

Restoring the Rock River Basin

Preserving and Improving Our Shared Resources

In the Rock River Basin, 62 lakes, stream segments and other water bodies are considered impaired due to total suspended solids (TSS) and phosphorus. A water body is designated as impaired or polluted if it fails to meet applicable water quality standards. The Federal Clean Water Act requires states and authorized tribes to identify and restore impaired waterbodies.*

A Strategy to Improve Water Quality in the Rock River Basin

A water body is designated as impaired or polluted if it fails to meet applicable water quality standards. In Wisconsin, water quality standards are established by the WDNR to protect and maintain a waterbody's uses, such as drinking water supply, fishing and swimming.

The first step in addressing the problem is to determine how much sediment or phosphorus the water body can

handle without impairment. This becomes the target pollution reduction level for the recovery plan. It is known as a Total Maximum Daily Load (TMDL).

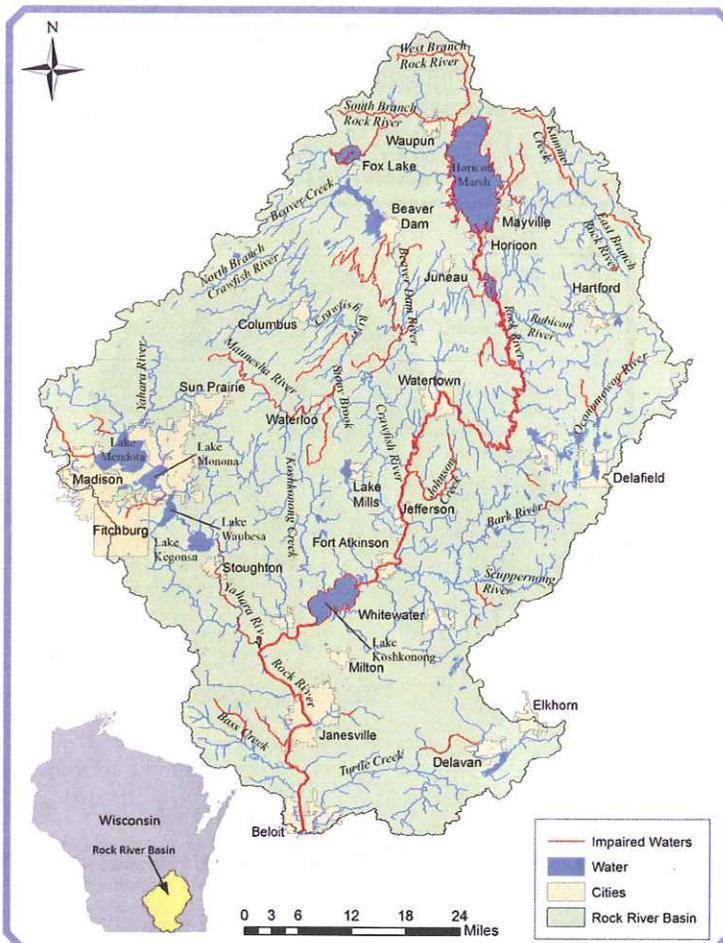
The second step is to determine how to achieve this reduction. This is done by allocating an allowable amount of pollution to individual wastewater treatment plants, industries and to municipalities who have a stormwater permit. Then for each sub-watershed a reduction goal is established for agriculture and other non-point or runoff sources.

The sources and allocations are contained in the TMDL Report, released in December 2010. Once a TMDL report is accepted by the US Environmental Protection Agency, an implementation plan is developed. In the Rock this will be called The Rock River Basin Recovery Plan.

The WDNR staff and others working on the plan recognize that a long-term solution is necessary to address the problem that resulted from 150 years of changing land use. Innovative ideas and "thinking outside the box" will be necessary to achieve these water quality goals.

While the WDNR is legally responsible for developing the Rock River Basin pollution reduction goals, many stakeholders, such as farmers, municipalities, business owners, and citizens, will play a critical role in the creation of the recovery plan as part of special sector teams. Scientific and technical experts will provide valuable information and insight to the process.

As the plan is developed the team members will look at established strategies and will explore new ways to achieve these water quality goals. The plan will provide guidelines to assist municipalities, counties, and individual landowners in improving water quality in the river, its lakes and its tributaries.



*TSS is mostly composed of sediment washing off the land and will be referred to as sediment instead of TSS in much of this document.

What Can Be Done to Improve Water Quality in the Rock River?

Since 2000, most industrial and municipal point sources have reduced their discharge of phosphorus down to 1 part per million as part of their permit requirements. However, this reduction alone is not enough to restore water quality in the watershed, and further point source reductions will be necessary for many.

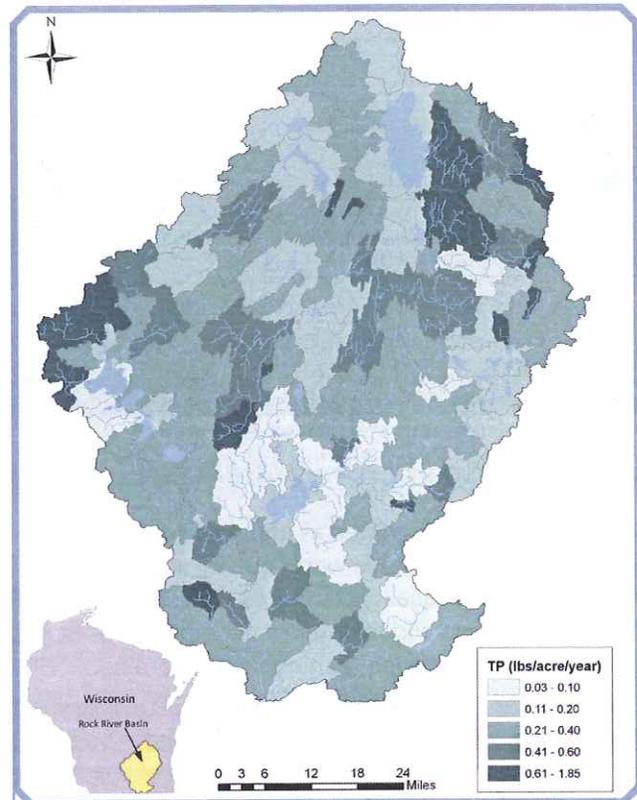
Stormwater runoff from agricultural land and urban areas are major sources of phosphorus and sediment in the basin. Runoff of phosphorus and sediment are closely linked, as phosphorus easily attaches to soil and moves with it when soil is carried off the land and into the water. Some of the actions that reduce the delivery of sediment will also reduce the amount of phosphorus delivered.

Examples of the types of actions to reduce runoff that will likely be part of the recovery plan include:

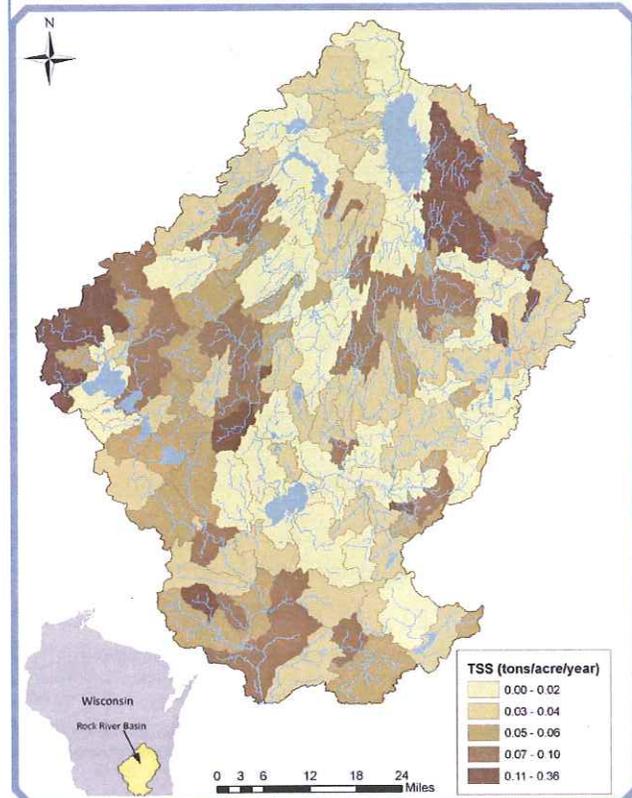
- Reducing phosphorus in agricultural soils and reducing cropland soil loss.
- Developing and implementing cropland nutrient management plans with the most effective and appropriate mix of practices.
- Managing manure application on the landscape and exploring composting, digesting, or other emerging technologies.
- Implementing rotational grazing for livestock and conservation tillage on cropland.
- Retaining natural buffers and installing vegetated buffers and grass filter systems with high trapping efficiency in farm fields and along streams and rivers.
- Using low impact design elements in subdivisions, such as infiltration swales, biofiltration islands, narrower streets, and rain gardens.
- Designing more effective erosion control systems.
- Rehabilitating degraded wetlands and restoring previously converted wetlands.
- Encouraging all citizens to find innovative solutions to improve and protect water quality.

“To truly be a Rock River Recovery Plan that will be effective in our lifetime, it will take all businesses, municipalities, farmers and citizens working together to find and apply innovative solutions.”

- Jim Congdon, WDNR Upper Rock River Basin Leader



The amount of phosphorus (TP) and sediment (TSS) that comes from agricultural and natural (forest, wetland) sources. Differences in loading rates reflect differences in soils, farming practices, crop types, past nutrient applications, buffers and slope. Land management practices impact the amount of polluted runoff that comes from agricultural lands and thus the amount of reductions needed to meet water quality targets.



Rock River Basin Pollutants and Impairments

The pollutants of concern, phosphorus and sediment, can enter the river from many sources. Crop fields, barnyards and pastures, municipal and industrial wastewater discharges, construction sites and urban areas are all potential sources.

Although phosphorus is important for growing plants, a surplus amount in surface waters can cause unwanted algae blooms and excess rooted plant growth. When these plants die, the process of decomposition uses much of the available oxygen. This results in a severely depleted supply of oxygen in the water, endangering fish

The Rock River, a major tributary of the Mississippi River, is one of the top ten contributors to the growing hypoxia or dead zone in the Gulf of Mexico due to its high nitrogen pollution level. Practices to reduce sediment and phosphorus should also result in a reduction in nitrogen. Improving water quality in the Rock is critical to improving water quality in the Mississippi and Gulf of Mexico.

and other aquatic life. Phosphorus runoff is also the main cause of blue-green algae growth. Toxins produced by this algae can cause rashes, illness and even death.

An excess amount of sediment causes many problems in water bodies, primarily destroying habitat, blocking sunlight and warming the water.

Decreasing the amount of phosphorus and sediment entering our waters will reduce algae blooms and habitat

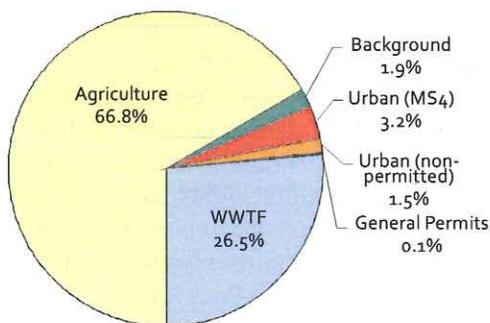


Excess phosphorus in the water leads to algae blooms that turn the water green, scummy, odorous and undesirable for recreation. Blue-green algae produce toxins that can cause rashes, illness and even death.

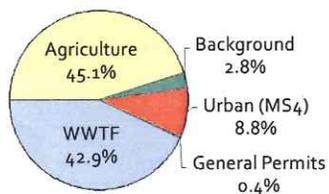
degradation. Land use practices that degrade surface water may also degrade groundwater; therefore steps to improve surface water will likely improve groundwater as well.

Water quality in the Rock River can be improved. Greater water clarity and decreased algae blooms will increase the value and usefulness of the river. We all depend on clean water—for drinking, recreation, agriculture and industrial businesses. Everyone who lives or vacations in the Rock River Basin will benefit from improved water quality.

Total Phosphorus (TP)

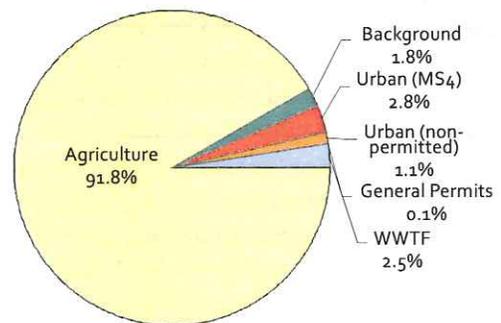


Baseline loading - 1,570,055 pounds per year

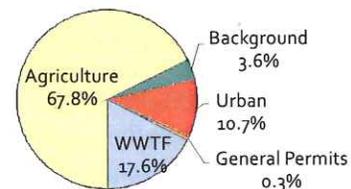


Load allocations - 422,800 pounds per year

Total Suspended Solids (TSS)

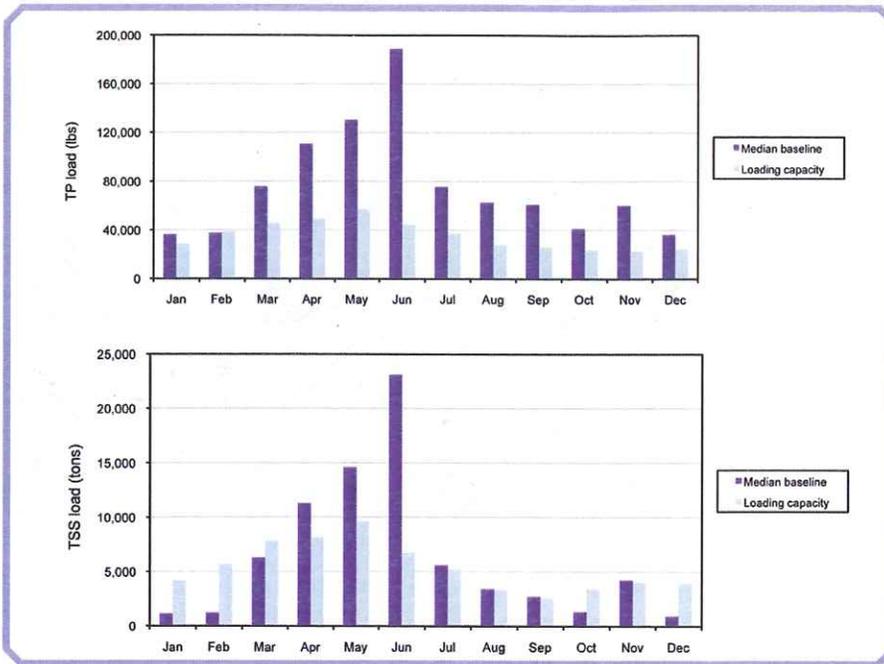


Baseline TSS loading - 179,900 tons per year



Load allocations - 51,628 tons per year

The TMDL report provides valuable information that will help identify strategies for cleaning up our waters. The top two charts show the current loads as a percentage by source for phosphorus and sediment. The bottom two show the results once the load allocations are achieved as outlined in the report. Total reductions needed to meet clean water goals are approximately 1 million pounds phosphorus and 128 tons of sediment annually.



Just as the amount of phosphorus and sediment entering the Rock River and its tributaries varies by month so does the amount of reduction that will be required to meet clean water goals. The charts at left show how some months will need little if any reduction of sediment and phosphorus, while others have high reduction goals. The dark bars on these two charts show the current loading while the lighter bars show the target reduction. Using a variable percent reduction allows more flexibility in achieving the reduction goals outlined in the Rock River Basin TMDL Report. Each municipal wastewater treatment facility, industrial operation, municipal stormwater system, barnyard, pasture and farm field is unique, and will be assigned a unique reduction amount.

How Might this Affect Me?

In Wisconsin, the implementation of point source wasteload allocations is done through permits issued under the Wisconsin Pollutant Discharge Elimination System (WPDES) Program, which includes industrial permits, municipal wastewater treatment plants and municipal stormwater discharge permits.

In order to reduce their contribution to water pollution, industrial and municipal wastewater discharges may need to improve or add additional treatment processes. In order to reduce their contribution to water pollution, construction sites and municipal stormwater systems may be required to install additional management practices to achieve water quality improvements.

Currently, control of pollutant discharge on agricultural lands are implemented voluntarily by farmers, typically with cost share assistance from state, county or federal agencies. During the development of the recovery plan an agricultural team will explore ways to increase farmer participation.

Public Participation

Active public involvement will be a vital part of the development and implementation of the Rock River Basin Recovery Plan. The process of creating or implementing a difficult and far-reaching plan cannot be effective unless citizens let their elected officials know of their interest and concerns. Accomplishing reductions in phosphorus and sediment loadings to the river will require participation from every community member.

Everyone is encouraged to become involved in the development and implementation of the Rock River Basin Recovery Plan. At a minimum, citizens are encouraged to participate in the public informational meetings throughout the development of the recovery plan. The success of the Rock River recovery effort rests with you, the basin stakeholders. Stakeholder participation in planning and implementing the water quality improvement actions is what will ultimately restore water quality in the Rock River.

Additional Resources

For more information regarding the Rock River Recovery Planning Process, contact Jim Congdon at (920) 387-7872, or James.Congdon@Wisconsin.gov

Wisconsin DNR's TMDL Web site - <http://dnr.wi.gov/org/water/wm/wqs/303d/RockRiverTMDL>

U.S. EPA's TMDL Website - <http://www.epa.gov/owow/tmdl>

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