterbody combinations completed by 2022	Madison metals, nutrients, and *E. coli* TMDLs (15 total) approved in 2019.
Table 8-4: Interim Outcome – Sources of pollutants identified are sufficient for local planning efforts				
No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
12	DEQ Watershed Protection Section, WRP sponsors	Support local efforts to refine pollutant source identification	• Updated fine-scale source identification in at least 3 WRPs	The Lower Clark Fork Watershed Group's Watershed Restoration Plan update included extensive stakeholder outreach to itentify specific projects to prioritize for implementation. The Gallatin Watershed Council began compiling fine-scale source information to use in the upcoming years.
Table 8-5: Interim Outcome - Plans are in place to ensure efficient and effective implementation				
No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
13	DEQ Watershed Protection Section, WRP sponsors, MACD	Work with watershed groups to develop and revise Watershed Restoration Plans (WRPs)	• 12 new or updated DEQ accepted WRPs by 2022	DEQ accepted the Lower Clark Fork Watershed Group's update of their WRP. A Bitterroot River WRP update and a Central Clark Fork Tributaries WRP are underway.
14	DEQ Watershed Protection Section, Cities and Counties	Incorporate NPS pollution prevention into city and county planning processes	• Provide information on NPS pollution prevention to 3 community planning entities	For the 10th year, the Bitter Root River Water Forum partnered with natural resource professionals to provide certified continuing education courses for realtors and builders. This year, they expanded their ciriculum to include nonpoint source pollution education. DEQ staff also reviewed a gold course BMP manual and finalized an updated stream permitting guide (http://dnrc.mt.gov/licenses-and-permits/stream-permitting/stream-permitting-book).

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
15	DEQ Watershed Protection Section, WRP Sponsors	Encourage integration of wetland restoration into NPS WRPs	• Specific wetland planning components are included in 2 WRPs	The Lower Clark Fork River WRP, accepted in 2019, includes wetland restoration and creation as a best management technique.
16	DEQ, DNRC, CDs	Encourage the development of channel migration mapping statewide	• Number of miles mapped • Number of waterbody segments mapped	DEQ provided funding in 2019 to map 110 miles of the Sun River, from Augsuta to Vaughn. The Montana Elevation Working Group, led by the Montana State Library, have embarked on a goal to obtain statewide LiDAR data by 2023. LiDAR is an essential component of Channel Migration Zone maps. In 2019, LiDAR was collected for a large portion of the Clark Fork River and Rock Creek; Deer Lodge, Powell, Lincoln, Dawson, Fallon, Custer, Rosebud, Big Horn, Carbon, Stillwater, and Treasure Counties, and parts of Hill, Valley, and Mineral Counties. These efforts were funded by DNRC.
17	DEQ Watershed Protection Section, WRP sponsors	Incorporate protection of unimpaired/high quality waters into watershed restoration plans	• Number of Watershed Restoration Plans incorporating protection of healthy waters	A main objective of the Lower Clark Fork WRP is "to identify and prioritize opportunities for the protection and enhancement of additional streams…"

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
Table 8-6: Interim Outcome - Public has knowledge and resources to address NPS issues				
No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
18	DEQ, MWCC	Provide support and promote the development and coordination of watershed groups through MWCC activities, training workshops, advertising campaigns, etc.	• Annual watershed coordinator training	The Tools for Watershed Health training, held at MWCC's 2019 Annual Meeting, featured 8 online tools available for hands-on learning. MWCC also supported 22 professional development trainings throughout the year.
			• Annual watershed tour	The 2019 Watershed Tour, hosted in partnership with the Missouri Headwaters Partnership, featured 9 watershed organizations, and drew an attendance of 80 participants over 3 days.
			• Bi-weekly newsletter	MWCC continues to publish and distribute a bi-weekly newsletter to over 1,200 people. The newsletter highlights news, career opportunities, training, and grants. Sign up for the newsletter here: https://mtwatersheds.org/app/watershed-news/
			• Support development and maintenance of a water quality monitoring website	MWCC and the MWCC Water Committee continued to maintain the water quality monitoring website, and fully updated the site in 2019. This centralized hub of water monitoring resources includes an interactive map and profiles agencies and organizations conducting water monitoring in Montana, as well as a resource library with over 200 resources relevant to watershed work in Montana.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
19	DEQ	Support riparian and wetland buffer education campaigns	• Support 3 distinct riparian and/or wetland buffer education campaigns	The Education and Outreach mini-grant program supported a beaver workshop in the Blackfoot watershed, and a pet waste pick up campaign in the Madison watershed. DEQ also funded landowner outreach and education along Ashley Creek, with a focus on fencing livestock away from riparian areas and protecting and restoring buffers. The Missouri River Conservation Districts Council launched LivingOnTheBank.org in 2019. This educational tool assists landowners with managing issues buying, selling, and improving property along a waterway. They produced rackcards to distribute to County offices.
20	DEQ	Participation and presentations at landuse planning meetings	• Active participation in 5 events annually	Watershed Protection Section staff served on Montana's chapter of the American Water Resources Association board, helping put on the annual conference. The 2019 annual meeting featured a panel discussion on Land use change and consequences to water resources in the West Billings Aquifer.
21	DEQ, EPA, Wetland Council, MWCC, NRCS, MACD, Montana Stockgrowers Association	Publish or distribute accounts of exemplary environmental stewardship	• Environmental stewardship awards and recognition highlighted in annual report	The Milton Ranch, near Roudup, MT, was awarded the 2019 Leopold Conservation Award. The Montana Stockgrowers Association awarded their Environmental Stewardship Award to the Castle Mountain Ranch, near White Sulphur Springs.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
22	DEQ, SWCDM, MWCC	Support NPS Education and Outreach efforts at a local level	• Fund at least 5 E&O mini-grants annually	$14,055 in 319 funding was awarded to 8 mini-grant recipients in 2019. This year, the mini-grant program switched from two calls for applications per year to one.
			• Staff at least 2 watershed festivals annually	Watershed Protection staff participated in the Lake Helena Watershed Group's Watershed Festival and the Running for Water 5k. Staff also continued to serve on the Montana Watershed Coordination Council board, and helped put on the 2019 Watershed Tour and 2019 Annual MWCC Meeting.
			• Support at least 5 BSWC activities annually	319 funding supported 6 Big Sky Watershed Corps members attending professional development events ($1,967 total), including algae sampling training, Montana AWRA, and MWCC's Watershed Tour. 319 funding also supported 4 BSWC members' project implementation ($24,370 total), including a beaver mimicry structure installation on Cameron Creek, a pet waste collection campaign in the Upper Gallatin Watershed, a revegetation project along Dry Creek, and a bank stabilization project along the Swan River.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
23	DEQ	Support NPS Education and Outreach efforts at a statewide level	• Annual maintenance and updates to DEQ NPS Management Program webpages	The Water Quality Division continued to make necessary fixed to their webpages that resulted from the 2018 revamp. Monitoring and Assessment, the TMDL Program, and the NPS Program made webpage updates in order to seek feedback on their 20 Year Plans. The Nonpoint Source Program also made updates to their webpage relevant to new rounds of applications (the FY2019 interim Call and FY2020 Call for Applications), and about the Bitterroot Focus Watershed.
			• NPS Annual Report	The 2019 Annual Report was published as a storymap and submitted to EPA in January 2020. A postcard with a report summary and webpage address will be produced and available for distribution in February.
			• Support two Wetland Council meetings annually	Two Wetlands Council meetings occurred in 2019: in March, the Council met to focus on qualitative and quantitative indictors of change, and in November, the Council focused on strategic planning to update the State Wetland and Riparian Areas Plan.
			• Assist with the creation or updates of NPS publications	DEQ continued to support the Montana Watershed Coordination Council's Watershed Stories effort (mtwatersheds.org/app/watershed-stories). In 2019, a watershed story featuring the Granite Creek and Upper Clark Fork watersheds were published. Additionaly, radio broadcasts and the production of a film highlighting watershed groups and their projects was funded. See also Number 19.
			• Distribute NPS publications at 5 events annually	Staff distributed NPS publications at the AWRA annual meeting, MACD Convention, MACD Area meetings, NPS Region 8 meeting, and a girls' STEM event.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
24	DEQ, MSUEWQ, MWCC, Montana Watercourse	Support volunteer monitoring efforts	• Create or update VM technical guidance documents	DEQ and MSUEWQ are co-authoring a Monitoring Methods Selection Guidance document to help VM programs while developing objectives and selecting parameters and data collection methods. DEQ drafted a volunteer monitoring catalogue to overview the steps and resources available when planning VM projects, and DEQ and MSUEWQ are co-developing VM training curriculum. With funding from DEQ, MSUEWQ continued to refine their data and photo database and visualization tool.
			• Provide training and technical guidance to 5 VM groups annually	DEQ and/or MSUEWQ provided in-person training for volunteers in the Gallatin, Bitterroot, and Lake Mary Ronan, and provided technical guidance to program coordinators for the Yellowstone Ecological Research Center, Trout Unlimited, and Carbon CD. DEQ provided feedback on 11 sampling and analysis plans.
			• Provide funding to support VM efforts	DEQ awarded $21,031 total to nine VM programs through its Volunteer Monitoring Lab Analysis Support Program to offset analytical costs of water sampling. DEQ contracted with Clark Fork Coalition to monitor nutrients and algae in the Clark Fork River and with Gallatin River Task Force to monitor nutrients and algae in the upper Gallatin watershed.
25	DEQ	Develop and conduct riparian and streamside land management workshop and education tools for the real estate industry	• Develop workshop syllabus and course materials for continuing education credits	See number 14
			• Hold 2 workshops	

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
26	DEQ, FWP, DNRC, DOJ, USACE, USFS, NRCS, BLM, DNRC, USFWS, CDs	Develop and implement an interagency policy for river restoration work, emphasizing restoration of natural processes	• Interagency policy in place and supported by a wide range of government, nonprofit, and private entities	NPS Program staff supported the Climate Solutions Council, created by the Governor's executive order, and contributed a white paper recommendation focused on restoring and protecting floodplain and wetland processes.
27	MDT	Promote and support BMP training for road maintenance personnel	• Provide 3 trainings for road maintenance personnel	61 MDT road maintenance and construction personnel completed Stormwater Pollution Prevention Plan (SWPPP) training in 2019, either online in the classroom. Classroom SWPPP Adminstrator training went live in November 2019. District Environmental Engineering Specialists met 17 times to discuss new BMP training and other environmental issues.
28	DEQ	Support conferences that address stormwater pollution prevention and control strategies	• Support 2 stormwater conferences	DEQ did not host a stormwater conference in 2019, but did conduct Industrial Stormwater Permit Compliance training.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
29	DNRC	Promote and conduct forestry BMP and stewardship educational workshops and programs	• Annual BMP/SMZ education workshops for loggers and landowners	Unable to obtain this information for 2019
			• Forest stewardship program targeting small landowners throughout Montana	Unable to obtain this information for 2019
30	DEQ, DNRC	Increase awareness of regulatory requirements for nonpoint source pollutions	• Factsheet of existing NPS regulatory requirements	The Updated "Montana Stream Permitting" Guide was finalized in 2019 (http://dnrc.mt.gov/licenses-and-permits/stream-permitting/stream-permitting-book)
			• New audiences reached through publications and presentations	NPS Program staff reviewed a golf course BMP manual and presented on NPS Pollution for a high school class and a girls' STEM club. DEQ also supported certified continuing education focused on NPS Polution.
31	DEQ	Increase number of applications for 319 funding	• At least 20 applications received in 2022	Eleven 319 grant applications were received in 2019

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
Table 8-7: Interim Outcome - Projects and practices are implemented to address NPS issues				
No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
32	DEQ Engineering Bureau	Encourage stormwater quality improvement projects funded through the state revolving fund program	• Fund at least 4 stormwater projects	The Town of Twin Bridges closed an SRF load in 2019 that funded planning and design for new stormwater facilities for areas that do not drain during a storm event. Construction on another project that will remove and replace 1,200 linear feet of storm sewer trunk lines in Havre began in 2019. Great Fall's Phase II project, which included upsizing sewer mains and improving storm sewers, concluded in 2019.
33	DEQ, MARS, NRCS, FWP, other organizations	Support for and involvement in public and private channel migration zone and riparian conservation easement programs	• Annual report on increases in the number of stream miles covered under a conservation easement (based on available Montana cadastral data)	According to the Montana State Library's Conservation Easement geodatabase, 7 stream miles were protected under new conservation easements in 2019.
34	DEQ Watershed Protection Section	Fund WQIP and WRP-directed NPS watershed restoration projects	• Fund on-the-ground watershed restoration activities	The Watershed Protection Section distributed $1,073,240 of 319 funding to 9 contracts implementing on-the-ground restoration projects. The WPS also announced their intent to award $966,570 of 319 funding to 8 on-the-ground restoration projects in 2020.
35	DEQ	Provide reviews and comment on outside agency proposed projects that may have an effect on NPS pollution	• Reviews completed and comments provided as appropriate	DEQ provided comment on the Lolo National Forest's Redd Bull project. Watershed Protection Section staff also reviewed project proposals for the DNRC's Reclamation and Development Grant Program.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
36	DEQ Watershed Protection Section	Protect, restore, and create riparian and wetland buffers designed to prevent or reduce NPS pollution	• Fund 10 miles of riparian buffer enhancement through Section 319 contracts	319 contracts implemented in 2019 will result in 3.5 miles of riparian buffer improvement on Nevada Creek, the Vermillion River, Oregon Creek, Miller Creek, and the Bitterroot River.
			• Fund 10 acres of wetland enhancement through Section 319 contracts	319 contracts implemented in 2019 will result in 0.3 acres of wetland creation on Oregon Creek.
37	DEQ Fiscal, Watershed Protection Section	Manage and implement the NPS Management Program in efficient and effective manner, including fiscal management	• Review and update guidance annually to reflect state and federal reporting requirements	Staff updated the 319 Call for Applications and associated reporting templates for clarity and efficiency.
			• Conduct contract initiation meetings for all new contracts	NPS Program staff arranged contract kick off meetings with all new or interested contractors.
			• Ensure 75% of 319 contracts are closed within three years of contract award	7 out of 9 (78%) 319 contracts initiated in 2016 closed within 3 years.
38	DEQ, USFS, BLM, MDT, NRCS, FWP	Work with agencies to encourage water quality improvement actions	• Develop, revise, or implement DEQ water quality improvement MOUs with agencies, including USFS, BLM, MDT, NRCS, and FWP	DEQ and the USFS revised and renewed their MOU. An MOU meeting is planned for early 2020.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
39	DEQ, DNRC, NRCS, FWP, irrigation districts, CDs, watershed groups, private landowners	Support efforts to restore and protect wetlands, natural channel migration, and natural hydrologic regimes	• Encourage submittal of requests for funding for projects that will make substantive, sustainable reductions in hydrologic modification	The FY2020 Call for Proposals states that eligible projects will be consistent with recommendations in the 2017 Montana Nonpoint Source Management Plan, which includes reductions in hydrologic modifications as a strategy for reducing NPS pollution. Proposals submitted for Ninemile and Miller Creeks substantively and sustainably address hydroloic modification.
			• Encourage groups that are developing or updating a WRP to incorporate plans to address hydrologic modification and wetland protection/restoration	The Lower Clark Fork River WRP, accepted in 2019, includes wetland restoration and creation as a best management technique.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
40	DEQ, NRCS, CDs	Continue support for the National Water Quality Initiative (NWQI) under the EQIP program	• Successful expenditure of all available funding in designated NWQI watersheds	NRCS has had such great success expending available fund that they are proposing to continue funding projects in the current NWQI watersheds (Camp and Godfrey Creek) for at least 1 additional year.
			• Ongoing water quality monitoring and technical support	DEQ and NRCS had limited coordination in 2019 and will pursue additional monitoring in Camp and Godfrey watersheds in partnership with NRCS and Gallatin Local Water Quality District in coming years following implementation of additional water quality improvement projects.
			• Identification and preparation of future NWQI watersheds	NRCS intends to continue work in the current NWQI watersheds (Camp and Godfrey Creek) for 1-2 more years.

Table 8-8: Interim Outcome - Project implementation and effectiveness is tracked and reported

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
41	DEQ Watershed Protection Section	Conduct TMDL implementation evaluations	• At least 15 reviews completed	The NPS Program finalized the Big Spring Creek and Cramer Creek TIEs. Bitterroot Headwaters and Ruby TIEs are nearing completion. Additionally, Monitoring and Assessment published the Clark Fork River Nutrient Water Quality Status and Trends Report.

No.	*Key Partner(s)*	*Actions*	*Measurable Milestones*	*2019 Accomplishments*
42	DEQ Watershed Protection Section	Implement a long-term 319 project effectiveness evaluation program	• Project effectiveness evaluation program in place by 2019	NPS Program staff established a method for evaluating the long term success of projects in 2019 and continue to conduct these reviews. Project Effectiveness Reviews (PERs) focus on photo-point monitoring and evaluating the function of the waterbody, banks, and riparian habitat.
			• Project sites are evaluated every 5 years	4 projects, completed between 2006 and 2016, were evaluated during Project Effectiveness Reviews. Lessons learned include: it is important to remedy sediment issues upstream before implementing projects downstream. True reference conditions are often impossible to achieve depending on the landuse context, and that is okay. Projects that do not achieve large polltuion load reductions may still be valuable for their public visibility and education opportunity.
43	DNRC	(US Environmental Protection Agency April 12, 2013)Work with forest agency partners (especially DNRC Forestry Assistance) to ensure effective forestry BMP and SMZ activities, and assess the effectiveness of SMZ and HCPs	Biannual reports on forestry BMP audits	The 2018 Montana Forestry BMPs Monitoring report was published in 2019.
			Reports on SMZ and HCPs	Field reviews will begin again in 2020.
44	DEQ Information Management and Technical Services Section	Administer MT-eWQX water quality database system to track and provide public access to water quality monitoring data	• Upload all ambient water quality monitoring data collected by DEQ, its contractors, or data partners to EPA National STORET/WQX water quality data warehouse	DEQ processed data for monitoring projects for condition assessments (i.e., 305(b) reporting), water quality standards, watershed/water quality modeling, and projects from data providers outside DEQ.