Minnesota Pollution Control Agency

National Pollutant Discharge Elimination System /State Disposal System (NPDES/SDS) Permit Program Statement of Basis

Permittee: United States Steel, Minnesota Ore Operations
Name: Keetac – Tailings Basin
Permit Number: MN0055948

Current Permit Expiration: February 28, 2011
Public Comment Period Begins: June 27, 2011 **Period Ends:** August 12, 2011
Receiving Water: Reservoir 2; Welcome Creek
Proposed Action: Permit Reissuance

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Purpose and Participation

Purpose
This Statement of Basis outlines the principal issues related to the preparation of this permit reissuance and documents the decisions that were made in the determination of the effluent limitations and conditions of this permit.

The permit will be reissued if the MPCA determines that the proposed Permittee or Permittees will, with respect to the facility or activity to be permitted, comply or undertake a schedule to achieve compliance with all applicable state and federal pollution control statutes and rules administered by the MPCA and the conditions of the permit and that all applicable requirements of Minn. Stat. ch. 116D and the rules promulgated thereunder have been fulfilled.

More detail on all requirements placed on the facility may be found in the Permit document.

Facility Description

Background Information
Facility Location
The permitted facility includes the tailings basin and Sargent Pit dewatering operations for the U.S. Steel – Keetac facility, located to the north of Keewatin, Minnesota.

Outfall Locations
SD001: Four siphon outfalls to Reservoir 2. This outfall is used as an emergency discharge to maintain the integrity of the dike system. The outfalls are located at the southwestern edge of Reservoir 6, at PLS coordinates T 56 N, R 22 W, Section 2.

SD005: Weir outfall to Reservoir 2 North/Welcome Creek. This is the primary outfall for discharges from the tailings basin system. The outfall is located at the northeastern edge of Reservoir 6, at PLS coordinates T 56 N, R 22 W, Section 1.

SD008: Combination of discharges from SD001 and SD005. This station is for compliance reporting purposes only.

SD009: Sargent Pit dewatering outfall to unnamed ditch, leading to Welcome Creek. This will be a new outfall constructed to facilitate direct discharge of Sargent Pit dewatering, which is currently directed to other outfalls that are covered under NPDES/SDS Permit MN0031879. The outfall will be located at the edge of the Sargent Pit, at PLS coordinates T 57 N, R 22 W, Section 26.

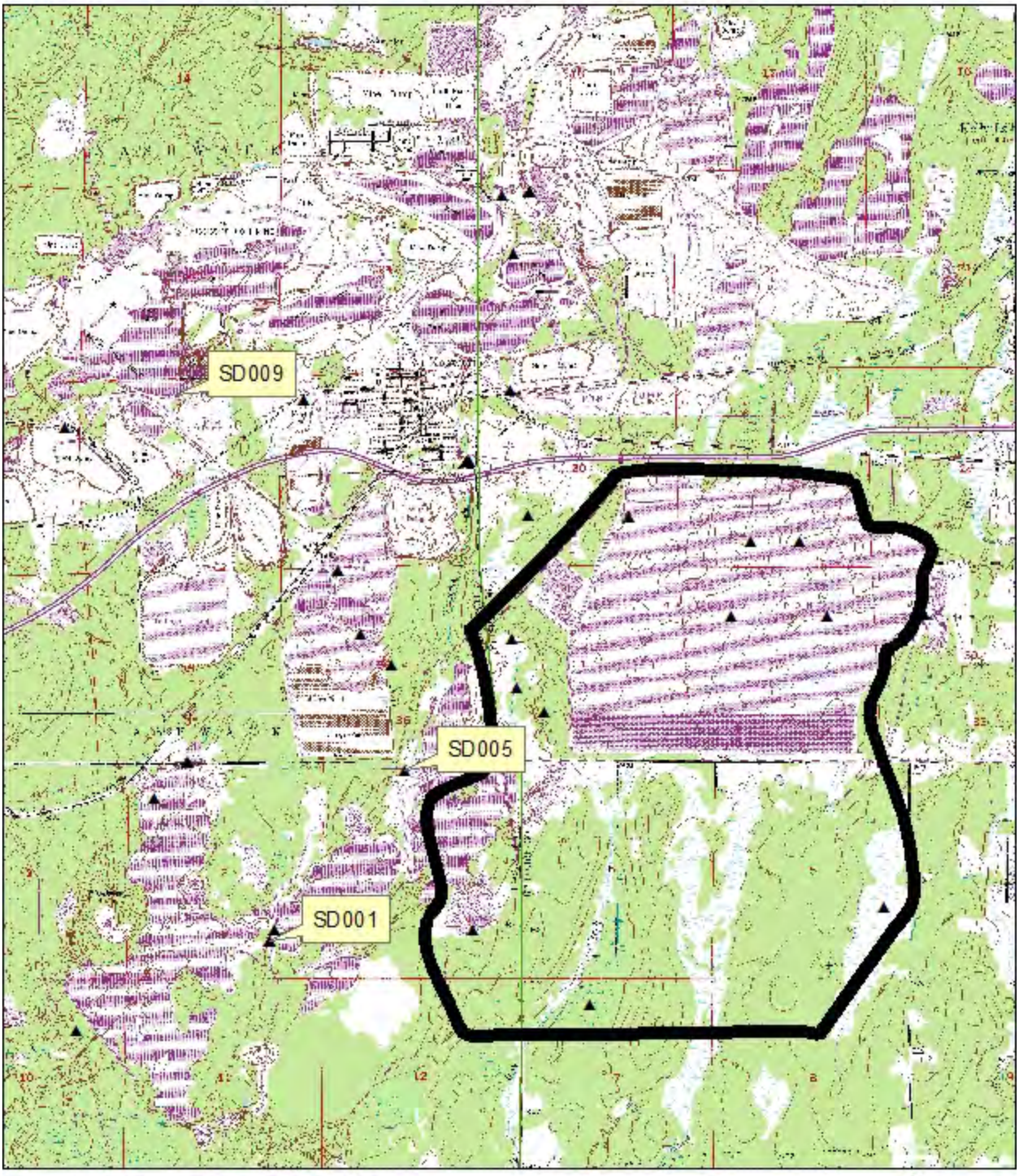
Changes to Facility or Operation
The facility has proposed an expansion of the taconite processing plant with which the permitted operations are associated. As a result, the rate of tailings deposition to the tailings basin will be increased. An increase in the discharge rate of process wastewaters from the tailings basin is not expected to exceed the volumes already permitted.

The facility is proposing to discharge dewatering effluent from the Sargent Pit directly to surface water. This discharge is discussed later in this statement of basis.

Recent Compliance History
The Facility was inspected on May 10, 2010. No significant compliance issues were found that would affect reissuance of this permit.

Topographic Map of Permitted Facility

MN0055948, United States Steel Corporation - Keetac Tailings Basin
St. Louis & Itasca County, Minnesota



Map produced by: MPCA Staff, 6/23/2011
Source: USGS Keewatin, Silica Quad
Scale: 1:50,000

0 0.25 0.5 1 Miles

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Receiving Waters

Use Classification
The receiving waters affected by this permit reissuance include Reservoir 2, Reservoir 2 North, Welcome Creek, and an unnamed ditch which discharges to Welcome Creek.

All waters of the state of Minnesota must be classified based on considerations of best usage in the interest of the public and in conformance with the requirements of the applicable statutes, as described in Minn. R. 7050.0140. Based on these considerations, Welcome Creek is classified as Class 2C waters as listed in 7050.0470 Subpart 4.A. item (236). According to Minn. R. 7050.0410, any listed water in part 7050.0470 is also classified as a Class 3C, 4A, 4B, 5, and 6 water.

Reservoir 2, Reservoir 2 North, and the unnamed ditch leading to Welcome Creek are not listed waters in Minn. R. 7050.0470. As detailed in Minn. R. 7050.0430, all surface waters of the state that are not listed in part 7050.0470 and that are not wetlands as defined in part 7050.0186, subpart 1a, are classified as Class 2B, 3C, 4A, 4B, 5, and 6 waters.

Based on the applicable classifications, the receiving waters named above are designated for use in the forms of aquatic life and recreation, industrial consumption, agriculture and wildlife, aesthetic enjoyment and navigation, and other uses.

Impairments
Minnesota is required to maintain a list of impaired waters, pursuant to Section 303(d) of the Federal Clean Water Act. Impairments have been identified in the receiving waters affected by this permit reissuance for mercury. Permit conditions with regard to mercury for this permit modification are discussed later in this statement of basis.

Proposed Permit Effluent Limits

The MPCA may develop effluent limitations based on Minnesota state water quality standards for the receiving water use classification, federal categorical standards applicable to specific industrial categories, or combination of these standards to regulate discharge of industrial wastewater. In addition, the MPCA may derive standards that are specific to a particular discharge. These standards may be based on toxicity studies, best professional judgment analysis, technology based standards, and in some instances standards developed by other U.S. states or regulatory agencies. Minnesota Rules and the U.S. Code of Federal Regulations (CFR) require that the MPCA categorize industrial dischargers consistent with the U.S. Environmental Protection Agency federal categorical standards, and state standards if appropriate.

Technology Based Effluent Limits
Minn. R. 7053.0225 subp. 1.A requires that all point source dischargers of industrial or other wastes shall comply with applicable federal standards, including those listed in 40 CFR parts 401 through 469. The MPCA has determined that the specific industrial category and federal effluent limitation guidelines (Categorical Standards) applicable to this facility are those described in 40 CFR pt. 440 subpt. A, for the iron ore mining and dressing point source category. The facility constitutes an existing source, and is therefore not subject to the New Source Performance Standards for this industry. The Categorical Standards for Best Practicable Control Technology currently available (BPT) and Best Available Technology economically achievable (BAT) have been applied for the conditions in this permit. These standards have been used to develop the effluent limitations for discharge of process wastewaters and dewatering effluent summarized in the tables below.

Table – Technology-Based Effluent Limitations Proposed for NPDES/SDS Permit No. MN0055948, Surface Discharge Stations SD001: Siphon Outfalls to Reservoir 2 and SD005: Weir Outfall to Reservoir 2 North

Effluent Characteristic	*Effluent Limitation*	*Basis*
pH	6.0 Standard Units (SU) Instantaneous Minimum; 9.0 SU Instantaneous Maximum	40 CFR 440.12(c)(2)
Iron, dissolved (as Fe)	1.0 mg/L Calendar Month Average, 2.0 mg/L Daily Maximum	40 CFR 440.12(c)(2), 40 CFR 440.13(c)(2)
Total Suspended Solids	20 mg/L Calendar Month Average, 30 mg/L Daily Maximum	40 CFR 440.12(c)(2)

Stations SD001 and SD005 are both discharges of process wastewater from Reservoir 6 to surface water. Both constitute discharges of process wastewaters from a mill that employs magnetic and physical methods to beneficiate iron ore in the Mesabi Range. Therefore, pursuant to 40 CFR 440.12(c) and 440.13(c), the allowable discharges from these outfalls are limited to the volume associated with the net accumulation of annual precipitation when annual precipitation exceeds evaporation. Compliance with this requirement is monitored for the combination of flows from SD001 and SD005 and reported via station SD008, along with the annual precipitation and annual evaporation.

Table – Technology-Based Effluent Limitations Proposed for NPDES/SDS Permit No. MN0055948, Surface Discharge Station SD009: Sargent Pit Dewatering to Unnamed Ditch

Effluent Characteristic	*Effluent Limitation*	*Basis*
pH	6.0 Standard Units (SU) Instantaneous Minimum; 9.0 SU Instantaneous Maximum	40 CFR 440.12(a)
Iron, dissolved (as Fe)	1.0 mg/L Calendar Month Average, 2.0 mg/L Daily Maximum	40 CFR 440.12(a), 40 CFR 440.13(a)
Total Suspended Solids	20 mg/L Calendar Month Average, 30 mg/L Daily Maximum	40 CFR 440.12(a)

Water Quality Based Effluent Limits

Stations SD001, SD005, and SD009 have been evaluated to determine the need for effluent limitations to protect the receiving waters for the use classifications previously discussed. Water quality-based effluent limitations have been included for the permit reissuance as discussed below.

The MPCA has made the determination that, based on the information available at the time of this permit reissuance, sulfate from the facility's discharges via SD001, SD005, and SD009 reaches waters that are used for the production of wild rice. Pursuant to Minn. R. 7050.0224 Subpart 2, the available information at the time of this permit reissuance, and currently established permitting policies, the MPCA is including final effluent limitations for total sulfate based on a water quality standard of 10 mg/L total sulfate for these outfalls. The effluent limitations and associated reasonable potential calculations are detailed in the two tables below. The calculations are based on a zero-dilution factor, due to the fact that the receiving waters are above the currently supported water quality standard of 10 mg/L sulfate.

Discharges from the tailings basin were evaluated for reasonable potential for water quality parameters as directed by MPCA permitting policy. The discharge indicates reasonable potential for sulfate as previously discussed. None of the additional parameters evaluated indicated reasonable potential to exceed water quality standards in the receiving waters.

Table – Reasonable Potential Calculations for SD001 and SD005

PARAMETER	SO4 AQ. LIFE (mg/l)	SO4 WILD RICE (mg/l)	SPEC. COND. (umohms/cm)	HG (ng/l)	CL- AQ. LIFE (mg/l)	CL- CLASS 3 (mg/l)
Maximum measured effluent value	137	137	958	2.4	24.8	24.8
Projected effluent quality (PEQ) @ n data points	1 (47)	1 (47)	1 (47)	4 (10)	154 (1)	154 (1)
Plant design flow (mgd)	23	23	23	23	23	23
Receiving water design flow (mgd)	0	0	0	0 0		0
Background concentration	0	0	0	6.9	0	0
Continuous standard (cs) @302 Hd	1210	10	1000	6.9	230	250
Maximum standard (ms) @ 302 Hd	1452	Na	Na	2400	860	Na
Final acute value (FAV) @ 302 Hd	2904	Na	Na	4900	1720	Na
Mass Balance – cs	1210	10	1000	6.9	230	250
Mass Balance - ms	1452	-	-	2400	860	-
Coefficient Of Variation (CV)	0.6	0.6	0.1763	0.6	0.6	0.6
Long Term Average: LTA cs	638.2	7.8029	928.3732	5.3840	121.3	195.0737
LTAms	466	-	-	771	276	-
Preliminary Effluent Limit (PEL): Daily Maximum	1452	24.3	1373.3	16.8	378	1607.5
Monthly Average	838	14.0	1130	9.7	218	350.7
Reasonable Potential PEQ>PEL (Dmax/FAV)	No	**Yes**	No	No No		No

The proposed discharge of Sargent Pit dewatering effluent to an unnamed ditch was evaluated for the potential to exceed water quality standards. The reasonable potential calculations for this discharge are summarized in the table below.

Table – Reasonable Potential Calculations for SD009

PARAMETER	BA (ug/l)	SE (ug/l)	CL-AQ. LIFE (mg/l))	CL-CLASS 3 (mg/l))	SO4 AQ. LIFE (mg/l)	SO4 WILD RICE (mg/l)	AS (ug/l)	HG (ng/l)	SP. COND (umhos/cm)
Maximum measured effluent value	35.6	2.9	8.84	8.84	113	113	12.6	1.2	660
Projected effluent quality (PEQ) @ n data points	220.7 (1)	17.98 (1)	55 (1)	55 (1)	700.6 (1)	700.6 (1)	32.8 (1)	7 (1)	4092 (1)
Plant design flow (mgd)	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75
Receiving water design flow (mgd)	0	0	0	0	0	0	0	0	0
Background concentration	0	0	0	0	0	0	0	0	0
Continuous standard (cs) @331 Hd	683	5	230	250	908	10	53	6.9	1000
Maximum standard (ms) @ 331 Hd	2758	20	860	Na	1090	Na	360	2400	Na
Final acute value (FAV) @ 331 Hd	5516	40	1720	Na	2179	Na	720	4900	Na
Mass Balance – cs	683	5	230	250	908	10	53	6.9	1000
Mass Balance - ms	2758	20	860	-	1090	-	360	2400	-
Coefficient Of Variation (CV)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Long Term Average: LTA cs	360.2	2.64	121.31	195.07	478.9	7.803	28	5.384	780.295
LTAms	885.6	6.42	276.14	-	350.0	-	115.6	771	-
Preliminary Effluent Limit (PEL): Daily Maximum	1122	8.2	378	607.5	1090	24.3	87	16.8	2430.1
Monthly Average	647.6	5	218	350.7	629	14.0	50	9.7	1403
Reasonable Potential PEQ>PEL (Dmax/FAV)	No	**Yes**	No	No	No	**Yes**	No	No	**Yes**

The discharge of Sargent Pit dewatering effluent indicated reasonable potential for sulfate as previously discussed. In addition, reasonable potential to exceed water quality standards for selenium and specific conductance was identified based on a limited data set. Therefore, effluent limitations have been included for the reissuance of this permit, with monitoring requirements discussed in greater detail later in this statement of basis.

Additional Requirements

Compliance Schedule
The permit reissuance includes a schedule for attaining compliance with the final effluent limitations for total sulfate. The schedule requires attainment of compliance as soon as possible, and in no case later than August 17, 2020. The term of the compliance schedule is based on the time required for completion of evaluations by the permittee, as well as time for implementation of any final plans for attaining compliance, including time for obtaining various regulatory approvals. The compliance schedule has been developed in accordance with the requirements of 40 CFR 122.47.

Monitoring for Selenium and Specific Conductance
The permit contains effluent limitations for selenium and specific conductance and previously discussed. However, these effluent limitations have been calculated based on a single data point, which may or may not be representative of the actual discharge conditions. The permit includes a requirement to monitor the discharge from Sargent Pit monthly. After accumulating a data set that represents at least 12 data points, and characterizes the seasonal variability of the discharge, the Permittee has the option of requesting reduction or elimination of monitoring for these parameters based on a revised reasonable potential analysis.

Nondegredation and Anti-Backsliding

Anti-Backsliding
The effluent limitations contained in this permit modification are not less stringent than the effluent limitations in the existing permit, in accordance with the antibacksliding requirements found in 40 CFR 122.44(l) and Minn. R. 7053.0275.

Nondegradation
In accordance with MPCA rules regarding nondegradation for all waters, the design flow of the facility as of January 1, 1988, and associated mass loading are the baseline design flow and mass loading. This baseline flow and mass loading are used to determine whether nondegradation review is required for any change in the discharge.

Given that the new discharge location for Sargent Pit dewatering to the unnamed ditch represents an expansion of the facility's permitted discharge to this receiving water by more than 0.2 mgd, and an increased loading of one or more pollutants over the baseline quality in the receiving water, the discharge of dewatering effluent has been reviewed in accordance with Minn. R. 7050.0185. The review includes consideration of the quantity and quality of the proposed discharge and the potential for violating water quality standards in the receiving water. The statistical reasonable potential analysis discussed previously in this Statement of Basis shows that the proposed project will not impair the designated beneficial uses of the receiving waters. The results of the analysis, including the water quality-based effluent limits for sulfate, selenium, and specific conductance have been included in this modified permit to ensure continued protection of existing beneficial uses.

The permit contains conditions for installation of treatment technology to ensure that sulfate loading associated with inputs to the tailings basin complies with nondegradation requirements following expansion of the facility's taconite processing operations.

The permittee has provided information for the proposed Sargent Pit dewatering as required under the provisions of the nondegradation rule. Using the information provided and all available data, the MPCA is required to determine appropriate effluent limitations protective of existing beneficial uses and determine whether additional controls can reasonably be taken to minimize the potential for impact on receiving waters. The discharge restrictions and monitoring requirements included in this permit have been designed to maintain water quality and preserve designated beneficial uses of the receiving waters. Additional controls beyond these measures are not warranted. Effluent monitoring and reporting requirements ensure ongoing compliance with the discharge permit conditions. Monitoring without numerical effluent limits is included for those parameters that do not have a reasonable potential to exceed water quality standards.