

# Phosphorus limits for wastewater treatment plants

Water quality standards for lakes and rivers are consistent across Minnesota, but permit limits vary depending on many factors.



## Examples of success

Since the 90's wastewater treatment facilities across the state have worked on reducing their impact to rivers and lakes through efforts such as stabilization ponds, upgraded wastewater treatment and improved phosphorus removal techniques.

● Mankato	Population	38,725
	Median Household Income	\$36,786
	Monthly Residential Sewer Charge	\$29.18
	Monthly Residential Sewer Charge as Percent of Median Household Income	0.95%

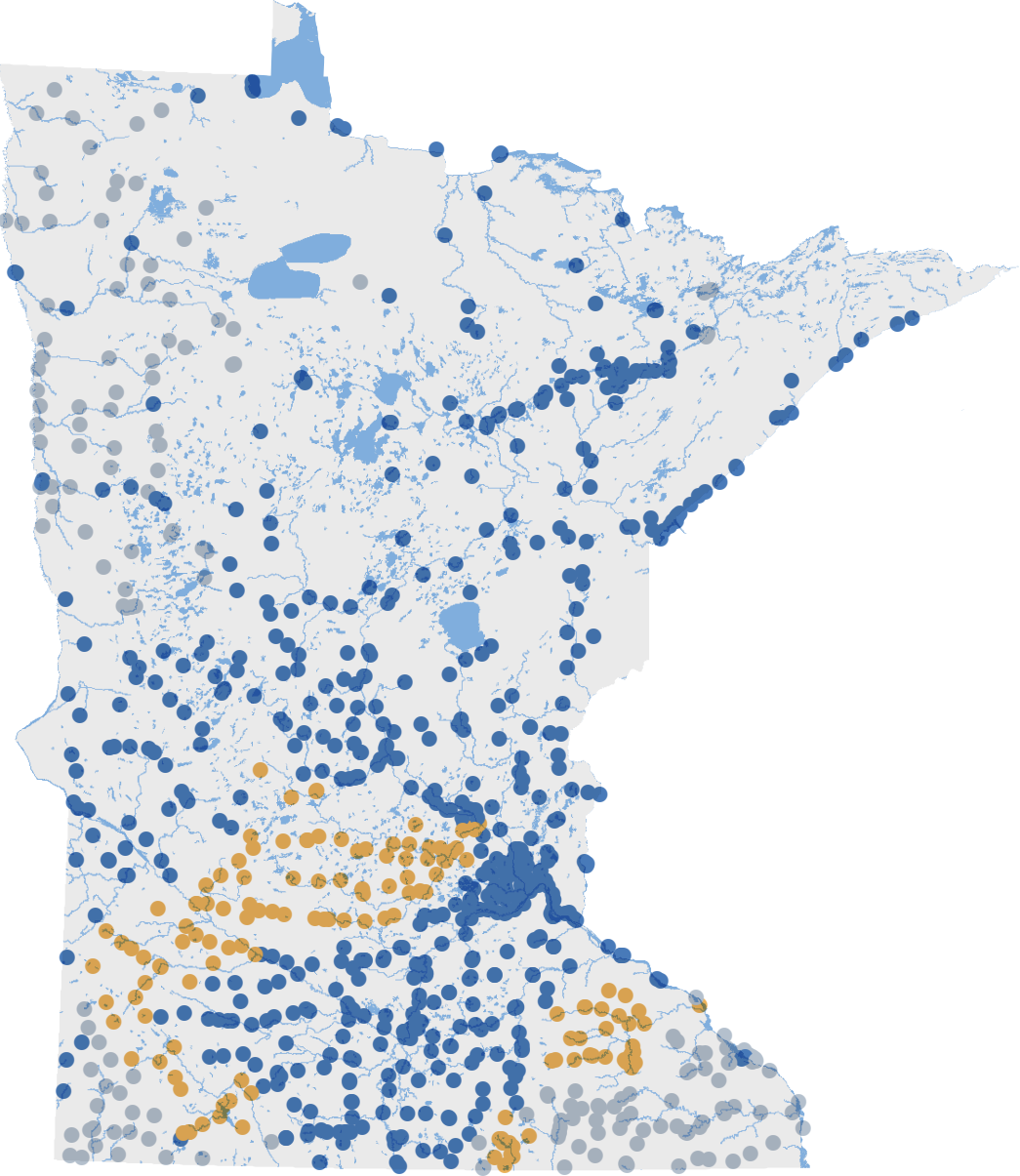
The Mankato wastewater treatment facility serves the communities of Mankato, North Mankato, Eagle Lake, Madison Lake, South Bend Township, Skyline and the Lake Washington Sanitary Sewer District. It is a major seller of phosphorus credits to industries and other municipalities in the Minnesota River Basin and also provides treated wastewater for use as cooling water to the Calpine Mankato Energy Center and reuses treated wastewater for municipal landscaping projects.

● McGregor	Population	393
	Median Household Income	\$33,575
	Monthly Residential Sewer Charge	\$25.00
	Monthly Residential Sewer Charge as Percent of Median Household Income	0.89%

The McGregor facility shows that this is a collaborative, transparent process. McGregor was assigned a 101 kg/year phosphorus wasteload allocation as part of the *Big Sandy Lake Excess Nutrient TMDL*. During the permit reissuance process the city demonstrated that its discharge location allowed for a 201 kg/year phosphorus limit, while still meeting the standard.

● North Branch	Population	10,046
	Median Household Income	\$50,417
	Monthly Residential Sewer Charge	\$46.50
	Monthly Residential Sewer Charge as Percent of Median Household Income	1.1%

North Branch wastewater treatment operators have achieved exceptional biological phosphorus removal results since 2005. Some of major components in that success include biological selector tanks and chemical (alum) as well as aerobic biosolid storage tanks.



- Wastewater treatment plants with phosphorus limits to protect downstream lakes. Most have done a lot of work already to reduce discharges, and will likely not face any new limits.
- Wastewater treatment plants which may need new phosphorus discharge limits to protect rivers. Most currently have no limits.
- Small treatment plants with no limits due to lake or river issues.

# Water quality standards and permit limits: What's the difference?

## 1.

### Water quality standards: setting the goal

We value healthy waters for fishing, swimming and wildlife. Standards are developed to attach measurable scientific metrics to these goals



A water quality standard is not the same thing as a permit requirement.



**To determine a permit limit for a facility:**  
We evaluate *facility-specific factors* such as flow, discharge quality, and the timing of discharge to determine what, if any, limits are required to protect lakes and rivers according to the standards. It's a tailored approach.


## 2.

### Permits: making it happen

An implementation of strategies to reach the clean water goal



Targeting sources



Flexible timelines



Financial assistance



Variances

# Same phosphorus, changing concentration

Waste water treatment plants discharge the same amount of phosphorus year round, but the concentration of phosphorus in our lakes, streams, and rivers depends on how high water levels are and how fast that water is flowing.

