



United States Steel – Minntac Tailings Basin Water Permit Reissuance

United States Steel mines, crushes, and processes iron-containing rock into taconite pellets at its Minntac facility near Mountain Iron, Minnesota. The crushed rock remaining after the iron is removed and the process water are disposed of in a large, aboveground impoundment called a tailings basin. This water and any precipitation that contacts the tailings are considered industrial wastewater, which is regulated by permits issued by the Minnesota Pollution Control Agency (MPCA).

The MPCA has prepared a draft permit containing requirements for the industrial wastewater that seeps or flows from the Minntac tailings basin. This fact sheet provides information about the Minntac tailings basin, the draft permit, and how the public can access and comment on the draft permit. **The draft permit is available for public comment from November 15 to December 23, 2016.**

Public comments

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The draft permit is available on the public notice page of the MPCA website at www.pca.state.mn.us

Facility description

This facility has been in operation since 1967, before passage of the federal Clean Water Act. The facility’s first water permit was issued on September 30, 1987, and expired on July 31, 1992. State law allows permitted facilities to continue operating under the terms of expired permits if they reapply for the permits in a timely fashion, which Minntac did. However, the permit has not been reissued since then.

Taconite processing requires a lot of water, and the basin serves as a reservoir for water used in the plant. The basin covers roughly 8,000 acres and is located in the Rainy River watershed and two sub-watersheds within the Rainy system: Sand River to the east of the basin and Dark River to the west.

Water leaves the basin by seeping out the lower sides of the basin walls and through the bottom of the basin. The seeps from the sides of the basin, called the outer dam wall (roughly 50 feet high and 600 feet thick), go directly to the surface along the outer dam wall. The seeps from the bottom enter the groundwater and are termed “deep seepage.”

Tailings basin water quality

Pollutant levels in the tailings basin have been increasing for years as water is pumped from the basin for reuse in the plant, picks up more pollutants, and returns to the basin. Leakage of this water from the basin impacts groundwater and nearby surface water.

Surface water quality standards which are set to protect specific uses are being exceeded in waters downstream of the basin for the following pollutants:

- Hardness – industrial use
- Bicarbonate, specific conductance, total dissolved solids –agricultural irrigation use
- Sulfate and total dissolved solids – protect for drinking water use that applies in trout streams
- Sulfate – wildlife use

Groundwater standards at the property line are currently being exceeded for sulfate and total dissolved solids, which are drinking water standards.

U.S. Steel has taken steps to reduce pollutants in the tailings basin and surrounding waters. In 2010 the company built a system on the east side of the basin that intercepts shallow flow seeping to the surface near the outer dam and pumps it back into the basin, called a Seepage Collection and Return System (SCRS). This has resulted in a roughly 50% decrease in the amount of pollutants entering the Sand River. A similar system will be installed on the west side to reduce pollutants going to the Dark River. Also, sulfate is being reduced by switching to a water source with lower sulfate to replace water lost from the basin.

Draft water quality permit

When a permit is reissued it is updated to ensure protection of all current water standards. Because Minntac contributes to exceedances of water standards, the permit contains final compliance limits to ensure the permitted activity does not cause an exceedance. However, the final compliance limit cannot be met on the day of permit issuance, so the draft permit includes a plan to meet the limits.

The draft permit includes the following updates:

- Sulfate limits in the basin pool water
- Water quality limits for additional pollutants
- Expanded monitoring of pollutants in nearby surface and groundwater
- Toxicity testing
- Collection of all shallow surface seepage
- Dates and schedules to reduce pollutants that leave the basin via deep seepage to levels that will protect the waters impacted by the facility

Each is discussed in detail below.

1. *Sulfate limits in the basin pool water*

Pollutant reduction in pool water improves groundwater and surface water. It will also decrease pollutants that are in the basin when it is closed, at which time it must be drained.

2. *Water quality limits for additional pollutants*

State law requires that all groundwater be protected as a potential drinking water source, so drinking water standards for sulfate and total dissolved solids are used as final compliance limits in groundwater at wells near the property boundary.

This draft permit contains limits on pollutants in surface water including hardness, total dissolved solids, specific conductance, sulfate, and bicarbonate. These protect for drinking water, industrial uses, irrigation, trout, and livestock and wildlife.

Several of the final limits in surface water and groundwater are currently being exceeded. The permit includes compliance schedules, which contain requirements that will result in meeting final compliance limits (see 4 and 5 below).

3. *Expanded monitoring of pollutants in nearby surface water and groundwater*

Water quality monitoring is added to measure water pollutants in the following new locations:

- Groundwater wells surrounding the basin
- Surface water stations in the Dark River, Timber Creek, Admiral Lake, Sand River, and Little Sandy Lake
- Outer dam wall on west basin perimeter
- Water in the basin

4. Toxicity testing

The draft permit requires testing of water on organisms to ensure protection of aquatic life (fish and aquatic bugs).

5. Collection of all shallow surface seepage

The compliance schedule in this draft permit requires that Minntac install a SCRS along the west and northwest sides of the basin that will eliminate shallow surface seepage in those areas. This system will be similar to the one already in operation on the east side of the basin. The SCRS will immediately reduce pollutants going to surface water. It must be operational by December 31, 2017.

6. Dates and schedules to reduce pollutants that leave the basin via deep seepage to levels that will protect nearby waters

The draft permit requires a comprehensive assessment of impacts to waters surrounding the tailings basin, with the understanding that additional mitigation (beyond the actions discussed above) will be required to meet applicable water quality standards in surface water and groundwater in the shortest reasonable period of time.

To accomplish this, the draft permit incorporates a compliance schedule that requires the following:

- Assess pollutant sources, routes of transport from the tailings basin, and impacts to surface water and groundwater
- Reduce the concentration of sulfate in the basin water from a current concentration of approximately 900 – 1000 mg/L, to 800 mg/L within five years, and to 357 mg/L within 10 years, which will protect groundwater and reduce pollutant levels in surface water.
- Identify the concentration of sulfate in the basin water needed to ensure protection of surface water and groundwater
- Implement additional mitigation if necessary to protect surface water

At present, MPCA lacks sufficient data to predict a date by which final limits in surface waters can be met. The time it takes pollutants to travel from the basin to various surface water bodies varies from months to decades, and there is not currently enough information on all the possible flow paths or mitigation that will be needed to predict when final compliance limits will be met in surface water. MPCA expects to incorporate final surface water compliance dates in a future permit after evaluating the movement of pollutants in groundwater. Regulating under state law gives the flexibility to address these complexities.

Wild rice

Recent legislation prevents permittees from being required to spend money on sulfate treatment until MPCA completes rulemaking on the sulfate standard that protects wild rice. If rulemaking designates any water body impacted by the tailings basin as a water to which the wild rice beneficial use applies, the permit requires U.S. Steel to submit an application for permit modification to set sulfate limits protective of wild rice, if needed.

The legislation does allow for sulfate minimization plans in permits. The draft permit requires specific actions be taken to decrease sulfate concentrations in groundwater that will lead to at least as much reduction in downstream lakes and streams as a minimization plan.

Public comment period and next steps

A copy of the draft permit is available for review at the MPCA's St. Paul and Duluth offices and on the MPCA's website: <http://www.pca.state.mn.us/index.php/public-notices/list.html>.

The draft permit is available for public comment from November 15 – December 23, 2016. Comments must be submitted in writing and include the following:

1. A statement of your interest in the permit application or the draft permit.
2. A statement of the action you wish the MPCA to take, including specific references to sections of the draft permit that you believe should be changed.
3. The reasons supporting your position, stated with sufficient specificity as to allow the Commissioner to investigate the merits of your position.

Submit comments to:

Erik Smith
Minnesota Pollution Control Agency
520 Lafayette Rd. North
St. Paul, MN 55155
erik.smith@state.mn.us

The MPCA will consider all comments received and will prepare responses. Comments from the public may lead to revisions to the draft permit before MPCA issues the permit.