

Watershed

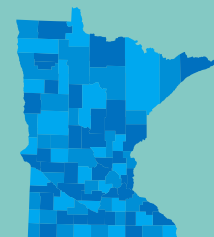
September 2021

2020 Watershed Achievements Report

A description of the projects funded by federal Clean Water Act Section 319 grants and Clean Water Partnership Loans for fiscal year 2020.



mn MINNESOTA POLLUTION CONTROL AGENCY



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Contents

Contents	i
Executive summary	iii
Introduction	1
Clean Water Partnership and Section 319 Programs.....	1
Watershed Program Accomplishments –2020.....	2
Protecting and restoring Minnesota’s waters for generations to come	3
Successes: A year in review	4
Plum Creek payoff	4
Hawk Creek soars above state’s 80 watersheds for water quality work	6
Report: Rainy River recovers, thanks to regulations and partnerships.....	7
NPS pollutant reductions and best management practices	9
Healthier watersheds	9
NPS pollution implementation funding at MPCA	13
Section 319 Program	13
CWP loans.....	15
Lower Mississippi River Basin	16
Newly awarded projects in the Lower Mississippi River Basin	16
Completed and new projects in the Lower Mississippi River Basin	16
Active projects in the Lower Mississippi River Basin.....	16
Minnesota River Basin	18
Newly awarded projects in the Minnesota River Basin	19
Completed projects in the Minnesota River Basin.....	22
Active projects in the Minnesota River Basin.....	26
Des Moines and Missouri River Basins	28
Newly awarded projects in the Des Moines River Basin.....	28
Completed projects in the Des Moines and Missouri River Basins	29
Active projects in the Des Moines and Missouri River Basins.....	30
Lake Superior Basin	31
Newly awarded projects in the Lake Superior Basin.....	31
Completed projects in the Lake Superior Basin	31
Active projects in the Lake Superior Basin	32
Rainy River Basin	33
Newly awarded projects in the Rainy River Basin.....	34
Completed projects in the Rainy River Basin	34

Active projects in the Rainy River Basin	34
Red River Basin	35
Newly awarded projects in the Red River Basin.....	36
Completed projects in the Red River Basin	36
Active projects in the Red River Basin.....	36
Saint Croix River Basin.....	38
Newly awarded projects in the Saint Croix River Basin.....	39
Completed projects in the Saint Croix River Basin	39
Active projects in the Saint Croix River Basin.....	39
Upper Mississippi River Basin	41
Newly awarded projects in the Upper Mississippi River Basin	41
Completed projects in the Upper Mississippi River Basin.....	43
Active projects in the Upper Mississippi River Basin	46
Cedar River Basin	48
Newly awarded projects in the Cedar River Basin	48
Completed projects in the Cedar River Basin.....	48
Active projects in the Cedar River Basin	48
Projects spanning multiple basins.....	49
Newly awarded projects in multiple basins	49
Completed projects in multiple basins.....	52
Active projects in multiple basins.....	52
References.....	53

Executive summary

The Minnesota Pollution Control Agency (MPCA) has two funding sources for local governments for implementation of best management practices (BMPs) to restore and protect Minnesota's waters. There are the federal Clean Water Act Section 319 (Section 319) funds and the Clean Water Partnership (CWP) funds. The governing statute for the CWP is [Minn. Stat. 103F.700](#) and the rules governing the disbursement are in [Minn. R. 7076](#). Further prioritization and Minnesota's goals are described in the [Nonpoint Source Management Program Plan](#) (NSPMP).

The projects reported in the fiscal year (FY) 2020 Watershed Achievement Report were awarded between 2015 and 2020. The state FY 2020 began July 1, 2019 and ended June 30, 2020. This report will describe the projects completed, newly awarded, and underway and funded with Section 319 and CWP loans by river basin. Each of the projects will contribute to the reduction of pollution loading in an effort to improve Minnesota's water quality. Section 319 projects awarded in federal fiscal year (FFY) 2020 (the FFY 2020 began October 1, 2019 and ended September 30, 2020) are not included due to the timing of this report and the execution of the grant agreements. Until all grant agreements for funds awarded under a request for proposal are fully executed, much of the information is considered not public. Grant agreements for the federal fiscal year are usually fully executed late in the year.

The Section 319 Grant Program is a federally funded program to address nonpoint source (NPS) pollution. Until 2020, the projects were awarded on a project-by-project, competitive basis. The grant award gave local governments the ability to work over four-years to complete the project. Each grantee is required to provide a match of at least 40% of the total project cost using state or local funds. In addition to providing pass through grant dollars, the U.S. Environmental Protection Agency (EPA) provides Minnesota with an equal amount of program dollars which fund program activities to address NPS pollution. These funds pay for staff to monitor, research, and develop products such as total maximum daily loads (TMDL) and watershed restoration and protection strategies (WRAPS).

The Section 319 Grant Program began the transition to the Section 319 Small Watershed Program in 2017. The EPA requirements changed in 2014 to include a more focused and detailed approach. The MPCA approaches watershed planning on a hydrological unit code (HUC) 8 scale. This allows the local governments to target their own priorities and develop implementation plans specific to their locality. The EPA requirements are a formalized version of this narrowing and focusing that is being done on the local level. The EPA requires that these plans are formalized with very detailed plans called nine key element (NKE) plans, which are described fully in the [Handbook for Developing Watershed Plans to Restore and Protect our Waters](#). The Focus Watersheds will be prioritized for funding in FFY 2020 and will be included in the 2021 Watershed Achievements Report.

FFY 2016 319 projects experienced delays due to Covid-19. EPA allowed extensions to 2021 to support watershed organizations an opportunity to complete their work.

The CWP program was originally a loan and grant program. In 2015, the Minnesota legislature stopped funding the grant program, but the loan program remained active. CWP funds are loaned to local units of government (LGU) at zero interest. The LGUs can apply for funding at any point throughout the year and use the funding to implement projects, create a loan or grant program for their residents, purchase equipment or easements, or educate and engage the citizens in taking action to protect and improve water quality. The loan funds are initially available for a three-year implementation period, with an optional extension to a fourth year. The CWP Loan funds are then paid back over a 10-year period. At no point do the funds accrue interest. Matching the funds is optional for borrowers. Although many entities do provide match activities for the loans, such as administration of their programs and outreach, not all

organizations choose to report matching funds. It is important to note that whether or not reported, some match and investment occurs with all program participants.

The estimated reductions associated with Section 319 and CWP loan projects are summarized in Table 1. It is important to note, no newly awarded projects or projects that are currently under way are included in this estimate. Some projects do not directly yield reductions, but may include civic engagement or demonstration elements to help further the NPS work in Minnesota.

Table 1. Summary of estimated reductions achieved with Section 319 grant and CWP loan projects completed in FY 2020

Basin	Total
P (lbs/yr)	10,610
TSS (t/yr)	4,305
N (lbs/yr)	8,818
Soil loss (t/yr)	677
BOD (lbs/yr)	12,900
Bacteria (cfu/yr)	2.453E+15
Debris (t/yr)	200.0
Biomass (t/yr)	14.8

Introduction

Minnesota's water resources are treasured by its citizens for the beneficial uses they provide including recreation, drinking water, aquatic life, industrial and agricultural uses. With more than 10,000 lakes, 100,000 river and stream miles, and extensive groundwater systems, water is a major part of Minnesota's culture, economy, and natural ecosystems.

Two programs provide local governments with resources to restore and protect surface water, with a special focus on NPS pollution. The MPCA relies on the Section 319 to provide funding for efforts to reduce nonpoint sources of pollution. The second source, the CWP loan program provides low interest loans to local units of government for BMPs, which reduce nonpoint source water pollution in local areas. The Watershed Achievements Report is an annual report on the efforts supported by these funding resources and the state's progress for reducing NPS pollution. This report describes the newly awarded, active and final nonpoint source projects for statewide and watershed-based projects.

Clean Water Partnership and Section 319 Programs

The MPCA provides financial and technical assistance to local government and other water resource managers to address nonpoint-source water pollution through the state CWP and Section 319 programs.

Section 319 Grant Program Small Watersheds Focus

MPCA developed a [Section 319 Small Watersheds Focus Program](#) in partnership with local governments to support comprehensive nonpoint source implementation on small-scale watersheds for WRAPS. The MPCA passes through approximately \$2.8 million in Section 319 grants annually to local governments and organizations to implement BMPs and adopt strategies to mitigate NPS pollution. Funding for the selected Focus Watersheds will continue in subsequent years for implementation projects. The goal of the Small Watersheds Program is to achieve the water quality objectives in the selected watersheds.

Clean Water Partnership Loan Program

The [CWP loan program](#) helps restore water quality in lakes and streams across Minnesota. Administered by the MPCA, the zero-interest loans go to local partners and tribal nations for projects that reduce nonpoint source pollution from diffuse sources such as failing septic systems and cropland runoff.

Figure 1. Clean Water Partnership loans reducing water pollution, one project at a time



Some examples:

- Improving on-site sewer systems in Itasca County to reduce sources of bacteria
- Removing water softeners — which are sources of chloride pollution — in the City of Lakefield

- Reducing nitrogen risks to drinking water wells in Rock County

Watershed Program Accomplishments –2020

Clean Water Accountability Reporting

Minnesota’s Clean Water Legacy Act requires that MPCA report actions taken in Minnesota’s watersheds to meet water-quality goals and milestones (Minn. Stat. 114D.26, subd. 2). This accountability reporting is required every two years, though updates to these reports will occur annually by July of each year.

[Healthier watersheds: Tracking the actions taken](#)

What’s in the reports?



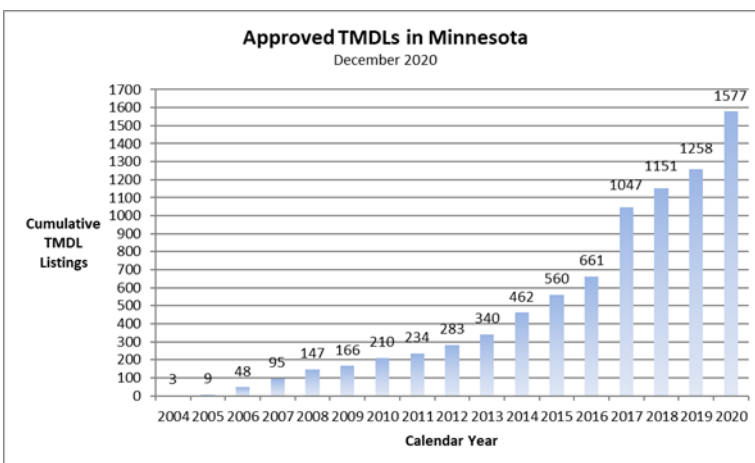
- WRAPS approval status
- TMDLs approved
- Wastewater treatment plant pollution reduction progress
- Nonpoint BMPs in all subwatersheds
- Funding (federal, state, local, point/nonpoint) by watershed

Minnesota’s Watershed approach

All 80 watersheds in Minnesota have restoration and protection strategy projects underway. Strategy plans have been completed for 60 of the 80 watersheds (75%) and more are on track for completion this year. More information is on this webpage [MPCA watershed approach](#).

Approved TMDLs

Progress is also being made in completing Total Maximum Daily Load (TMDLs) studies for impaired waters in the state. TMDL studies are being done on a watershed scale as part of the watershed approach, which has accelerated the pace on TMDL study completions. EPA approved TMDLs for 319 impairments on Minnesota’s Section 303(d) List in the year 2020.



2020 Clean Water Fund Performance Report

Minnesota agencies released their fifth collaborative [report](#) in February 2020 to help Minnesotans clarify connections between Clean Water Funds invested, actions taken and outcomes achieved. Measures in the report provide a snapshot of how Clean Water Fund dollars are being spent and what

progress has been made. The measures are organized into four categories: investment, surface water quality, drinking water protection, and external drivers and social measures. Each measure has detailed status ranking and trend information.

Protecting and restoring Minnesota's waters for generations to come

Minnesotans value clean, safe, and abundant water. In 2008, Minnesota residents voted for the Clean Water Land and Legacy Amendment, increasing their own sales tax and making a strong commitment to clean water in Minnesota. Here are some accomplishments since the amendment passed:

- All major watersheds in Minnesota have been assessed. We now know the clean water challenges we face.
- We have restored water quality in 50 lakes and streams. We are beginning to turn the tide.
- Vulnerable municipal water systems are engaged in protecting their source water.
- Over 30,000 private wells in 50 counties have been tested for nitrate.
- 500,000 acres on almost 800 farms now meet agricultural water quality certification standards.
- The average use of water per person in Minnesota is down by 20% over the last eight years.
- Municipal wastewater treatment upgrades have reduced phosphorus discharges by over 139,000 pounds per year.

Successes: A year in review

Plum Creek payoff

Seven years ago, Plum Creek was added to the state's impaired waters list, a list of the bodies of water in Minnesota that do not meet water quality standards. The stream, located between the Mississippi

Figure 2. Plum Creek (Upper Mississippi River Basin-Headwaters) following restoration



River and Warner Lake in Stearns County, was impaired for *E. coli* bacteria. While *E. coli* does not typically cause disease, it is used by the MPCA as an indicator for other types of harmful organisms that can be in the water from animal or human waste.

Jerry Finch and partners worked to identify solutions to pollution in Plum Creek.

Jerry Finch, a local township supervisor in 2014, wanted to fix the problem. Finch felt he needed more knowledge and skills to make it happen, so at the suggestion of MPCA staff, he turned to the University of Minnesota. "I went to the U and signed up for the watershed specialist course," he says.

Figure 3. Jerry Finch, Town Supervisor, Lynden Township



Finch earned his watershed specialist certification with mentoring from the Stearns County Soil and Water Conservation District (SWCD). Finch used what he learned to organize about 20 other people who live near the creek into the Plum Creek Neighborhood Network. They worked closely with the local township board, the county SWCD, MPCA, the University of Minnesota, and St. John's University. "That's the secret to it," Finch says. "One group can't do it alone. Most rewarding in all this was all the help we received."

Much of the work done by the network and its partners was trying to figure out where the bacteria was coming from. Finch was involved in the intensive monitoring for *E. coli* that was done in Plum Creek over several years. The monitoring revealed levels spiked during heavy

rain events/high creek flows, indicating soil from field erosion and streambed sediments were likely the most significant sources of bacteria. Waste from leaking septic systems and wildlife were also possible sources. Inspections identified several areas near the creek susceptible to erosion.

Based on what the groups learned, the local SWCD led several projects to reduce the impact of these potential sources:

- Erosion control structure constructed to address erosion from a county road culvert
- Suspect septic systems upgraded or replaced
- Water quality structure installed to address field erosion entering the creek
- Buffer installed on interstate highway right-of-way near the creek, in partnership with MnDOT
- Area farmers adopted new tillage and planting practices to reduce erosion

Figure 4. In 2017, the Plum Creek Neighborhood Network was named "Conservationist of the Year" by the Stearns County SWCD



The work of the network, state and local partners, and landowners made the difference. Monitoring conducted in 2019 by the Stearns County SWCD with assistance from volunteer Ted Stevens showed average *E. coli* counts dropped low enough that the Plum Creek is now meeting water quality standards related to bacteria.

Plum Creek and other waters that are now meeting water quality standards can be found in the draft 2020 Impaired Waters List and the online Impaired Waters Viewer tool.

Finch was very happy to hear the news about Plum Creek being delisted. "That was our mission."

Figure 5. Grade stabilization structure helped reduce erosion



Hawk Creek soars above state's 80 watersheds for water quality work

For not having its own official identity among Minnesota's 80 major watersheds, the [Hawk Creek Watershed Project \(HCWP\)](#) could well be considered an overachiever in terms of water quality protection and improvement efforts.

Over the past three years, HCWP has captured more than 25% of state and federal grants and loans in competition with all other watersheds. Over a 20-year period it has turned \$16 million in funds into more than 1,700 water quality projects in a primarily agricultural landscape.

Figure 6. Hawk Creek, as it flows through the golf course in Willmar



Hawk Creek originates from Eagle Lake north of Willmar and flows about 65 miles to the [Minnesota River](#), encompassing 623,424 acres (974 square miles) in major portions of Renville, Chippewa, and Kandiyohi counties. Officially, the Hawk Creek Watershed is a part of the [Yellow Medicine River Watershed](#). Both streams enter the Minnesota River almost across from each other about eight miles southeast of Granite Falls.

Figure 7. Hawk Creek staff at an annual meeting in February



The three counties created the HCWP in 1997 for: "Improving the water quality/quantity issues in the watershed, while also promoting a healthy agricultural, industrial, and recreational-based economy for the region." In 2013, the counties formalized the organization in a joint powers agreement.

Staff and leadership have been key to the project's longevity and success. The first coordinator, Loren Engelby, is now the agricultural inspector for Kandiyohi County. The next two coordinators, Darrell Schindler and Cory Netland, now work for the Minnesota Department of Natural Resources (DNR).

Heidi Rauenhorst took over as coordinator in 2012. An Olivia native, she returned bringing an impressive academic and professional resume. Watershed project staffers Dean Dambrotten and Jordan Austin put the grant funds to work on water quality projects, monitoring, and outreach.

Currently, the watershed manages about \$2 million in active grants. Most of that money goes for installation of water quality projects, such as buffer strips, bank stabilization, water storage, and education and outreach. Staff also monitor water quality and pesticides at a total of 36 sites in four watersheds among eight counties.

"We are very busy with water quality monitoring, implementing projects on the ground, and planning and carrying out education and outreach activities," says Rauenhorst. "We've been approached several

times to take on additional water quality monitoring because of Jordan’s exceptional and meticulous monitoring work.

Figure 8. Hawk Creek flooding along Hwy 23 bridge between Maynard and Granite Falls in June 2014



We have several projects completed, in process, or planned because of Dean’s 20-plus years of knowledge and expertise.”

An estimated 98% of the original wetlands in the watershed have been drained for agriculture. “We work with farmers and landowners to implement practices that are better for water quality while keeping ag land productive,” Rauenhurst says. “That could mean cover crops, reduced tillage, or putting unproductive acres into perennial cover. Soil health is huge for reducing erosion and improving water quality, while still using the land for ag use.

“We’ve seen an increase in farmers using cover crops and reduced tillage, which is very

encouraging. But we have a long way to go with it to see significant improvements in the water quality of the watershed. We need more acres where soil health is a priority.”

Under the state’s new [One Watershed One Plan](#) approach, water quality work is now organized by the natural boundaries of watersheds rather than county boundaries. Previously, counties developed their own water plans.

Report: Rainy River recovers, thanks to regulations and partnerships

In an era of flashy quick fixes, the Rainy River is a story of how slow and steady wins the race. Once one of the most polluted rivers in the state, the Rainy River now boasts “good to excellent” water quality.

Back in the 1950s, the Rainy River was so choked with industrial wood waste and raw sewage, one had to dig several feet to hit water. Now the Rainy River supports drinking water, fishing, tourism, and recreation.

Figure 9. MDH researchers in the 1950s had to dig down through paper mill waste clogging the Rainy River to find the water



The solution

Reading a new report by the Minnesota Pollution Control Agency (MPCA) on the health of the river, another idiom comes to mind: “Many hands make light work.” This story of recovery came via efforts of

Figure 10. Rainy River



many agencies and environmental legislation in both Canada and the United States. For more than 50 years, the two countries have collaborated to restore and protect water quality.

“The Rainy River is a vital economic and cultural bond between the United States and Canada,” says MPCA commissioner Laura Bishop. “With all partners working together — including federal, state, and local governments, Tribal Nations, industry, and environmental advocates — we have moved the river from near total

destruction to one of the most treasured fishing spots in North America that is also integral to the health of economies on both sides of the border.”

Though it would take several decades to turn the Rainy River around, two pieces of legislation set the river in the right direction: Canada’s Environmental Protection Act in 1971 and the United States’ Clean Water Act in 1972. In addition, the International Joint Commission established the International Rainy River Water Pollution Board to assist the two countries to address pollution in the Rainy River. By the early 1980s, pollutants had dropped dramatically on both sides of the border.

“The improvements that we have seen in the Rainy River demonstrate what can be accomplished when our two countries collaborate, in this instance by working together in the International Joint Commission’s International Rainy-Lake of the Woods Watershed Board, to achieve shared objectives,” said Ariel Delouya, Consul General of Canada in Minneapolis.

The Rainy River is now considered a world-class fishery, and one of the top five places in the U.S. to catch a 10-pound walleye or a four-foot or larger sturgeon. Other aquatic life, such as insects that provide food for fish and birds, are also doing well.

Looking ahead

The MPCA report cites the need to continue to protect sensitive headwaters lakes and streams, to ensure spawning for multiple game species. Protections are needed from future development and land use changes. For the report and supporting images, visit the [Rainy River pages](#).

The Rainy River report is the fourth in a series on big river systems in Minnesota. Previous reports have focused on the Upper Mississippi, Minnesota, and Red rivers. The MPCA is now working on its assessment of the St. Croix River.

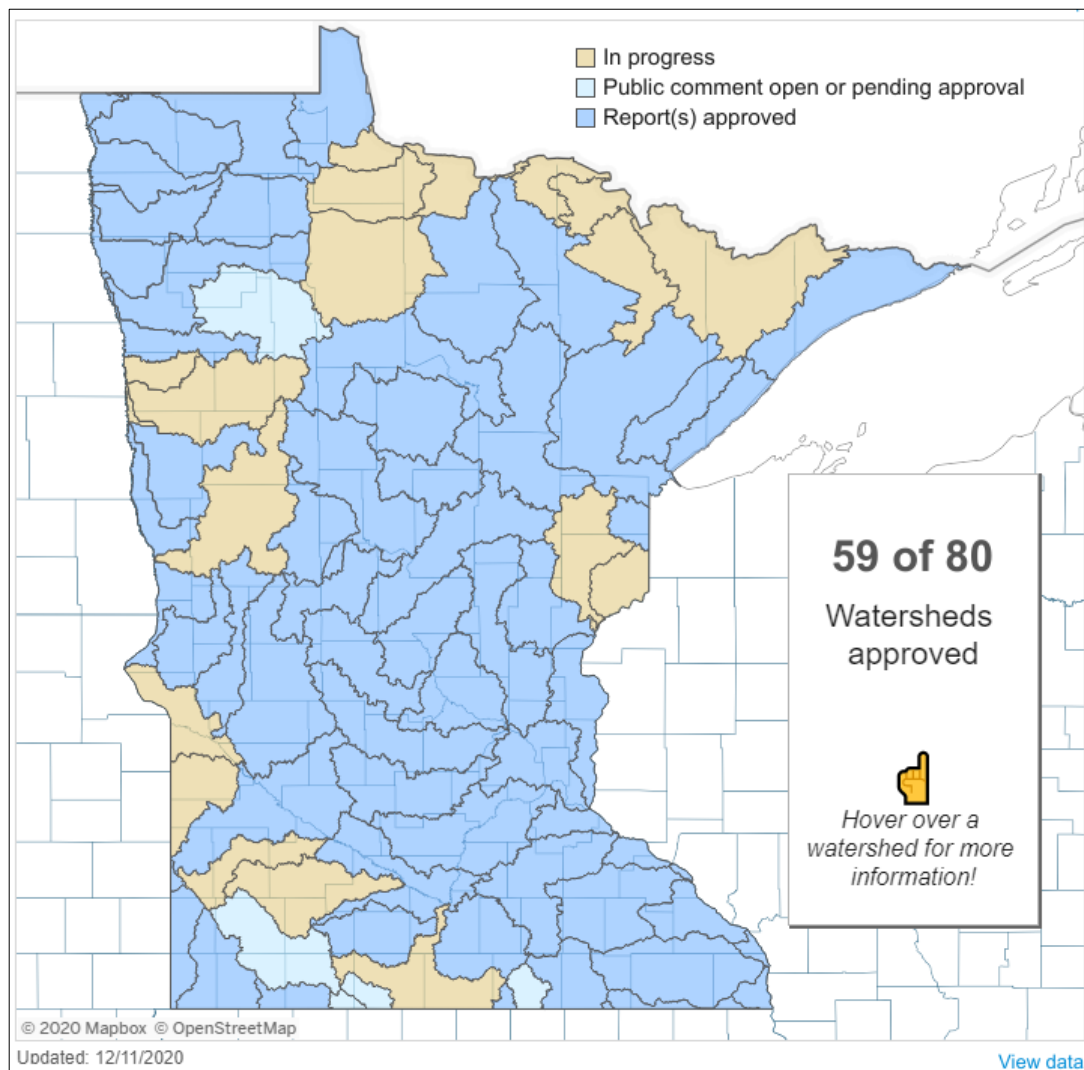
NPS pollutant reductions and best management practices

The healthier watersheds webpage (<https://www.pca.state.mn.us/water/healthier-watersheds>) was developed to track the spending of Clean Water Funds in Minnesota. Not all of the information tracked has to do with NPS pollution; however, the WRAPS, TMDL status, and BMPs implemented by watershed are related to NPS work. Data for the BMPs is collected by self-reported reporting of implementation of those receiving NPS funds. This information is provided by various government agencies, including NRCS (EQIP, CSP, ACEP, WRP) and FSA (CRP) at the federal level, and BWSR (easements and CWF grants), MDA (AgBMP, MAWQCP), and MPCA (319, CWP) reporting state administered NPS programs.

Healthier watersheds

Progress toward approving WRAPS (Figure 11) can be tracked at <https://www.pca.state.mn.us/water/watershed-restoration-and-protection-strategy-status>.

Figure 11. Approval status of WRAPS, taken December 18, 2020



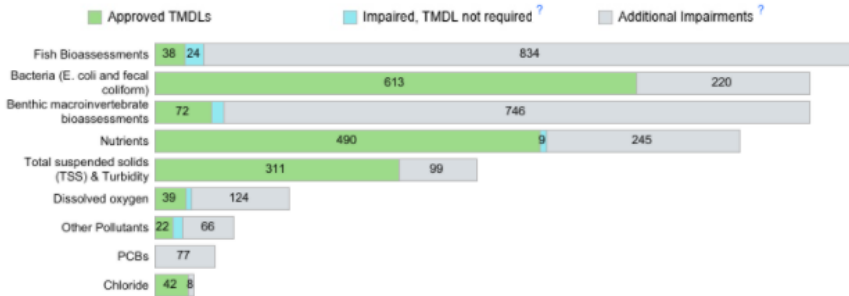
TMDL status (Figure 12) can be found at <https://www.pca.state.mn.us/water/tmdl-status>.

Figure 12. TMDL status, taken December 18, 2020

Showing data for: All Minnesota watersheds

Total Maximum Daily Load (TMDL) approval status

The information below tracks the MPCA's efforts to develop TMDLs on all impaired waterbodies on the 2020 Impaired Waters List. TMDLs are approved by the U.S. Environmental Protection Agency and set pollutant reduction goals that help target implementation strategies and actions to restore impaired lakes, rivers, and streams.



Filter by geography

Watershed: (All) [v]

Subwatershed: (All) [v]

County: (All) [v]

Legislative district (Senate, House): (All) [v]

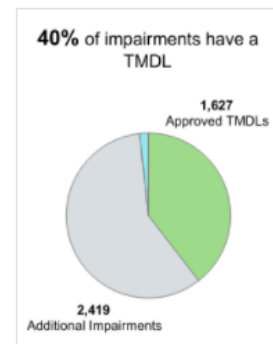
Waterbody (ID or Name): [input]

Include mercury TMDLs?
 Yes
 No

Reset Filters

List of impaired waters and TMDL status

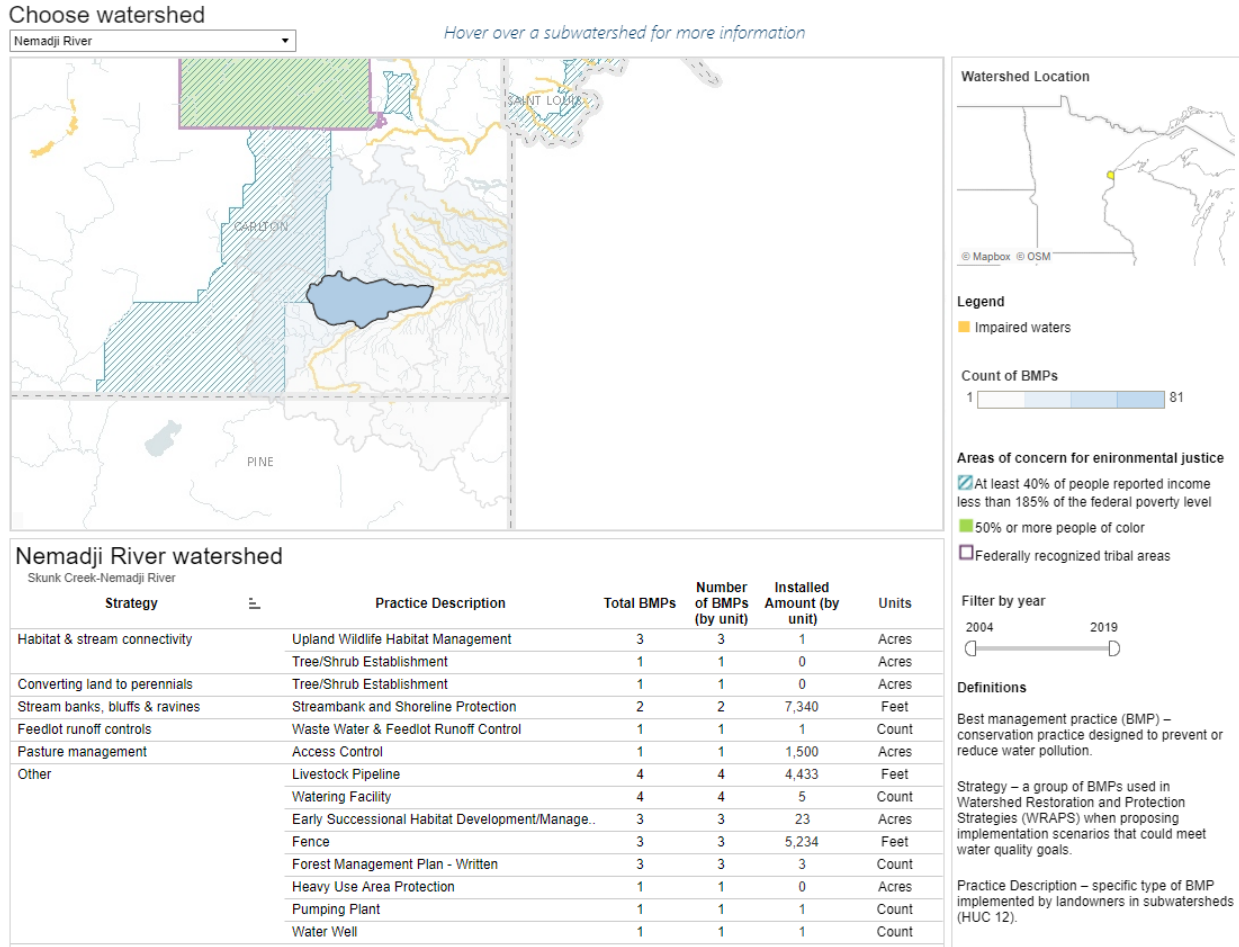
County	Waterbody ID	Waterbody	Pollutant/Stressor	First Listed	TMDL Status	View data
	01-0099-00	Gun Lake	Nutrients	2010	TMDL Approved, 2020	[link]
	01-0034-00	Horseshoe Lake	Nutrients	2010	TMDL Approved, 2019	[link]
	07010104-701	Little Willow River Old Cha..	Fish bioassessments	2020	Not Required	
	07010103-518	Minnewawa Creek	Benthic macroinvertebrates bi..	2018	Not Required	
	07010103-519	Minnewawa Creek	Fish bioassessments	2018	Planned, 2029	
	01-0033-00	Minnewawa Lake	Nutrients	2002	TMDL Approved, 2011	[link]
	07010103-708	Mississippi River	Total suspended solids (TSS)	2016	Planned, 2027	
	07010104-655	Mississippi River	Turbidity	1998	Planned, 2027	
	07010103-749	Moose River	Dissolved oxygen	2012	Not Required	
	07030003-631	Pine River	Escherichia coli (E. coli)	2020	Planned, 2020	
	01-0001-00	Pine Lake	Nutrients	2012	Planned, 2020	
	07010103-733	Pokegama Creek	Benthic macroinvertebrates bi..	2018	Not Required	
			Fish bioassessments	2018	Not Required	
	01-0069-00	Portage Lake	Nutrients	2020	Planned, 2020	
	07010104-688	Rabbit Creek	Fish bioassessments	2020	Not Required	
	07010104-505	Rice River	Dissolved oxygen	2020	Planned, 2020	
			Fish bioassessments	2002	Planned, 2020	



[About this data](#)

Best management practices implemented by watershed (Figure 13) can be found <https://www.pca.state.mn.us/water/best-management-practices-implemented-watershed>.

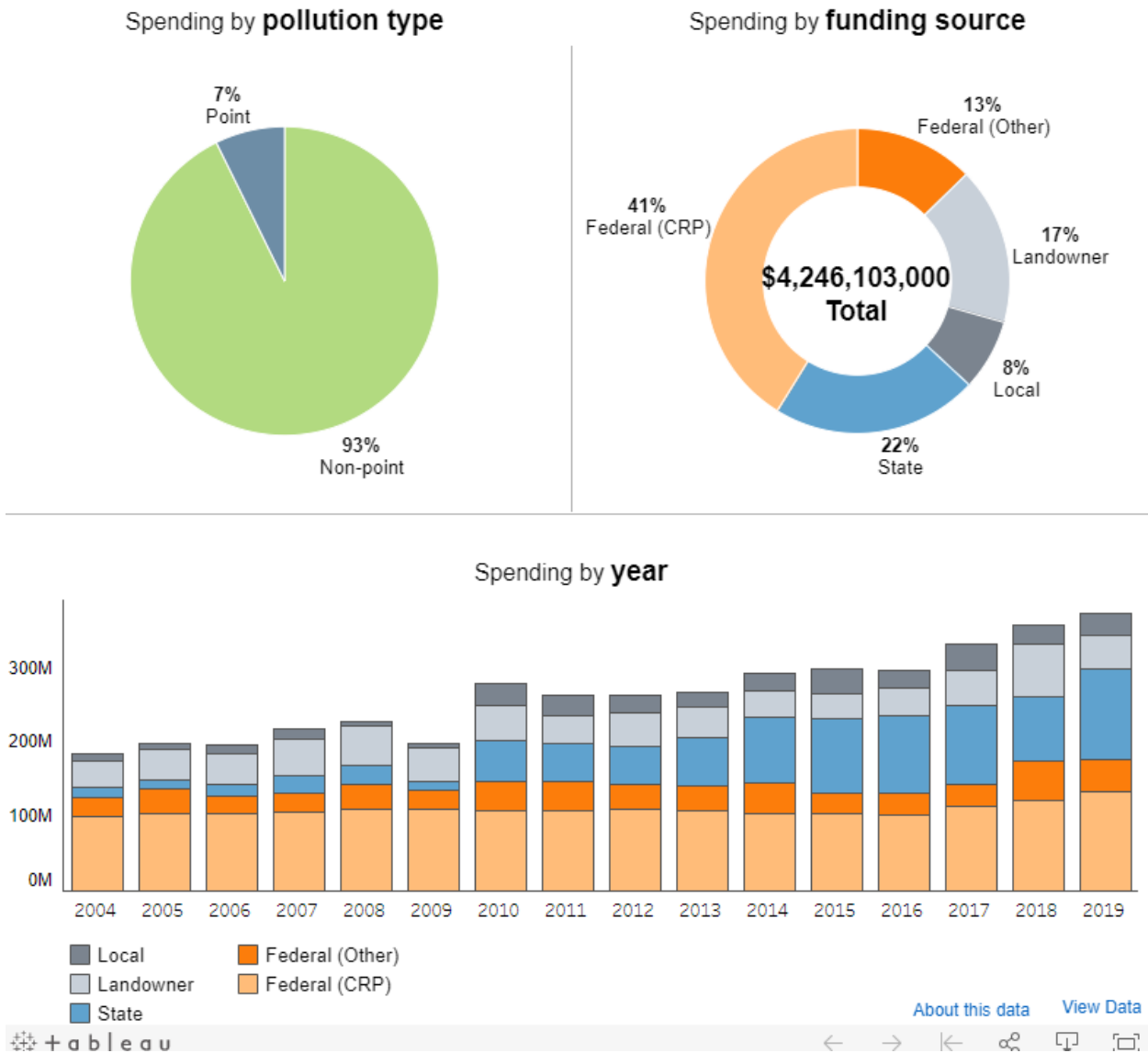
Figure 13. BMPs by watershed, Skunk Creek (Nemadji River) taken December 18, 2020



Implementation spending for watershed implementation projects are described <https://www.pca.state.mn.us/water/spending-watershed-implementation-projects>. This describes spending related to state and federally funded programs. Does not include all government spending or private spending for stormwater and other clean water projects.

Figure 14. Spending in all watersheds within all counties in Minnesota, taken on December 16, 2020

All Watersheds within all counties



NPS pollution implementation funding at MPCA

Most of the implementation funding to address NPS pollution in Minnesota is administered by the Minnesota Board of Soil and Water (BWSR). A description of these grant programs can be found at <http://bwsr.state.mn.us/grants>. Funds are awarded, based on program requirements, as competitive and noncompetitive grants, as well as watershed based funding.

Section 319 Program

Section 319 Small Watershed Focus Program

Section 319 Grant Program Changes – Small Watersheds Focus MPCA developed the Section 319 Small Watersheds Focus Program in partnership with small watersheds to develop a long-term roadmap to support comprehensive nonpoint source implementation on a small-scale watershed. To date, 30 small watersheds selected for prioritized funding, 10 each for prioritization for funding in 2020, 2021, and 2022. In 2021, the small watersheds for Group D, to be prioritized for funding in 2023, will be selected.

The selections are part of the transition in the federal Clean Water Act Section 319 Program from one-time grants to more reliable funding focused on small watersheds. The goal of the program is to help local governments make measureable changes toward water quality improvements. Based on input from many local governments, the program is designed to provide a reliable and longer-term funding source to address all pollutants in small watersheds.

Table 2. Focus Watersheds and the years they are prioritized for funding

Prioritization group	Group A	Group B	Group C	Group D
Funding years	2020, 24, 28, 32	2021, 25, 29, 33	2022, 26, 30, 34	2023, 27, 31, 35
Prioritized watersheds	Fairmont Chain of Lakes and Dutch Creek (Blue Earth River)	Big Sandy Chain of Lakes	Rat Root River (Rainy River)	TBD
	Dobbins Creek (Cedar River)	Brown’s Creek (St. Croix River)	Cascade Creek (Zumbro River)	TBD
	Plum Creek (Redwood River)	Como Lake (Mississippi River-Twin Cities)	Comfort Lake/Forest Lake Chain (St. Croix River)	TBD
	Upper Hawk Creek and Wilmar Chain of Lakes (Minnesota-Yellow Medicine)	Coon Creek (Mississippi River-Twin Cities)	Amity Creek (St. Louis River)	TBD
	Sand Creek (Lower Minnesota)	Rice Creek (Le Sueur River)	Pelican Lake (Lake Superior)	TBD
	Black River and Red Lake River-Thief River Falls to Crookston	South Heron Lake (Des Moines)	Cook SWCD – TBD	TBD
	Skunk Creek (Nemadji River)	Twelvemile Creek (North Fork Crow River)	Campbell Creek (Otter Tail River)	TBD

Prioritization group	Group A	Group B	Group C	Group D
	Whiskey Creek (Red River of the North)	Tamarack, Birch, and Wilkinson Lakes (Vadnais Lake)	Tributary to the Redeye River	TBD
	Green Lake (Rum River)	West Indian Creek (Zumbro River)	Rice Lake (North Fork Crow River)	TBD
	Pipestone, Split Rock and Mound Creeks (Big Sioux and Rock Rivers)	Whitefish Chain of Lakes (Pine River)	Skunk Creek (Lake Superior)	TBD

There have been 41, 34, and 31 declarations of interests from local governments to participate in Groups A, B, and C, respectively. The MPCA conducted telephone interviews with all applicants each year. These candidates were narrowed down further, and three-hour interviews were conducted. The agency then chose ten watersheds for funding based on criteria such as state priorities and collaboration, along with input from the BWSR. The MPCA will choose an additional group of 10 watersheds for prioritized funding in 2023 in spring 2021.

Information regarding projects awarded in FFY 2020 will be reported in the 2021 WAR, due to timing of grant execution.

Environmental Performance Partnership Grant

The MPCA will requested \$2,842,750 in technical (program) funds from the EPA for FFY 2020 as part of a larger grant agreement that funds multiple programs at the MPCA. Section 319 is the funding source for a portion of that agreement.

The MPCA has entered into an Environmental Performance Partnership Agreement (EnPPA) with the EPA Region 5. This is a multi-year agreement that specifies how the two agencies will jointly protect Minnesota’s environment. The EnPPA uses the Performance Partnership Grant (PPG) workplan template to detail tasks or work commitments from the states. On October 1, 2016, the MPCA and EPA Region 5 entered into a new four-year agreement. This agreement includes air quality permits, mining permits, and the Minnesota Watershed Approach and the Section 319 Grants Program. For the purposes of this report, only the Section 319 funding will be discussed.

The Performance Partnership Agreement (PPA) is an extension of the MPCA’s Strategic Plan and the EPA’s Regional Plan. In Minnesota, there are 80 HUC8 watersheds. In a ten-year period, all 80 HUC8 watersheds will be intensively monitored or sampled, assessed for impaired waters and waters in need of protection, modeled with U.S. Geological Service HSPF (Hydrological Simulation Program-FORTRAN) model, and investigated for biological stressors. Using this data, TMDLs are developed. This information is gathered in a WRAPS report that uses the collected data to create a table of strategies (generally BMPs) needed to achieve water quality standards in that major watershed. Input from not only local governmental units, but also citizens, is integral to the process of creating the WRAPS reports. Ownership by the local stakeholders of the WRAPS report is the central tenet of the process: with that ownership, the right conservation practices are more likely to be implemented in the areas where they’re most effective.

Section 319 Program funding currently funds 21.85 full-time equivalents (FTE) to support the NPS program work. These positions support the development, management, and administration of the program.

CWP loans

The CWP program offers zero-interest loans to local units of government for implementing nonpoint source BMPs and other activities that target the restoration and protection of a water resource such as a lake, stream, or groundwater aquifer.

Loans can be used for these activities:

- Urban green infrastructure
- Buffers
- Septic system upgrade or replacement
- Technical assistance, outreach and education
- Equipment (e.g., salt application, street sweeping)
- Any nonpoint source BMP
- Feedlot upgrade or replacement

There were almost \$9.4 million of CWP Loans awarded in FY 2020. Individual loans are described in the following river basin sections.

Lower Mississippi River Basin

The Lower Mississippi River Basin covers approximately 6,300 square miles. Since 2016, there has been an investment of \$965,046 of Section 319 funds for four projects in the Lower Mississippi River Basin. Local partners have committed to investing an additional \$905,183 of state and local matching funds to these projects.

The Lower Mississippi Basin is located in the southeastern portion of Minnesota. Watersheds included in the Lower Mississippi River Basin: [Upper Iowa River](#), [Mississippi River - Reno](#), [Root River](#), [Zumbro River](#), [Cannon River](#), [Mississippi River - Lake Pepin](#), [Mississippi River - Winona](#), [Mississippi River - La Crescent](#).

Regionally speaking, Southeastern Minnesota has a number of opportunities for improvement. These include the reduction of nitrogen leaching to groundwater, which will more often than not emerge in surface water in this area partially dominated by karst geology. Likewise, the same opportunity is present for the reduction of bacteria leaching and runoff from feedlots as southeast Minnesota is home to four of the top 10 beef and dairy producing counties in the state ([MDA Dairy Industry Profile](#), [MDA Beef Industry Profile](#)). Other significant opportunities lie in the reduction of sediment and nutrient delivery to streams, in part to contribute to the [Nutrient Reduction Strategy for the Mississippi River](#) and to restore and protect the regions water resources.

Newly awarded projects in the Lower Mississippi River Basin

There were no newly awarded projects in the Lower Mississippi River Basin in FY 2020.

Completed and new projects in the Lower Mississippi River Basin

There were no projects completed in the Lower Mississippi River Basin in FY 2020.

Active projects in the Lower Mississippi River Basin

Projects that are currently under way in the basin are described in Table 3. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There are \$905,046 of Section 319 funds used in active projects, with \$905,182 of committed local and state matching funds.

Table 3. Active projects in the Lower Mississippi River Basin

Project Name	Middle Fork Zumbro River Critical Source Area Restoration	Mississippi River Lake Pepin Watershed WRAPS Implementation	Reducing Bacteria from Southeast Minnesota Feedlots	Whitewater Watershed Nitrogen Reduction Project
Sponsor	Dodge SWCD	Goodhue SWCD	Goodhue SWCD	Whitewater Joint Powers Board
FY awarded	2016	2016	2017	2017
Project timeframe	January 2018 to August 2020	January 2017 to August 2020	March 2018 to August 2021	March 2018 to August 2021
Funding type	Section 319	Section 319	Section 319	Section 319
Funding	\$219,000	\$117,221	\$336,000	\$232,825.00
Match	\$222,906	\$227,432	\$275,000	\$179,845

HUC8 Code	07040004	07040001	Multiple	07040003
Watershed	Zumbro River	Mississippi River - Lake Pepin	Multiple watersheds	Mississippi River - Winona
Project goal	Address the turbidity TMDL by installing sediment reducing practices in the identified critical source areas to have an estimated sediment reduction of 200-246 tons per year	Implement restoration and protection strategy practices from the Mississippi River/Lake Pepin WRAPS to improve stream habitat, increase upland storage and reduce sediment and nutrient loading.	Provide targeted technical and financial assistance to critical loading SE MN open lot feedlots under 500 AU's and reducing fecal coliform bacteria runoff to negligible levels from a goal of 30 feedlots.	The project addresses nitrate pollution to surface waters within critical source areas by increasing implementation of nitrogen management practices and cover crops.

Minnesota River Basin

The Minnesota River Basin covers approximately 15,000 square miles within the State of Minnesota.

Since 2016, there has been an investment of \$9,527,637 of Section 319 funds and Clean Water Partnership Loan funds between a total of 25 projects. Local partners have invested an additional \$4,708,660 of state and local match dollars to these projects. The projects funded by Section 319 and CWP Loan funds address sediment and nutrient loading, improving soil health, addressing altered hydrology, in-lake contributions, and upgrading and replacing SSTS.

Figure 15. The Minnesota River Basin



This could be a pivotal year for the Minnesota River and its tributaries (Figure 15). Recent watershed assessment studies emphasize the need for widespread changes to the Minnesota River Basin, which covers 10 million acres in southern Minnesota.

Sediment pollution (also called total suspended solids) is clouding the water in the major portion of the Minnesota River. The TMDL and sediment reduction study is calling for decreasing sediment in the river by 50%. The Minnesota River Basin has erodible soils and is naturally vulnerable to sediment pollution. The incised zone of many watersheds compounds this but some practices, such as artificial drainage, worsen the situation by bringing too much water, too quickly, into the system. Increasing flows are a major threat to water

quality in the basin, accelerating riverbank erosion and threatening infrastructure. In the past 80 years, flow amounts have doubled in the Minnesota River.

The increased flow isn't just due to increased rainfall; the river carries more water per inch of rain than in previous decades. Increased artificial drainage, fewer wetlands to store water, lack of perennial vegetation and agricultural and urban land use practices all contribute to higher flows and erosion of fields and streambanks.

The muddy water then makes it hard for fish and other aquatic species to breathe, find food, and reproduce. The sediment is also filling in the Lower Minnesota River and Lake Pepin downstream at a much faster rate than before European settlement and intensive farming of the basin.

The Minnesota River Basin contains the following HUC8 watersheds: [Minnesota, River – Headwaters](#), [Pomme de Terre River](#), [Lac qui Parle River](#), [Minnesota River –Yellow Medicine](#), [Chippewa River](#), [Redwood River](#), [Minnesota River - Mankato](#), [Cottonwood River](#), [Blue Earth River](#), [Watowan River](#), [LeSueur River](#), and [Lower Minnesota River](#).

For more information on the Minnesota River, see the interactive report found at <https://www.pca.state.mn.us/water/minnesota-river-basin>.

Newly awarded projects in the Minnesota River Basin

Projects that are newly awarded in the basin are described in Table 4. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project.

Table 4. Newly awarded projects in the Minnesota River Basin

Project name	Lac Qui Parle-Yellow Bank SSTS Loans Phase II	Brush Creek & Blue Earth River Sediment	Improving Chetomba, Sacred Heart & Wood Lake Creek	North Branch Yellow Medicine River Protection Project	Pomme de Terre Watershed BMP Implementation	Whetstone River Restoration	Renville County SSTS Loan Program
Sponsor	Lac qui Parle-Yellow Bank Watershed District	Faribault SWCD	Hawk Creek Watershed Project	Lincoln SWCD	Pomme de Terre River Association	Upper Minnesota River Watershed District	Renville County
FY awarded	2019	2019	2019	2019	2019	2020	2020
Project timeframe	August 2018 to August 2021	January 2020 to August 2023	January 2020 to August 2023	January 2020 to August 2023	January 2020 to August 2023	March 2020 to March 2023	March 2020 to March 2023
Funding	CWP Loan	Section 319	Section 319	Section 319	Section 319	CWP Loan	CWP Loan
Funding	\$900,000	\$387,000	\$499,860	\$106,000	\$304,100	\$430,000	\$900,000
Match		\$302,000	\$334,000	\$70,750	\$205,000		
HUC code	Multiple	07020009	07020004	07020004	07020002	70200001	07100001, 07100002
Watershed	Multiple	Blue Earth River	MN River - Yellow Medicine	MN River - Yellow Medicine	Pomme de Terre River	Minnesota River-Headwaters	Multiple
Project goal	Provide low interest funds for homeowners to bring non-conforming septic systems into compliance of the Minnesota Rules Chapter 7080. Upgrades for 70 to 80 SSTS in Lac qui Parle County.	Implementation of BMPs focusing on sediment reduction, nutrient transport, and increased infiltration in the Blue Earth Watershed.	The goal of this project is to implement prioritized BMPs and increase civic engagement in critical areas to reduce nonpoint sources of <i>E. coli</i> , sediment (TSS), and nutrient eutrophication in order to achieve the impairment and water quality goals for the Hawk Creek Watershed.	The main goal is to reduce sediment from entering the North Branch and Upper Branch water bodies. As a secondary benefit, phosphorus is reduced naturally by keeping the sediment on the upland. By doing so, impairments such as turbidity and Nutrient Eutrophication will be reduced, creating cleaner water within the Yellow Medicine River system.	Implement BMPs effective in abating nonpoint source phosphorous and sediment runoff to impaired waterbodies within the Pomme de Terre watershed.	Funding will provide a 100% complete Engineering Design Report, provide funding for flowage easements and land purchases between the levees. The completed project moves beyond operations and controls by moving toward a permanent solution to Big Stone Lake water quality and restoration of the lower Whetstone and Minnesota Rivers.	Renville County Environmental Services estimates that 75 sewage treatment systems will be upgraded with loan proceeds at an average cost of \$12,000 per system..

Project name	Lac Qui Parle-Yellow Bank SSTS Loans Phase II	Brush Creek & Blue Earth River Sediment	Improving Chetomba, Sacred Heart & Wood Lake Creek	North Branch Yellow Medicine River Protection Project	Pomme de Terre Watershed BMP Implementation	Whetstone River Restoration	Renville County SSTS Loan Program
Planned BMPs	40-45 SSTS	Cost share for cover crops and conservation tillage; develop CE plan; 3 field days/workshops; in-channel practices	BMPs including: side inlets, WASCObS, cover crops, conservation till, ag waste, streambank stabilizations, lakeshore restoration; Community outreach	WASCObS, grassed waterway	Implementation of eligible BMPs such as: sediment control basins, rain gardens, shoreline and streambank protection, alternative tile intakes, agriculture waste pit closures, cover crops; Technical assistance; Civic Engagement	Engineered plans	SSTS
Anticipated estimated reductions	Phosphorus: 200 lbs/yr Sediment: 1.4 t/yr Soil Loss: NA/? Nitrogen: 700 lbs/yr BOD ₅ : 5,000 lbs/yr <i>E. coli</i> : NA	Phosphorus: 1,100 lbs/yr Sediment: 700 t/yr Soil Loss: 2,200 t/yr Nitrogen: 25,500 lbs/yr BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 5,000 lbs/yr Sediment: 1,800 t/yr Soil Loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : 3.0E+15 cfu/yr	Phosphorus: 230 lbs/yr Sediment: 230 t/yr Soil Loss: 375 t/yr Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 3,600 lbs/yr Sediment: 1,000 t/yr Soil Loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	NA	Phosphorus 400 lbs/yr Sediment 2.5 t/yr Soil Loss: NA Nitrogen 1,000 lbs/yr BOD ₅ : NA <i>E. coli</i> : NA

Completed projects in the Minnesota River Basin

Projects completed in the Minnesota River Basin are shown in Table 6. The final amount of Section 319 and CWP Loan funds invested were \$2,072,236 with \$885,429 of state and local match. The projects addressed nutrient, sediment, and *E. coli* loading in the basin, with estimated reductions summarized in Table 5. Best management practices (BMPs) installed included both structural practices and education/outreach activities. BMPs installed included alternative inlets, side inlets, 4,560 acres of cover crops planted, streambank stabilizations and SSTS upgrades.

Table 5. Estimated reductions for completed projects in the Minnesota River Basin

Pollutant	Reduction (unit)
Phosphorus	9,818 lbs/yr
Sediment (TSS)	3,731 t/yr
Nitrogen	8,818 lbs/yr
Soil loss	5,867 t/yr
Bacteria	1.375E+15 cfu/yr

Table 6. Completed projects in the Minnesota River Basin

Project name	Greater Blue Earth River Basin Drainage Partnership	High Island Creek & Rush River TMDL Implementation Project Dissolved Oxygen	Quantifying Cropland-Riparian Water Management	Hawk Creek Watershed FY16 Implementation Project	Hawk Creek Watershed Subsurface Sewage Treatment System (SSTS) Upgrade Implementation	Lac qui Parle-Yellow Bank SSTS Loan Program
Sponsor	GBERBA	Sibley SWCD	Regents of the University of Minnesota	Hawk Creek Watershed Project	Hawk Creek Watershed Project	Lac Qui Parle-Yellow Watershed District
FY awarded	2015	2015	2015	2016	2016	2017
Project timeframe	January 2016 to August 2019	February 2016 to August 2019	February 2016 to August 2019	December 2016 to June 2019	August 2016 to August 2019	August 2016 to August 2019
Funding	Section 319	Section 319	Section 319	Section 319	CWP Loan	CWP Loan
Funding	\$134,745	\$300,000	\$283,787	\$190,054	\$758,723	\$404,927
Match	\$251,337	\$206,787	\$289,602	\$126,703	\$11,000	
HUC code	Multiple	07020012	Multiple	7020004	7020004	Multiple
Watershed	Multiple	Lower Minnesota River	Multiple	Minnesota River - Yellow Medicine	Minnesota River - Yellow Medicine	Multiple
Project goal	Four 319 Conservation Drainage projects received cost share from this grant to be conducted in the headwater areas of the Blue Earth and Le Sueur Major Watersheds.	Reduce the overall load of sediment and nutrients in the High Island Creek and Rush River watersheds; therefore, improving dissolved oxygen levels within these watersheds.	Improve our understanding of cropland runoff, via subsurface tile-drains at field scales and the buffer capacity of BMPs to store and treat drainage waters (at catchment scales) in different landscapes of the Western Cornbelt Plains ecoregion. This understanding will lead to better management of excessive runoff and nitrate reduction in the Minnesota River basin.	This project focused on implementation of BMPs in the Hawk Creek Watershed that elevate dissolved oxygen levels in watercourses by reducing phosphorus in agricultural and urban areas and/or increasing groundwater infiltration, thereby increasing stream base flows.	This project focused on implementation of SSTS upgrades in the Hawk Creek Watershed that elevate dissolved oxygen levels in watercourses by reducing phosphorus.	Thirty-five of an estimated 40-45 Subsurface Sewage Treatment Systems (SSTS) were replaced to improve the waterbodies of concern due to the project closing early after an opportunity for better funding rates.

Project name	Greater Blue Earth River Basin Drainage Partnership	High Island Creek & Rush River TMDL Implementation Project Dissolved Oxygen	Quantifying Cropland-Riparian Water Management	Hawk Creek Watershed FY16 Implementation Project	Hawk Creek Watershed Subsurface Sewage Treatment System (SSTS) Upgrade Implementation	Lac qui Parle-Yellow Bank SSTS Loan Program
BMPs installed	111 new side inlet structures on public drainage systems	73 alternative inlets installed 3,600 acres of cover crop 110 acres of buffer	N/A	1 ag waste project 960 acres cover crops 1 grade stabilization 1 lakeshore stabilization/buffer 1 nutrient management project 1 streambank stabilization 47 events/meetings	64 SSTS upgrades	35 SSTS
Estimated reductions achieved	Phosphorus: 5,150 lbs/yr Sediment: 1,800 t/yr Soil Loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 2,166 lb/yr Sediment: 1,365 t/yr Soil loss: 5,867 t/yr Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	N/A	Phosphorus: 790 lbs/yr Sediment: 560 t/yr Soil loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 554 lbs/yr Sediment: 10,693 t/yr Soil loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 158 Lbs/yr Sediment: 1,844 lbs/yr Soil loss: NA Nitrogen: 505 lbs/yr BOD ₅ : 3,331 lbs/yr <i>E. coli</i> (bacteria): 1.375E+15 cfu/yr
Project highlights	Local Drainage Staff implementing the alternative side inlets have numerous reports of positive landowner interactions regarding the placement and design of the BMP. The practice allows for better field operations for the landowner and a water quality benefit for the public.	One major success of this project was the way that it utilized a network of project partners that had been built through previous Section 319 and Clean Water Partnership projects. Critical areas map for BMP location and GIS layer created/analyzed. Longitudinal dissolved oxygen sampling in 2016 and 2017.	A water budget was developed for modeling BMPS in the Minnesota River Basin. Novel source water partitioning techniques were tested. A SWAT model was developed for the Cottonwood River Watershed. Riparian Process Zone BMP Guidance document was developed.	The activities accomplished through this grant are identified in the Hawk Creek Watershed Restoration and Protection Strategies report and have helped to move closer to accomplishing the goals and priorities.	The activities accomplished through this loan project have helped achieve the reduction of pollutant loading from failing SSTS.	There were 35 SSTS upgraded to address bacteria impairments.

Project name	Greater Blue Earth River Basin Drainage Partnership	High Island Creek & Rush River TMDL Implementation Project Dissolved Oxygen	Quantifying Cropland-Riparian Water Management	Hawk Creek Watershed FY16 Implementation Project	Hawk Creek Watershed Subsurface Sewage Treatment System (SSTS) Upgrade Implementation	Lac qui Parle-Yellow Bank SSTS Loan Program
Partnerships	County and SWCD elected officials GBERBA Staff and Members Blue Earth, Brown, Cottonwood, Faribault, Freeborn, Jackson, Le Sueur, Martin, Waseca, and Watonwan Counties and SWCDs	Sibley, Nicollet, Renville, and McLeod Counties and SWCD High Island Creek WD DNR MPCA Cities of Arlington, Gaylord, Winthrop, Gibbon, and Lafayette NRCS Rush River Watershed Tech Farm Service Agency USFWS	UMN Minnesota Corn Research and Promotion Council Martin SWCD	Chippewa, Kandiyohi, and Renville Counties and SWCDs City of Willmar Eagle, Long, Foot, and Willmar Lake Associations Hawk Creek Watershed Partnership (HCWP) HCWP Board of Directors, Citizen Advisory Committee, Citizen Monitors, Local Work Group Landowners BWSR DNR MPCA NRCS USFWS	Landowners HCWP Chippewa, Kandiyohi, and Renville Counties MPCA	Lac qui Parle-Yellow Bank WD Lac qui Parle County Landowner Contractors MPCA

Active projects in the Minnesota River Basin

Projects that are currently under way in the basin are described in Table 7. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There is currently \$4,328,441 of Section 319 and CWP loan funds invested in the Minnesota River Basin. Those funds are leveraged by a commitment of \$2,911,481 in local and state matching funds.

Table 7. Active projects in the Minnesota River Basin

Project name	Greater Blue Earth River Basin TMDL Implementation	Chippewa River Sediment Reduction	Le Sueur River WRAPS Implementation Endeavor	Pomme de Terre WRAPS BMP Implementation Project	Minnesota River and Sand Creek Improvement Project	Chippewa Countywide Septic System Upgrades	Hawk Creek Watershed Improvement Project	Mankato Watershed – Renville Co FY17 Improvement Project	Seven Mile Creek Assessment and Implementation	Swift County SSTS Upgrades	Internal Loading BMPs in Spring Lake and Prior Lake	Hawk Creek Watershed FFY 2018 Implementation Project
Sponsor	Greater Blue Earth River Basin Alliance	Chippewa River Watershed Project	Faribault SWCD	Pomme de Terre River Association	Scott County/Scott WMO	Chippewa County	Hawk Creek Watershed Project	Hawk Creek Watershed Project	Gustavus College	Swift County	Prior Lake-Spring Lake Watershed District	Hawk Creek Watershed Project
FY awarded	2016	2016	2016	2016	2016	2017	2017	2017	2017	2018	2018	2018
Project timeframe	December 2016 to August 2021	January 2017 to August 2021	January 2017 to August 2021	December 2016 to August 2021	November 2016 to August 2021	June 2017 to June 2021	January 2018 to August 2021	February 2018 to August 2021	June 2018 to August 2021	April 2018 to April 2021	February 2019 to December 2021	March 2019 to August 2022
Funding type	Section 319	Section 319	Section 319	Section 319	Section 319	CWP Loan	Section 319	Section 319	Section 319	CWP Loan	Section 319	Section 319
Funding	\$400,000	\$285,878	\$347,950	\$285,000	\$832,789	\$500,000	\$397,000	\$297,000	\$475,524	\$250,000	\$80,300	\$477,000
Match	\$266,700	\$190,585	\$138,500	\$190,000	\$960,000		\$265,000	\$199,000	\$328,096		\$55,600	\$318,000
HUC code	Multiple	7020005	7020011	7020002	07020012	Multiple	7020004	7020007	7020007	Multiple	7020004	7020004
Watershed	Multiple	Chippewa River	LeSueur River	Pomme de Terre River	Lower Minnesota River	Multiple	Minnesota River - Yellow Medicine	Minnesota River - Mankato	Minnesota River - Mankato	Multiple	Minnesota River - Yellow Medicine	Minnesota River - Yellow Medicine
Project goal	Two specific agricultural BMPs will be implemented through this project: alternative tile intakes and cover crops.	The purpose of the Chippewa River Sediment Reduction project is to target areas of erosion.	Provide cost-share assistance to landowners within targeted watersheds implement NPS reduction BMPs.	The Project intends to continue implementation of restorative BMPs to reduce nutrient and sediment loading and to help improve habitat.	The following goals are based on the TSS load duration curves prepared for the Sand Creek Watershed Impaired Waters Resource Investigation completed in 2010.	To upgrade or replace 40 SSTS per year, with approximately 25% applying for loans per year.	Carry out BMP implementation in critical areas to progress the Lower Minnesota River Dissolved Oxygen TMDL Implementation Plan.	Carry out BMP implementation in critical areas to progress the Lower Minnesota River Dissolved Oxygen TMDL Implementation Plan.	Gather watershed data necessary to evaluate the effectiveness of BMP implementation in a typical agricultural watershed in southern Minnesota.	The problem of SSTS is ongoing. Swift County upgrades on average 22 systems per year with approximately 32% applying for low interest loans annually.	The goal of this project is to improve the water quality of Spring and Upper Prior Lakes by decreasing total phosphorus concentrations.	Carry out BMP implementation in critical areas to work towards the goals of the Hawk Creek Watershed.

Des Moines and Missouri River Basins

The Minnesota portion of the Des Moines River, Missouri – Big Sioux, Missouri – Little Sioux cover approximately 3,300 square miles. Since 2016, there has been an investment of \$1,577,882 of Section 319 funds and Clean Water Partnership Loan funds. Local partners have invested an additional \$128,350 of state and local match dollars to these projects. These projects span a period of three to four years.

The Des Moines River watershed is located in southwestern Minnesota, including parts of Lyon, Pipestone, Murray, Cottonwood, Nobles, Jackson, and Martin counties. There are two HUC8 watersheds in Minnesota, [Des Moines River –Headwaters](#) and [East Fork Des Moines River](#). It has five subwatersheds: Lake Shetek, Beaver Creek, Heron Lake, Lime Creek, and the West Fork Des Moines River Main Stem. The river joins the East Fork Des Moines River in Iowa, and eventually enters the Mississippi River at Keokuk, Iowa. It is located in the Western Cornbelt Plains ecoregion of southwestern Minnesota and northern Iowa.

The river is used for recreational activities such as fishing, tubing, snowmobiling, and canoeing. It is also a valuable fisheries resource with the following species of fish prevalent throughout the watershed: northern pike, buffalo, carp, walleye, channel catfish, crappie, and bullhead. Land use is primarily agricultural. Okamanpeedan, Bright and Pierce Lakes in the eastern part of the watershed in Minnesota are used for recreation such as fishing and hunting. Several shallow waterfowl lakes are also located in the southern part of the watershed.

The Missouri River Basin has three HUC8 watersheds in Minnesota, the [Upper Big Sioux River](#), [Lower Big Sioux River](#), and [Rock River](#).

Newly awarded projects in the Des Moines River Basin

Projects that are currently under way in the basin are described in Table 8. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There are currently \$1,213,210 of CWP loan funds newly awarded in the Des Moines River Basin, with a commitment of \$2,100 in local match.

Table 8. Newly awarded projects in the Des Moines and Missouri River Basins

Project name	Complete Water Softener Removal	Wellhead Nitrogen Reduction Project	Heron Lake Phosphorus Reductions III
Project sponsor	City of Lakefield	Rock County Rural Water	Heron Lake WD
Fiscal year Awarded	2020	2020	2020
Project timeframe	Not fully executed	June 2020 to June 2023	March 2020 to March 2023
Funding type	CWP Loan	CWP Loan	CWP Loan
Funding amount	\$483,210	\$300,000	\$430,000
Match amount	\$2,100		
HUC Code	07100001	10170204	Multiple
Watershed	Heron Lake	Rock River	Multiple
Project goal	The program will remove chlorides being discharged into the Heron Lake Watershed. Chlorides are toxic to aquatic life.	We are purchasing land directly in our flow path of groundwater to our wells. The land acquisition will have a large positive impact on nitrate	Through the low interest loan project, the HLWD proposes to replace 30 Subsurface Sewage

Project name	Complete Water Softener Removal	Wellhead Nitrogen Reduction Project	Heron Lake Phosphorus Reductions III
		levels in our wells, provides additional filtration for the Rock River and improve wildlife habitat.	Treatment System (SSTS) over the three-year period.
BMPs planned	Removal of all private, residential water softeners to address chloride issues	Land retirement	SSTS
Estimated reductions anticipated	Phosphorus: NA Sediment: NA Soil Loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA Chloride:455,000 lb/yr	Phosphorus: 10 lbs/yr Sediment: NA Soil Loss: NA Nitrogen: 65 lbs/yr BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 300 lbs/yr Sediment: NA Soil loss: NA Nitrogen 800 lbs/yr BOD ₅ : 12,000 lbs/yr <i>E. coli</i> (bacteria) 2.11E+15 CFU/yr

Completed projects in the Des Moines and Missouri River Basins

The projects completed in the Des Moines and Missouri River Basins are summarized in Table 10. The final amount of CWP Loan funds invested were \$242,488. The projects addressed sediment, nutrient, and *E. coli* loading in the basin, with estimated reductions summarized in Table 9. The projects installed were SSTS upgrades and replacements and a purchase of a street sweeper. Heron Lake Watershed District also conducted outreach and education.

Table 9. Estimated reductions for completed projects in the Des Moines and Missouri River Basins

Pollutant	Reduction (unit)
Phosphorus	88 lbs/yr
Sediment (TSS)	1.75 t/yr
Soil loss	--
Nitrogen	90 lbs/yr
BOD ₅	6,450 lbs/yr
<i>E. coli</i> (bacteria)	5.39E+14 cfu/yr
Debris	200 t/yr

Table 10. Completed projects in the Des Moines and Missouri River Basins

Project name	Heron Lake Phosphorus Reduction Phase II	Edgerton Sweeper Replacement
Sponsor	Heron Lake WD	City of Edgerton
FY awarded	2016	2020
Project timeframe	June 2016 to July 2020	March 2020 to December 2020
Funding type	CWP Loan	CWP Loan
Funding	\$162,488.00	\$80,000
HUC Code	07100001	10170204
Watershed	Heron Lake	Rock River

Project name	Heron Lake Phosphorus Reduction Phase II	Edgerton Sweeper Replacement
Project goal	Through the low interest loan project, the HLWD proposes to replace 30 Subsurface Sewage Treatment System (SSTS) over the three-year period.	Purchase and implementation of an improved street sweeper to reduce the amount of TSS, nutrients, chloride, and debris from washing into surface water.
BMPs installed	16 SSTS	Regular and scheduled street sweeping.
Estimated reductions achieved	Phosphorus: 80 lbs/yr Sediment: 1.75 t/yr Soil loss: NA Nitrogen by 90 lbs/yr BOD ₅ : 6,300 lb/yr <i>E. coli</i> (bacteria): 5.39E+14 cfu/yr	Phosphorus: 8 lbs/yr Sediment: 3.0 t/yr Soil loss: NA Nitrogen: NA BOD ₅ : 141 lbs/yr Debris: 200 t/yr
Project highlights	Many inquiries were made regarding SSTS replacement projects within the last six months of the project. The work will continue through a new CWP loan, Heron Lake Phosphorus Reduction Phase III.	The City of Edgerton was able to upgrade their street sweeping equipment and reduce sediment, chloride, phosphorus and other pollutant loading.
Partnerships	Watershed residents	City of Luverne

Active projects in the Des Moines and Missouri River Basins

Projects that are currently under way in the basin are described in Table 11. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project.

Table 11. Active projects in the Des Moines and Missouri River Basins

Project name	South Heron Lake TMDL Implementation Plan
Sponsor	Heron Lake Watershed District
FY awarded	2018
Project timeframe	April 2019 to August 2022
Funding type	Section 319
Funding	\$122,125.00
Match	\$126,250
HUC code	7100001
Watershed	Heron Lake
Project goal	The primary goal of the project is to reduce phosphorus by restoring and stabilizing 3,300 linear feet of streambank in the JD 3, restoring two wetlands and installing nine alternative side inlets.

Lake Superior Basin

Minnesota's portion of the Lake Superior Basin (HUC4) encompasses approximately 6,000 square miles and is located within Carlton, Cook, Lake, Pine and St. Louis counties in northeastern Minnesota. The Lake Superior Basin is remarkably diverse in natural features including the rugged coastline of Lake Superior, with bedrock outcrops, cascading waterfalls and cold water streams draining to Lake Superior. The Lake Superior Basin is split into two HUC8s watersheds, the [Lake Superior - North](#) and [Lake Superior – South](#) watersheds. The interior area, comprised of the [St. Louis River](#) and [Cloquet River](#) watersheds, includes a diverse mix of lakes and streams, along with significant areas of wetlands and peatlands. The southern portion includes the [Nemadji River](#) watershed, a stream-dominated drainage developed on a glacial lake plain. Many of the streams in the basin support coldwater and sensitive species, including wild rice. Overall, the Lake Superior Basin is sparsely populated, with people concentrated mainly in Duluth and surrounding communities in the south, the Iron Range communities in the northwest, in small towns dotting Lake Superior's North Shore, and other small communities distributed throughout. Two tribal governments and reservations, Fond du Lac Band of Lake Superior Chippewa, near Cloquet, and Grand Portage Band of Lake Superior Chippewa, at Grand Portage, are located in the Basin, along with the 1854 Treaty Area. A large percentage of lands are publicly owned, including portions of the Boundary Waters Canoe Area Wilderness, the Superior National Forest, and State & County managed forested lands. Lands are managed for forestry/forest management, small agricultural operations in the south & western basin, iron mining on the northwest edge, and aggregate mining throughout. Tourism and recreational outdoor activities, such as hiking, canoeing, fishing and hunting are popular in this region. The undeveloped nature for much of the basin is undoubtedly key to the high water quality of most lakes and streams. Minnesota's efforts to restore, protect and maintain water quality on those tributary lakes and streams are a primary focus for protecting Lake Superior and the Lake Superior Basin.

Despite its immense size, Lake Superior is surprisingly vulnerable. The year-round cold temperatures of Lake Superior and small amount of nutrients entering the lake result in a simple and fragile food chain. Because Lake Superior is nourished by forests and watered by streams, changes on the land become changes in the lake. We find algae blooms in Lake Superior bays, decreasing clarity in the western arm of the lake, contaminated sediment in the Duluth-Superior harbor and toxic contaminants building up in the food chain.

Unlike waters such as the Mississippi and Minnesota Rivers, most of Lake Superior has never suffered the extreme degradation that once characterized these rivers. Slowly, carefully, and with considerable effort and expense, those waters are being reclaimed. The challenge with Lake Superior is to keep it as clean as it is now and to clean up the problems that have been found.

Newly awarded projects in the Lake Superior Basin

The newly awarded project in the Lake Superior Basin in 2020 is included in Table 12.

Completed projects in the Lake Superior Basin

The loan completed in the Lake Superior Basin is summarized in Table 12. The final amount of CWP Loan funds invested were \$165,000. The loan addressed chloride loading in the basin, reducing salt application by an estimated 32 t/yr. This project included a purchase of specific ice removal blades and a new grader, which also reduces emissions. The CWP loan funded all of the purchase of the blades and half of the purchase of the road grader, based upon the half of the year it is likely used for snow and ice management.

Table 12. Newly awarded and completed project in the Lake Superior Basin

Project name	Thomson Township Road Equipment Purchase
Project sponsor	Town of Thomson
Fiscal year Awarded	2020
Project timeframe	2021
Funding type	CWP Loan
Funding amount	\$165,000
Match amount	\$165,000
HUC code	04010201
Watershed	St. Louis
Project goal	Reduce the need to apply chloride by improving the snow removal. Reduced emissions associated with the new grader.
BMPs planned	Improved snow/ice removal with less salt.
Estimated reductions achieved	Phosphorus: NA Sediment: NA Soil loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA Chloride: 32 t/yr

Active projects in the Lake Superior Basin

There are no active projects in the Lake Superior Basin in 2020.

Rainy River Basin

The Rainy River Basin encompasses a total area of 27,114 square miles, of which 11,244 square miles (41%) are in Minnesota and 15,870 square miles (59%) are in Ontario. The primary focus of the Rainy River Basin Information Document is on the Minnesota portion of the Basin. The Minnesota portion of the Basin is bounded on the north by the Province of Ontario, the east by the Lake Superior Basin, the south by the Upper Mississippi Basin and the west by the Red River Basin.

The Rainy River Basin is home to some of Minnesota's finest forest and water resources. Voyageurs National Park and the Boundary Waters Canoe Area Wilderness (BWCA) are located within the Rainy River Basin, as are several of the state's most famous walleye fisheries and many top-notch trout streams.

The Basin includes portions of eight Minnesota counties, including substantial portions of Cook, Itasca, Lake, Lake of the Woods, Koochiching, and St. Louis Counties with relatively minor portions of Beltrami and Roseau Counties.

The headwaters of the Basin are located in Cook, Lake, Itasca and St. Louis Counties. The eastern headwaters portion of the Basin includes an extensive area of irregularly shaped lakes on Canadian Shield topography. This area includes the BWCA. The southern headwaters portion includes the Vermilion Iron Range, part of the Mesabi Iron Range, and, in Itasca County, numerous northern lakes situated in glacial till.

The central, or large lakes, portion of the Basin is characterized by relatively large lakes on Canadian Shield topography. This area includes Voyageurs National Park. Lakes include Crane, Kabetogama, Namakan, Rainy and Vermilion.

The Lake of the Woods portion of the Basin is characterized by extensive wetlands located on the old Glacial Lake Agassiz lake bed and, of course, Lake of the Woods.

The Basin is made up of eight watersheds partially or wholly within the United States. These watersheds are: [Rainy River Headwaters](#), [Vermilion River](#), [Rainy River/Rainy Lake](#), [Lower Rainy River](#), [Little Fork River](#), [Big Fork River](#), [Rapid River](#), and [Lake of the Woods](#).

The Red Lake Band of Chippewa (Miskwaagamiiwi-zaaga'igan) own many acres in the Rainy Basin which are spread out from the Northwest Angle to southern Koochiching County. Bois Forte Band of Chippewa own three sectors, Nett Lake (*Asabiikone-zaaga'igan*), Vermilion (*Onamani-zaaga'igan*), and Deer Creek (*Waawaashkeshi-ziiibiins*). Both are independent tribal nations located in the Rainy Basin. Both Bands have active water quality programming and work with the U.S. Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA) in water quality matters.

In addition, other Bands not located in the Basin, have hunting, fishing, and gathering rights on off-reservation lands located within the Rainy Basin.

For more information about their water quality program, please contact the Bands at:

Bois Forte Band of Chippewa, Ecological Resources Program, 218-757-3261 Extension 1305 or cholm@boisforte-nsn.gov

Red Lake Band of Chippewa, Red Lake DNR, 218-679-3959, or rldnr@redlakenation.org

Newly awarded projects in the Rainy River Basin

The newly awarded project in the Rainy River Basin in 2020 is included in Table 13. Voyageurs National Park is the nation’s only water-based national park, making protection of the water a high-priority. Water quality degradation threatens the long-term health of the ecosystem and the economic health of the tourism industry, upon which the local economy is based. The project provides an opportunity to repair and upgrade failing and nonconforming SSTS systems to protect groundwater and surface water from contamination.

Table 13. Newly awarded project in the Rainy River Basin

Project name	CLWSD Management and Expansion Program
Sponsor	Crane Lake Water & Sanitary District (CLWSD)
FY awarded	2020
Project timeframe	March 2020 to March 2023
Funding type	CWP Loan
Funding	\$1,110,500
HUC code	9030003
Watershed	Rainy-Lake of the Woods
Project goal	Providing an alternative, reasonable source of funding to assist CLWSD property owners with replacement or upgrade of septic systems.
BMPs planned	40 SSTS
Estimated reductions anticipated	Phosphorus: 250 lbs/yr Sediment 1.5 t/yr Soil loss: NA Nitrogen:1,500 lbs/yr BOD ₅ : NA <i>E. coli</i> : NA

Completed projects in the Rainy River Basin

There were no completed projects in the Rainy River Basin in 2020.

Active projects in the Rainy River Basin

There were no active projects in the Rainy River Basin in 2020.

Red River Basin

The Red River of the North Basin encompasses a total area of 45,000 square miles, of which 41% of the total drainage area is in Minnesota. The remaining portion of the basin occupies substantial portions of North Dakota, southern Manitoba and a small portion of northeastern South Dakota to the north and west. The Minnesota portion of the basin is bound by the Minnesota River Basin to the south, and the Rainy and Upper Mississippi River Basins to the east. The Red River flows to the north, feeding into Lake Winnipeg in Manitoba and ultimately to the Hudson Bay.

The Red River Valley is one of the most productive agricultural areas of the world. While extensive human created and modified drainage systems have resulted in extremely rich agricultural areas, portions of the basin still support the ecologically abundant prairie-pothole region. Five National Wildlife Refuges, eight state parks, and many acres of federal and state wildlife management areas are located within the Basin. The Upper and Lower Red Lakes, two of the largest lakes in Minnesota, are located in the upper reaches of the Red River Basin. Flooding is a major concern for residents in the basin because frequent floods in the relatively wide and flat Red River Valley impact urban and rural infrastructure and agricultural production.

The Minnesota portion of the Red River Basin covers the entirety of 9 Minnesota counties and portions of 12 additional counties. Several moderate to small urban centers are located along the Red River main stem and tributaries in Minnesota, including Crookston, Thief River Falls, Detroit Lakes, Roseau, and Fergus Falls, as well as the North Dakota and Minnesota border communities of Wahpeton-Breckenridge, Fargo-Moorhead and Grand Forks-East Grand Forks.

The headwaters of the Red River of the North is the confluence of the Bois de Sioux and Otter Tail rivers within the city of Breckenridge, along the North Dakota – South Dakota boarder. The Minnesota portion of the Red River Valley is approximately 16,500 square miles, incredibly flat, and characterized by poorly drained, fine silt and clay left behind by Glacial Lake Agassiz. The beach ridges to the east of the valley are the remnants of the Glacial Lake Agassiz shoreline and are characterized by sandy, coarse-textured deposits and disconnected aquifers. The beach ridges are where the northern Minnesota Glacial Lakes area is located and includes lakes from around Fergus Falls up through Detroit Lakes and to Upper and Lower Red Lakes.

The Basin is made up of 17 watersheds partially or wholly within the United States. These watersheds are: [Upper Red River of the North](#), [Bois de Sioux River](#), [Mustinka River](#), [Otter Tail River](#), [Buffalo River](#), [Red River of the North - Marsh River](#), [Wild Rice River](#), [Clearwater River](#), [Red River of the North - Sand Hill River](#), [Upper and Lower Red Lakes](#), [Thief River](#), [Red Lake River](#), [Red River of the North - Grand Marais Creek](#), [Snake River – Red River Basin](#), [Lower Red River of the North - Tamarac River](#), [Two Rivers](#), and [Roseau River](#). Assessment of 12 of these watersheds is complete with the remaining five to be completed by the end of 2021.

Common water quality issues found during these assessments include: cloudy water caused by too much sediment and very fine, natural local soils; unsafe swimming conditions due to algae blooms in lakes caused by excessive nutrients and due to high bacteria levels in streams caused by humans, livestock, and wildlife; and low dissolved oxygen and degraded fish and macroinvertebrate communities caused by degraded natural habitat, lack of connectivity, and low flow issues in modified drainage systems.

The Red Lake Band of Chippewa Ojibwe and White Earth Band of Ojibwe are independent tribal nations located in the Red River Basin. Both Bands have tribal lands in the Basin that is outside of their reservation boundaries.

Red Lake Band of Chippewa Ojibwe, Red Lake DNR, 218-679-3959, or rldnr@redlakenation.org

White Earth Band of Ojibwe, White Earth Natural Resources Division, 218-935-2488, or monica.headstrom@whiteearth-nsn.gov

Newly awarded projects in the Red River Basin

There are no newly awarded projects in the Red River Basin in 2020.

Completed projects in the Red River Basin

The completed project in the Red River Basin is summarized in Table 14. The final amount of Section 319 funds invested were \$240,676, with local and state match of \$201,942. The 319 project was used to provide public engagement and outreach to landowners along the lower reaches of the Otter Tail River to increase participation in future restoration work, to determine existing channel conditions through surveying and engineering work, and to produce a final channel restoration and sediment reduction engineering and design plan. There were no reductions directly associated with the project; however, this is front end work for related projects and future implementation of work recommended in the engineering design plan.

Table 14. Completed project in the Red River Basin

Project name	Lower Otter Tail River Restoration
Sponsor	Buffalo-Red River WD
FY awarded	2015
Project timeframe	April 2016 to September 2019
Funding type	Section 319
Funding	\$240,676
Match	\$201,942
HUC code	09020103
Watershed	Otter Tail River
Project goal	Provide civic engagement outreach, establish existing stream channel conditions, produce a final restoration and sediment reduction engineering design plan.
BMPs installed	Public meetings and outreach, Survey work, Engineering and Design work, and BMP promotion
Project highlights	The results of the project included providing education to the public and the development of the engineered implementation roadmap critically needed to reduce channel erosion and help achieve water quality standards along the Otter Tail River. The engineering report, detailed plans, and specifications will be used to direct future management, construction work, and conservation practices that will result in long-term water quality benefits to the Otter Tail River.

Active projects in the Red River Basin

Projects that are currently under way in the basin are described in

Table 15. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There is currently \$613,908 in Section 319 funds invested, with a commitment of \$412,087 of local and state match.

Table 15. Active project in the Red River Basin

Project name	Upper Buffalo River Sediment Reduction
Sponsor	Buffalo-Red River WD
FY awarded	2018
Project timeframe	March 2019 to September 2022
Funding type	Section 319
Funding	\$613,908
Match	\$412,087
HUC code	09020106
Watershed	Buffalo River
Project goal	Provide civic engagement (outreach and education) to landowners in the upper Buffalo River watershed resulting in BMP project implementation, complete surveying and engineering design work for individual BMP projects and the restoration of a portion of the upper Buffalo River, and provide funding for the construction or implementation of BMP projects..
BMPs planned	Civic engagement and outreach Individual BMP plans and Buffalo River restoration design plans Completed BMPs: 74 WASCOBs, 5 grade stabilizations, 10 grass waterways, 20 acres buffers
Estimated reductions achieved	Sediment 20,583 t/yr

Saint Croix River Basin

The Saint Croix River Basin extends between both Minnesota and Wisconsin (Figure 16). The Minnesota side of the Saint Croix River Basin covers approximately 3,500 square miles. The 10 projects currently awarded and underway in the Saint Croix Basin represents a total of \$3,041,632 of Section 319 and CWP Loan funds invested in the basin and \$984,840 of committed local and state matching funds.

The St. Croix River offers good water quality, excellent fisheries, and a thriving mussel population. But there are some problems, including phosphorus levels and resulting algae in two sections of the river,

Figure 16. Saint Croix River Basin – Minnesota and Wisconsin



with more threats to water quality on the horizon. One of the first rivers in the United States to be designated as wild and scenic, with special protections, the St. Croix River now needs protective measures more than ever.

The St. Croix River is indeed a treasure, with good water quality, excellent fisheries, and a thriving mussel population. This river has a healthy ecosystem, in large part because of relatively little disturbance to its wetlands, floodplains and other features. This condition helps makes the basin more resilient to climate change. Located near major metropolitan areas, the St. Croix offers exceptional recreation for hundreds of thousands of people every year. But that attraction also poses threats. Development—for housing, recreation and agriculture—means more runoff, and more runoff means more pollutants. One of the first rivers in the United States designated and protected under the Wild and Scenic Rivers Act, the St. Croix now needs protective measures more than ever.

- Protection crucial: This river faces threats from changes in land use, both different agriculture practices and expanding urban development, so protection is crucial. Climate change is also a threat.
- Popular: The St. Croix River is extremely popular because of its high water quality, exceptional recreation, and ease of public access.
- Nutrient diet prescribed: Many partners are working to reduce phosphorus in Lake St. Croix to prevent algal blooms. The stretch of the river coming into the lake also needs reductions in nutrients.
- Healthy biology: The fish and bugs are in good to excellent condition. And this river is one of the few of its size in the United States with a thriving native mussel population (MPCA, 2020).

The following HUC8 watersheds are contained on the Minnesota side of the Saint Croix River Basin: [Kettle River](#), [Lower St. Croix River](#), [Snake River-St. Croix Basin](#), and [Upper St. Croix River](#).

Newly awarded projects in the Saint Croix River Basin

Newly awarded projects in the Saint Croix River Basin in 2020 are summarized in Table 16. A total of \$372,635 of Section 319 and CWP loans were awarded to two projects. These projects also have \$240,340 of state and local match commitments associated with the project. These projects will address stormwater concerns and help an LGU to pay for NPS projects funded by a reimbursement-only grant.

Table 16. Newly awarded projects in the Saint Croix River Basin

Project name	Carnelian Marine St Croix Bridging Funds Loan	Marine on St. Croix Stormwater, Phase 4
Sponsor	Carnelian-Marine-St. Croix Watershed District	Carnelian-Marine-St. Croix Watershed District
FY awarded	2020	2019
Project timeframe	November 2019 to November 2022	January 2020 to August 2023
Funding type	CWP Loan	Section 319
Funding	\$317,000.00	\$55,635.00
Match	\$200,000.00	\$40,340.00
HUC code	7030005	7030005
Watershed	Lower St. Croix	Lower St. Croix
Project goal	To help the watershed district maintain liquidity while implementing three Section 319 grant projects, while waiting for reimbursement.	The goal of this project is to reduce phosphorus loading and sedimentation to the St. Croix River, a National Wild and Scenic River, and downstream to Lake St. Croix, which is on the EPA 303(d) list of impaired waters for excess nutrients.
BMPs planned	Implementation of reimbursement grant project. CWP Loan money will make initial payments until grant funds are disbursed	Stormwater planter and bioinfiltration basin
Estimated reductions achieved		Phosphorus: 1.6 lbs/yr Sediment: 0.22 t/yr

Completed projects in the Saint Croix River Basin

There were no completed projects in the Saint Croix River Basin for 2020.

Active projects in the Saint Croix River Basin

Projects that are currently under way in the basin are described in Table 17. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There are currently \$2,668,997 of Section 319 and CWP loan funds invested in the Saint Croix River Basin, with a commitment to \$744,500 of local and state match.

Table 17. Active project in the Saint Croix River Basin

Project name	Moody Lake Wetland Rehabilitation Project	Snake River Watershed Resource Protection Project	Lower St. Croix Targeted Phosphorus Reduction Project	Goose Lake TMDL Final Implementation Projects	Carnelian Marine Stormwater Phase 2	Chisago Lakes Gully Restoration Green Lake	Marine on St. Croix Stormwater Phase 3	Comfort Lake Forest Lake Adaptive Management Project Implementation
Sponsor	Comfort Lake-Forest Lake WD	Snake River Management Board	Washington Conservation District	Carnelian-Marine-St. Croix WD	Carnelian-Marine-St. Croix WD	Chisago SWCD	Carnelian-Marine-St. Croix WD	Comfort Lake-Forest Lake WD
FY awarded	2016	2016	2017	2017	2017	2018	2018	2018
Project timeframe	January 2017 to August 2020	July 2016 to July 2020	March 2018 to August 2021	April 2018 to August 2021	March 2018 to August 2021	April 2019 to August 2021	April 2019 to December 2020	June 2018 to June 2021
Funding type	Section 319	CWP Loan	Section 319	Section 319	Section 319	Section 319	Section 319	CWP Loan
Funding	\$81,497	\$400,000	\$300,000	\$76,000	\$92,500	\$50,000	\$169,000	\$1,500,000
Match	\$210,000		\$200,000	\$76,000	\$82,500	\$55,000	\$121,000	
HUC code	7030005	7030004	7030005	7030005	7030005	7030005	7030005	7030005
Watershed	Lower St. Croix River	Snake River	Lower St. Croix River	Lower St. Croix River	Lower St. Croix River	Lower St. Croix	Lower St. Croix	Lower St. Croix

Upper Mississippi River Basin

The Upper Mississippi River Basin (UMRB) within Minnesota stretches from the headwaters of the Mississippi River at Lake Itasca to Lock and Dam #2 near Hastings. It is the largest of Minnesota's 10 major river basins, and is the only major drainage basin with all of its watersheds contained entirely within Minnesota's borders. The watershed drains 20,105 square miles and 510 miles of river corridor are located within the basin. There are dramatic changes in the river as it flows downstream from the headwaters to the metro area. The Northern part of the River and Basin is dominated by lakes and forests and the Southern part of the River and Basin is dominated by more agricultural and urban areas. These differences in land use dictate the type of water quality issues found across the basin, as well as the specific strategies that are needed to protect or restore the river.

Watersheds that comprise all the land that drains water towards the Upper Mississippi River are [Mississippi River – Headwaters](#), [Leech Lake River](#), [Crow Wing River](#), [Pine River](#), [Long Prairie River](#), [Mississippi River – Brainerd](#), [Mississippi River – Grand Rapids](#), [Redeye River](#), [Mississippi River- Sartell](#), [Mississippi River – St. Cloud](#), [Rum River](#), [Sauk River](#), [North Fork Crow River](#), [South Fork Crow River](#), and [Mississippi River – Twin Cities](#).

Newly awarded projects in the Upper Mississippi River Basin

There were nine projects awarded in the Upper Mississippi River Basin in 2020, which are summarized in Table 18. These projects represent a total of \$4,495,355 of Section 319 grant and CWP loan investment, with a further commitment of \$1,645,386 in state and local matching funds. Some project goals include SSTS upgrade/replacement, inflow and infiltration in resident-owned sewer lines, the remainder of a stream, stormwater mitigation, and other in lake practices.

Table 18. Newly awarded projects in the Upper Mississippi River Basin

Project name	Meeker County SSTS Program	H2O (HOPP) Water Preservation Project	Todd County SSTS Project	Vadnais Lakes Area WMO Bacteria, Sediment & Nutrient Reduction Project		Crystal Lake Management Plan	Sweeney Lake WQ Improvement Project	Lake Carlos Watershed Improvement Project	Partridge River <i>E. coli</i> Reduction, Phase II
Sponsor	Meeker County	City of Mounds View	Todd County	Vadnais Area Lakes Water Management Organization		Shingle Creek WMC	Basset Creek WMC	Douglas SWCD	Todd SWCD
FY awarded	2020	2020	2020	2019	2019	2019	2019	2019	2019
Project timeframe	October 2019 to October 2022	January 2020 to January 2023	March 2020 to March 2023	September 2019 to September 2022	November 2019 to August 2023	January 2020 to August 2023	December 2019 to August 2023	January 2020 to August 2023	March 2020 to August 2023
Funding type	CWP Loan	CWP Loan	CWP Loan	CWP Loan	Section 319	Section 319	Section 319	Section 319	Section 319
Funding	\$275,000	\$2,000,000	\$450,000	\$400,000	\$302,679	\$216,066	\$330,000	\$300,000	\$221,610
Match				\$302,679	\$601,447	\$154,440	\$238,080	\$200,000	\$148,740
HUC code	Multiple	7010206	Multiple	7010206	07010206	07010206	07010206	07010108	07010106
Watershed	Multiple	Mississippi River-Twin Cities Watershed	Multiple	Mississippi River-Twin Cities Watershed	Mississippi River-Twin Cities Watershed	Mississippi River-Twin Cities Watershed	Mississippi River-Twin Cities Watershed	Long Prairie River Watershed	Crow Wing River
Project goal	Replace/upgrade approximately 30 SSTS	Replacement of older, less efficient residential water softeners.	Replace/upgrade approximately 55 SSTS	Companion to the VLAWMO Bacteria, Sediment, & Nutrient Reduction Project	A suite of BMPs to address bacteria impairment, stormwater storage, and capture sediment in Lambert Lake	The purpose of this project is to improve the water quality of Crystal Lake.	Reduce total phosphorus concentrations in Sweeney Lake to meet water quality standards	This project will target and implement BMPs on actively eroding sites.	Restore water quality in the Partridge River and its associated tributaries.
BMPs planned	SSTS replacement/upgrades	Approximately 100 POS lateral lines televised and refurbished/yr at and a goal of an additional 100-120 lateral lines/yr	SSTS replacement/upgrades	Sheet pile replacement	Design and build new meandering channel, biochar treatment cells.	Alum treatment, carp removal, AIS management	Alum treatment, curly-leaf pond treatment	WASCOBs, Ag waste system, ag waste pit closure, alternative tile intakes, lakeshore landscaping projects, raingardens, cover crops, etc.	Heavy use protection, access control fencing, alternative watering devices, critical area planting, livestock crossings, and feedlot BMPs
Estimated reductions planned	Phosphorus 100 lbs/yr Sediment 1 t/yr Nitrogen 389 lbs/yr BOD 4,000 lbs/yr Bacteria 7.22E+14 B MVP/yr		BOD 9,500 lbs/yr TSS 5,300 lbs/yr Phosphorus 425 lbs/yr Nitrogen 1,200 lbs/yr	Companion to the VLAWMO Bacteria, Sediment, & Nutrient Reduction Project	Phosphorus 7 lbs/yr Sediment 6 t/yr Bacteria 8x10 ⁹ org/day	Phosphorus - alum treatment 255 lbs/yr carp removal 4,000 kg	Phosphorus 350 lbs/yr	Phosphorus 2,540 lbs/yr BOD 240 lbs/yr Nitrogen 60 lbs/yr	Phosphorus 400 lbs/yr Nitrogen 1300 lbs/yr <i>E. coli</i> 1.46#+15 cfu/yr

Completed projects in the Upper Mississippi River Basin

The six completed projects in the Upper Mississippi River Basin are summarized in Table 20. These projects represent a total of \$2,275,421 of Section 319 and CWP loan funds, with a reported match of \$933,376 from state and local sources. These projects addressed SSTS upgrades and replacements, nutrient and sediment loading, determining the best filter medium, and reducing carp biomass.

Table 19. Reductions achieved by completed projects in the Upper Mississippi River Basin

Pollutant	Reduction (unit)
Phosphorus	616 lbs/yr
Sediment (TSS)	570 t/yr
Bacteria	80 T
Carp biomass	14,500 lbs
Black bullhead biomass	15,000 lbs

Table 20. Completed projects in the Upper Mississippi River Basin

Project name	Crow River SSTS Restoration Project	Lower Sand Creek Corridor Restoration Project	Osakis Lake Subwatershed Nutrient Reduction	Shingle Creek Biochar/Iron Sand Bacteria Filters	Markham Pond Ecological Restoration Project	Twin Lake Carp Management Project
Sponsor	Crow River Organization of Water (CROW)	Coon Creek WD	Sauk River WD	Shingle Creek WMC	Ramsey-Washington Metro WD	Shingle Creek WMC
FY awarded	2017	2017	2015	2015	2015	2015
Project timeframe	October 2016 to October 2019	March 2018 to December 2019	January 2016 to September 2019	December 2015 to August 2019	February 2016 to August 2019	December 2015 to August 2019
Funding type	CWP Loan	Section 319	Section 319	Section 319	Section 319	Section 319
Funding	\$1,362,788	\$248,333	\$126,368	\$197,160	\$240,780	\$99,992
Match	\$61,105	\$173,815	\$107,695	\$276,021	\$204,640	\$110,100
HUC code	Multiple	7010206	7010202	07010206	7010206	07010206
Watershed	Multiple	Mississippi River-Twin Cities Watershed	Sauk River Watershed	Mississippi River-Twin Cities Watershed	Mississippi River-Twin Cities Watershed	Mississippi River-Twin Cities Watershed
Project goal	Upgrading failing Subsurface Sewage Treatment Systems (SSTS) in five counties located in the watershed.	This restoration was to address excess total phosphorus, TSS, habitat alterations, and altered hydrology, which are the primary stressors to Sand Creek's biota.	This grant assisted with the funding for one Water and Sediment Control Basin (WASCOB), one storage treatment wetland and several hayed buffers	Academic research is evaluating the efficiency of various filter media in removing nutrients, bacteria, metals, and other pollutants in urban stormwater.	--	This project was intended to reduce the biomass of carp in the chain of lakes, limit future recruitment, and manage lake aquatic vegetation response to reduce internal phosphorus loads and increase water clarity.
BMPs installed	Loans were used to help upgrade SSTS systems in: Kandiyohi, McLeod,	Streambank restoration. Streambank gullies, buffers, streambank	WASCOBs, hayable buffer, and storage treatment wetland	Three mediums tested and analyzed in a biochar filter.	--	

Project name	Crow River SSTS Restoration Project	Lower Sand Creek Corridor Restoration Project	Osakis Lake Subwatershed Nutrient Reduction	Shingle Creek Biochar/Iron Sand Bacteria Filters	Markham Pond Ecological Restoration Project	Twin Lake Carp Management Project
	Meeker, Renville and Wright Counties	stabilization, and invasive species removed, boulder and log vanes installed, and 5 backwater pools in former oxbows to reconnect the adjacent floodplain.				
Estimated reductions achieved		Phosphorus: 316 lbs/yr Sediment: 370 t/yr Soil loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	Phosphorus: 300 t/yr Sediment: 200 t/yr Sediment: 370 t/yr Soil loss: NA Nitrogen: NA BOD ₅ : NA <i>E. coli</i> : NA	Reduced concentrations of <i>E. coli</i> by 70 to 90 T from stormwater.	--	Carp 14,500 lbs Black bullhead 15,000 lbs
Project highlights	The Crow River SSTS Restoration Project improved 104 SSTS systems.	This 2018-19 project stabilized 2900 LF of actively eroding banks and 5 gullies, established vegetative buffers along ½ mile of stream, and also improved in-stream and riparian habitat.	The BMPs installed were due, in part, to partnership efforts between the Sauk River Watershed District, Pheasants Forever and the Todd and Douglas Soil and Water Conservation Districts occurred throughout the grant period.	An exciting new finding is that adding biochar to iron-enhanced sand filters removed up to 99% of bacteria from synthetic stormwater in the lab.	--	The tracking verified that carp were moving freely between the lakes and Shingle Creek downstream. Carp barriers were installed to limit access to spawning areas in upstream wetlands and prevent recolonization.

Active projects in the Upper Mississippi River Basin

Projects that are currently under way in the basin are described in Table 21. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There are currently \$3,353,342 of Section 319 and CWP loan funds invested in the Upper Mississippi River Basin, with a commitment to \$673,325 of local and state match.

Table 21. Active projects in the Upper Mississippi River Basin

Project name	Lake Osakis Minor Watershed Nutrient Reduction	Middle Sand Creek Corridor Restoration	Osakis Lake Basin Restoration - Phase 2 Implementation	Long Prairie River Streambank Restoration	Middle Sauk River Field Runoff Reduction	JD2 Sediment Pond Dredging Project	Partridge River <i>E. coli</i> Reduction	Lake Monongalia Stormwater Projects	Shingle Creek Watershed SRP Reduction
Sponsor	Todd SWCD	Coon Creek WD	Sauk River WD	Todd County SWCD	Sauk River WD	Sauk River WD	Todd County SWCD	Middle Fork Crow River WD	Shingle Creek WMC
FY awarded	2017	2018	2018	2018	2018	2019	2018	2019	2018
Project timeframe	March 2018 to August 2021	April 2019 to August 2022	November 2017 to November 2020	March 2019 to August 2022	April 2019 to August 2022	November 2018 to November 2021	March 2019 to August 2022	October 2018 to October 2021	March 2019 to August 2022
Funding type	Section 319	Section 319	CWP Loan	Section 319	Section 319	CWP Loan	Section 319	CWP Loan	Section 319
Funding	\$300,000	\$291,000	\$1,500,000	\$156,450	\$104,000	\$575,000	\$79,722	\$275,000	\$72,170
Match	\$200,000	\$194,000		\$104,300	\$69,333		\$53,182		\$52,510
HUC code	7010202	7010206	7010202	7010108	7010202	7010202	07010106	7010204	7010206
Watershed	Sauk River Watershed	Mississippi River-Twin Cities Watershed	Sauk River Watershed	Long Prairie River	Sauk River Watershed	Sauk River Watershed	Crow Wing River	North Fork Crow	Mississippi River-Twin Cities Watershed

Cedar River Basin

The Cedar River Basin lies in the western portion of Southeast Minnesota. Approximately 1,000 square miles cover Minnesota, but most of this Basin is in Iowa. In Minnesota, the Basin includes the following HUC8 watersheds: [Cedar River](#), [Upper Wapsipinicon River](#), [Shell Rock River](#) and [Winnebago River](#). Agriculture dominates the land use of the Cedar River Basin. Row crop and livestock production play a large role in the watershed. Many of the water quality projects implemented in this Basin work to reduce impacts from agriculture, including sediment, nitrogen and *E. coli* reduction efforts.

Newly awarded projects in the Cedar River Basin

There were no newly awarded projects in the Cedar River Basin.

Completed projects in the Cedar River Basin

There were no completed projects in the Cedar River Basin.

Active projects in the Cedar River Basin

There are no current projects in the Cedar River Basin.

Projects spanning multiple basins

In many cases, political boundaries do not follow the natural watershed boundaries. In cases like these, often a political entity, such as a county, will develop a project within their political borders that span multiple basins. In other cases, there are projects that have a statewide impact and will benefit the entire state. There is currently \$8,136,875 of Section 319 and CWP loans that will impact more than one basin.

Newly awarded projects in multiple basins

There were six new projects awarded that span multiple basins in 2020, which are summarized in Table 22. These projects represent a total of \$5,000,000 of CWP loan investments, with a further commitment of \$30,000 in state and local matching funds. The project goals are to upgrade and replace SSTS in six counties.

Table 22. Newly awarded multiple basin projects at the county level

Project name	McLeod County SSTS Restoration	Lincoln County SSTS Project	Itasca County SSTS Loan Program	Otter Tail County SSTS Loan	Pine County SSTS Upgrades	Renville County SSTS Loan Program
Sponsor	McLeod County	Lincoln county	Itasca County	Otter Tail County	Pine County	Renville County
FY Awarded	2019	2019	2020	2020	2020	2020
Project timeframe	July 2019 to July 2022	June 2019 to Jun3 2022	December 2019 to December 2022	April 2020 to April 2023	June 2020 to June 2023	May 2020 to May 2023
Funding type	CWP Loan	CWP Loan	CWP Loan	CWP Loan	CWP Loan	CWP Loan
Funding	\$1,200,000	\$500,000	\$500,000	\$1,000,000	\$900,000	\$900,000.00
Match		\$30,000				
HUC code	07010205, 07010204, 07020012	07020003, 10170202, 10170203, 07020004, 07020006	07010101, 07010103, 09030006, 09030005, 09020302, 04010201	09020103, 07010107	07030001, 07030005, 07030004, 07030003, 04010301	07020012, 07020007, 07020004, 07010205
Watershed	South Fork Crow, North Fork Crow, Lower Minnesota	Lac qui Parle, Minnesota - Yellow Medicine, Redwood, Upper Big Sioux, Lower Big Sioux	Mississippi - Headwaters, Mississippi-Grand Rapids, St. Louis, Little Fork, Big Fork, Upper/Lower Red Lake	Otter Tail, Redeye	Upper St. Croix, Lower St. Croix, Snake, Kettle, Nemadji	Lower Minnesota, Minnesota-Mankato, Minnesota - Yellow Medicine, South Fork Crow
Project goal	Upgrade/replace failing SSTS	Upgrade/replace failing SSTS	Upgrade/replace failing SSTS	Upgrade/replace failing SSTS	Upgrade/replace failing SSTS	Upgrade/replace failing SSTS
BMPs planned	Upgrade/replace 80 SSTS	Upgrade/replace 40+ SSTS	Upgrade/replace 40+ SSTS	The plan is to replace/ upgrade approximately 30 SSTS, including many larger Type IV and Type V systems.	Replace/upgrade approximately 60 SSTS	Replace/upgrade approximately 75 SSTS

Project name	McLeod County SSTS Restoration	Lincoln County SSTS Project	Itasca County SSTS Loan Program	Otter Tail County SSTS Loan	Pine County SSTS Upgrades	Renville County SSTS Loan Program
Expected estimated reductions	Phosphorus:1,000 lbs/yr Sediment: 2.2 t/yr Nitrogen: 1,500 lbs/yr	Phosphorus: 200 lbs/yr Sediment: 1.4 t/yr Nitrogen: 700 lbs/yr Bacteria: 5.0E+14 CFU BOD: 5,000 lbs/yr	Phosphorus: 1,000 lbs/yr Sediment: 22,000 t/yr Nitrogen: 1,500 lbs/yr	Phosphorus: 630 lbs/yr Sediment; 7,440 t/yr Nitrogen; 1,146 lbs/yr	Phosphorus: 250 lbs/yr Sediment: 4.5 t/yr Nitrogen: 1,800 lbs/yr	Phosphorus: 400 lbs/yr Sediment: 2.5 t/yr Nitrogen: 1,000 lbs/yr

Completed projects in multiple basins

The one completed projects in the Upper Mississippi River Basin are summarized in Table 23. The projects represented a total of \$886,904 of CWP loan funds. These projects addressed SSTS upgrades and replacements in Pine County.

Table 23. Completed projects in multiple basins

Project name	Pine County SSTS Upgrades
Sponsor	Pine County
FY awarded	2017
Project timeframe	August 2016 to August 2020
Funding type	CWP Loan
Funding	\$886,904
Match	
HUC code	07030001, 07030005, 07030004, 07030003, 04010301
Watershed	Upper St. Croix, Lower St. Croix, Snake, Kettle, and Nemadji
Project goal	Replace and upgrade SSTS in Pine County

Active projects in multiple basins

There are three projects that are currently under way described in Table 24. The table describes the funding source and amount, the expected state and local match, the HUC8 watershed, and the goal of the project. There are currently \$2,249,971 of Section 319 and CWP loan funds invested, with a commitment of \$155,000 of local and state match.

Table 24. Active projects spanning multiple basins

Project name	Smart Salting and Nutrient Reduction	Kandiyohi County SSTS Upgrades	Cottonwood County SSTS Low Interest Loan Project
Level	Statewide	County	
Sponsor	Fortin Consulting	Kandiyohi County	Cottonwood County
FY awarded	2016	2018	2019
Project timeframe	to August 2021	June 2018 to June 2021	May 2019 to May 2022
Funding type	Section 319	CWP Loan	CWP Loan
Funding	\$349,971	\$1,000,000	\$900,000
Match	\$155,000		
HUC code	Statewide	07010204, 07010205, 07020005, 07020004	07100001, 07020010, 07020008, 07020007, 07020009
Watershed	NF Crow, SF Crow	North Fork Crow, South Fork Crow, Chippewa, Redwood	Mississippi River-Twin Cities Watershed

References

Minnesota Pollution Control Agency (MPCA). (2006). *Revised regional total maximum daily load evaluation of fecal coliform bacteria impairments in the lower Mississippi River Basin in Minnesota.*