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Brandon Smith, Industrial Division (smith.brandon@state.mn.us)  
Minnesota Pollution Control Agency  
520 Lafayette Road N  
St. Paul, MN 55155

RE: NPDES/SDS Draft/Proposed Permit MN0031879 - Keetac Mining Area  
NPDES/SDS Draft/Proposed Permit MN0055948 - Keetac Tailings Basin

Dear Mr. Smith:

I represent WaterLegacy, a non-profit organization formed to protect Minnesota's water resources and the communities that depend on them. Our interests include protection of clean water, aquatic ecosystems, public health and natural stands of wild rice. WaterLegacy also seeks to ensure that State regulatory processes provide for effective public review and participation.

WaterLegacy requests a public meeting before the Citizens' Board pertaining to the draft permits for the Keetac Mine Area and Keetac Tailings Basin and that the permits be substantially revised prior to their issuance. WaterLegacy's requests for action by the Minnesota Pollution Control Agency (MPCA) are described in the comments herein, along with the reasons supporting WaterLegacy's position that the permits must be substantially revised prior to their issuance.

Although WaterLegacy's review of information is incomplete and additional time might provide clarification as well as raise additional issues, our assessment is that there are serious gaps in the analysis provided in the draft permits and statement of basis documents and that the draft permits fail to meet requirements of Minnesota rules and the federal Clean Water Act. Our concerns are summarized as follows:

- 1) The draft permits for the Keetac Mine Area and Keetac Tailings Basin result from a major expansion of mining activity requiring a comprehensive nondegradation analysis.
- 2) The Keetac mine expansion nondegradation review should analyze potential impacts to downstream waters of outstanding resource value and Lake Superior Basin waters.
- 3) The Keetac Mine and Tailings Basin should set maximum discharge loading limits and require conditions for treatment efficacy needed to prevent degradation of Minnesota waters.
- 4) The Keetac Mine and Tailings Basin permits should impose current effluent limits for sulfate. The "schedule of compliance" in the draft permits is inconsistent with applicable law.
- 5) Permits for the Keetac Mine and Tailings Basin should contain water quality based effluent limits (WQBELs) for selenium, specific conductance, hardness and mercury.
- 6) Permits for the Keetac Mine and Tailings Basin should require additional monitoring for hardness (calcium and magnesium), aluminum and manganese and multiple monitoring sites should be required to identify impacts of mine expansion.

7) The permit review process should address additional concerns: mercury methylation, rating of mine expansion permits as “minor,” and accessibility of public information.

WaterLegacy requests that the Keetac Mine and Tailings Basin permits be revised to comply with Minnesota rules and the Clean Water Act as explained in greater detail below. WaterLegacy further requests that the MPCA provide greater transparency to the public by posting the MPCA documents referenced in this letter electronically to the Agency web site.

WaterLegacy looks forward to review of the proposed NPDES/SDS permits for the Keetac Mine and Tailings Basin by the MPCA Citizens’ Board, as promised by the MPCA in response to prior citizen requests, and to a more rigorous process of writing and enforcing permits to ensure that the MPCA fulfills its delegated responsibilities under the Clean Water Act to protect clean water, aquatic ecosystems, public health and natural stands of wild rice.

1. The draft permits for the Keetac Mine Area and Keetac Tailings Basin result from a major expansion of mining activity requiring a comprehensive nondegradation analysis.

The Keetac Mine and Tailings Basin draft permits result from a mine expansion project that will increase taconite pellet production by over 50 percent. The draft permits do not explain what changes result from this expansion.

The notice and draft permit for the Keetac Tailings Basin says only, “The facility has proposed an expansion of the mining and taconite pellet manufacturing operations at the processing plant associated with this tailings basin. The conditions of this permit reflect the changes associated with this expansion.” (Keetac Tailings Basin Draft/Proposed NPDES/SDS Permit MN0055948, “Keetac Tailings Basin Permit”,<sup>1</sup> p. 3). No specific information is provided in either the Tailings Basin or Mining Area draft permit as to what will change as a result of the expansion. (See Keetac Mine Area Draft/Proposed NPDES/SDS Permit MN0031879, “Keetac Mine Permit”, p. 4).

In response to an inquiry by WaterLegacy, the MPCA downplayed the relationship between the Keetac mining expansion and the proposed NPDES/SDS permits, stating:

Your comment describes the draft Permits as mining expansion permits. This is incorrect, as the draft Permits are reissuance actions. The MPCA has reviewed the conditions in the draft Permits with regard to the proposed mining expansion to ensure that the permit conditions are appropriate in light of the possible expansion, however the reissuance of the Permits is in no way dependent on, nor does it authorize, the proposed mining expansion. (Email of Brandon Smith to Paula Maccabee, dated August 4, 2011, copy available on request).

However, the Final Environmental Impact Statement for the Keetac Mine expansion states that NPDES permit amendments to MN0031879 (Plant and Mine) and MN0055948 (Tailings Basin) are required by the Project. (U.S. Steel Keetac Taconite Mine Expansion Project Final Environmental Impact Statement, November 2010,<sup>2</sup> “Keetac FEIS,” p. 2-1). Applications for both the Mine and Tailings Basin permits explicitly state that they were made as a result of the proposed expansion:

The application to modify the permit is being submitted to request construction

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<sup>1</sup> Keetac Tailings Basin Draft/Proposed NPDES/SDS Permit MN0055948 and Keetac Mine Area Draft/Proposed NPDES/SDS Permit MN0031879 are available at <http://www.pca.state.mn.us/index.php/about-mpca/mpca-news/public-notices/public-notices.html> (last visited August 15, 2011).

<sup>2</sup> U.S. Steel Keetac Taconite Mine Expansion Project Final Environmental Impact Statement, November 2010 available at [http://files.dnr.state.mn.us/input/environmentalreview/keetac/final\\_eis/keetac\\_mine\\_expansion\\_feis.pdf](http://files.dnr.state.mn.us/input/environmentalreview/keetac/final_eis/keetac_mine_expansion_feis.pdf) (last visited August 15, 2011).

associated with, and discharge authorization from the mine and plant areas, following a proposed expansion at Keetac that will increase pellet production from 6.0 million tons per year (MTY) to 9.6 MTY. The expansion is planned for 2012.” (Application for Keetac Mine Area NPDES/SDS Permit MN0031879, “Keetac Mine Application”, attached as Exhibit 1, p. 1; Application for Keetac Tailings Basin NPDES/SDS Permit MN0055948, “Keetac Tailings Basin Application”, attached as Exhibit 2, p. 1).

The FEIS and permit applications also describe several significant changes associated with the expansion of production at the Keetac mine:

- Expansion of the mine, waste rock and surface material stockpiles by a total of approximately 2,075 acres. (Keetac FEIS, p. 1-2).
- Increase of 9.0 million long tons per year of tailings pumped as slurry to the existing tailings basin. (Keetac FEIS, p. 3-51)
- Increase in the flow of tailings slurry and associated process water from the current average flow of 20 million gallons per day to 29 million gallons per day following the expansion (45 percent expansion). (Keetac Tailings Basin Application, pp. 16, 18).
- Increased tailings slurry flow will result in increased surface water discharge from the tailings basin system. (Keetac Tailings Basin Application, p. 1)
- Changes in discharge flow rates and water quality characteristics due to the expansion of the plant. (Keetac Mine Application, p. 3; Keetac Tailings Basin Application, p. 3)
- Increase in water discharge rates and increased mining depth and extent, which will require higher dewatering rates in the future, resulting in higher discharge rates from the tailings basin. (Keetac Mine Application, p. 4; Keetac Tailings Basin Application, p. 4)
- Chemical usage associated with taconite processing will increase due to the increased production. (Keetac Mine Application, p. 4)

Minnesota rules enacted pursuant to the Clean Water Act require protection of existing beneficial uses, the water quality necessary to protect those uses and water quality conditions better than those needed to meet water quality standards. Minn. R. 7050.0185, Subp. 1. Nondegradation rules for general waters of the state require that any new (Subp. 2(A) or expanded (Subp. 2(B) industrial discharge, at a minimum, must comply with applicable water quality standards in chapter 7050 and chapter 7053 and applicable point source treatment requirements. Minn. R. 7050.0185, Subp. 3. Where a new or expanded discharge increases by more than 200,000 gallons per day, the discharge is deemed significant and can only be permitted if the agency determines that additional control measures cannot reasonably be taken to minimize the impact of the discharge on receiving waters. Minn. R. 7050.0185, Subp. 4.

Neither the Keetac Mine Permit, its Statement of Basis (“Keetac Mine Statement of Basis”, attached as Exhibit 3), the Keetac Tailings Basin Permit nor its Statement of Basis (“Keetac Tailings Basin Statement of Basis”, attached as Exhibit 4) detail the total increased discharge from the Keetac mine expansion. However, the MPCA acknowledges that new discharge for dewatering of the mine represents an expansion to receiving waters by more than 200,000 gallons per day. (Keetac Tailings Basin Statement of Basis, p. 9)

Additional protection against degradation is provided for outstanding resource value waters (“ORVW”) in Minnesota Rule 7050.0180. A new or expanded discharge to ORVWs may not be permitted unless there is no prudent and feasible alternative to the discharge. Minn. R.

7050.0180, Subp. 6. Where the project expands discharge of a bioaccumulative chemical of concern to waters within the Lake Superior Basin, further protections in chapter 7052 of Minnesota's Rules apply. Minn. R. 7050.0180, Subp. 2(C).

Little information regarding the MPCA's nondegradation analysis is provided in the Keetac Mine draft permit, the Keetac Tailings Basin draft permit or the Statement of Basis documents. However, based on the information from the permit applications, WaterLegacy not only believes that a more thorough nondegradation analysis should be provided in these documents, but that the draft permits for the Keetac Mine and Tailings Basin would allow degradation of Minnesota waters, including waters of outstanding resource value.

2. The Keetac mine expansion nondegradation review should analyze potential impacts to downstream waters of outstanding resource value and Lake Superior Basin waters.

Neither the Keetac Mine draft permit, the Keetac Tailings Basin draft permit nor their Statement of Basis documents discuss potential impacts of the Keetac mine expansion on outstanding resource value waters.

However, applications for both the Keetac Mine and Tailings Basin permits acknowledge potential impacts of the mine expansion on outstanding resource value waters. The applications state, "No sewage, industrial waste, or other waste from the Keetac facility discharges *directly* to an outstanding resource value water (ORVW)." (Keetac Mine Application, p. 14; Keetac Tailings Basin Application, p. 13, emphasis added). The Keetac Mine application explains, "All discharges from Keetac flow into the O'Brien Diversion Channel, then Hay Creek (and pass through Hay Lake), then Swan Lake, then Swan River, and ultimately the Mississippi River. This portion of the Mississippi is identified as an ORVW." (Keetac Mine Application, p. 14).

The Keetac Tailings Basin Application states that the MPCA told U.S. Steel that the MPCA would not apply the Rule 7050.0180 ORVW nondegradation review to the Keetac mine expansion, but only the "all waters" nondegradation rule:

In meetings regarding this permit modification application, MPCA personnel indicated that for the purposes of this application, the MPCA would not apply ORVW nondegradation review, but would rely on the "all waters" classification of the water bodies discharged into and nearby downstream points. (Keetac Tailings Basin Application, p. 21).

Absent an analysis demonstrating that the Keetac expansion would not affect nearby or downstream outstanding resource value waters, it does not appear that the MPCA has the discretion to apply only an "all waters" nondegradation review. Minnesota Rule 7050.0180 requires that discharges upstream of outstanding resource value waters must be controlled so as to assure no deterioration of the downstream ORVW:

**Impact from upstream discharges.** The agency shall require new or expanded discharges to waters that flow into outstanding resource value waters be controlled so as to assure no deterioration in the quality of the downstream outstanding resource value water. Minn. R. 7050.0180, Subp. 9.

The U.S. EPA's Water Quality Handbook also explains that antidegradation provisions in analogous federal rules are interpreted to prohibit new or increased discharge to tributaries of outstanding resource waters that would result in lower water quality in the outstanding resource waters. (USEPA, *Water Quality Handbook* – Chapter 4: Antidegradation, Section 4.7(ONRW).<sup>3</sup>

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<sup>3</sup> USEPA, Water Quality Handbook - Chapter 4: Antidegradation (40 CFR 131.12) available at <http://water.epa.gov/scitech/swguidance/standards/handbook/chapter04.cfm> (last visited August 15, 2011).

An MPCA Guidance Manual for Applying Nondegradation Requirements explains the policy behind requiring a demonstration that there is no feasible and prudent alternative in nondegradation review for outstanding resource value waters:

[I]t is appropriate to place the burden on the party seeking to use a public water body to dispose of his or her waste products. The capacity of a lake or stream to assimilate certain conventional (non-toxic) pollutants is a limited public resource subject to allocation by the MPCA. A permit to discharge is a privilege not a right. (MPCA, *Surface Water Pathway Evaluation User's Guide*, Appendix 5, Guidance Manual for Applying Nondegradation Requirements on Outstanding Resource Value Waters in Minnesota (Working Draft, January 30, 2006, p. 142).<sup>4</sup>

In addition to analyzing whether discharges affect downstream ORVWs in the Mississippi River Watershed, WaterLegacy believes that, prior to issuing permits, an evaluation should be done to determine whether the Keetac mine expansion impacts outstanding international resource waters in the Lake Superior Basin. Minn. R. 7052.0300, Subp. 3. The permit documents do not discuss potential impacts on the Lake Superior watershed, but the FEIS for the Keetac mine expansion states that a small portion of the existing southeast stockpile and tailings basin exterior dam are located in the Lake Superior watershed (Keetac FEIS, p. 3-4) and that a small portion of the proposed east stockpile will be located in the Lake Superior watershed. (Keetac FEIS, p. 4-65).

The Keetac FEIS explains that mining activities have altered the natural routing of surface water; that the placement of stockpiles of overburden and waste material within and over watershed boundaries has caused changes in surface runoff patterns; and that the Keetac tailings basin “has discharge from seeps, which has altered the water flow to watersheds and water bodies around the site.” (FEIS, p. 4-65). The FEIS also explains that existing subsurface mining features, such as tunnels and shafts as well as naturally-occurring faults in the region have the potential to physically transfer water from one watershed to another, that it is likely that underground mine workings exist in the Keetac expansion area, and that such features could result in inter-basin impacts. (Keetac, FEIS, p. 5-83).

The Keetac FEIS then states that the Lamberton Fault “bisects the continental divide between the Great Lakes Watershed and the Mississippi River Watershed” and serves as “a subsurface hydrologic conduit between the Lamberton pit in the Mississippi River Watershed and Carmi-Carson pit in the Great Lakes Watershed.” (Keetac FEIS, p. 5-84) The Keetac east mine pit expansion would connect with Hibtac’s Lamberton pit and be affected by this fault. (*Id.*) Figure 5.8.1 of the Keetac FEIS, attached as Exhibit 5 to these comments, illustrates the potential for inter-basin transfer. The FEIS then suggests that proper management is needed to prevent diversion of water out of or discharge to the Lake Superior watershed:

Managed properly, there would not be a diversion of water out of the Lake Superior watershed or a discharge to the Lake Superior watershed from the Upper Mississippi River watershed. However, due to mining activity, there is the potential for a transfer of water to occur from one major watershed to another. Either instance would be considered an adverse effect. (Keetac FEIS, p. 5-85)

The Keetac NPDES/SDS permit record has insufficient information to allow a conclusion that potential adverse impacts to the Lake Superior watershed have been managed properly and that discharge to the Lake Superior Basin from the Keetac mine expansion has been prevented. Additional analysis should be done to determine if permit conditions are needed to prevent this

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<sup>4</sup> MPCA, *Surface Water Pathway Evaluation User's Guide*, Appendix 5, Guidance Manual for Applying Nondegradation Requirements on Outstanding Resource Value Waters in Minnesota (Working Draft, January 30, 2006) available at <http://www.pca.state.mn.us/index.php/view-document.html?gid=3166> (Last visited August 15, 2011).

adverse effect.

3. The Keetac Mine and Tailings Basin should set maximum discharge loading limits and require conditions for treatment efficacy needed to prevent degradation of Minnesota waters.

Even before analysis is done of outstanding and high value waters, the record demonstrates that the Keetac Mine and Tailings Basin draft permits are insufficient to prevent degradation of Minnesota waters. Neither permit restricts the mass loading of pollutants and neither permit requires attainment of a particular level of improved treatment efficacy.

The Keetac Mine application states that additional production related to mine expansion will not increase discharge since, "The existing scrubber wastewater treatment system will be upgraded as a part of the planned expansion." The Mine application then states that the upgrade is discussed in more detail in the application for the Tailings Basin permit. (Keetac Mine Application, pp. 20-21).

The Tailings Basin application explicitly states that improved wastewater treatment is needed to comply with nondegradation requirements. The application states that a "significant change" resulting from nondegradation review "is the proposed installation of additional sulfate treatment on the existing scrubber blow-down system. The additional sulfate treatment will reduce the sulfate loadings into the tailings basin system and consequently will reduce the tailings basin sulfate concentration." (Keetac Tailings Basin Application, p. 1). The application further states that the discharge associated with the Keetac expansion project should not be considered a new or expanded discharge as defined in Minnesota Rule 7050.0185, "due to the proposed upgrade to the existing scrubber wastewater treatment system." (Keetac Tailings Basin Application, pp. 11-12). Discharges from the Keetac expansion are not expected to adversely impact downstream outstanding resource value waters "with the modifications requested in this application." (Keetac Tailings Basin Application, p. 14).

In the Tailings Basin application, U.S. Steel's consultants state that in general, given that the allowable discharge flow rate in 1988 was 5,297 million gallons per year, mass loadings are expected to remain below baseline levels. (Keetac Tailings Basin Application, pp. 23). The exceptions to this general conclusion pertain to sulfate, "due to the current increases observed in the tailings basin system and the potential impact to downstream water quality," and hardness levels, which could increase due to the use of hydrated lime within the scrubber wastewater treatment system. (*Id.*).

U.S. Steel's consultants use 1988 Discharge Reports and the maximum allowable discharge volume permitted in 1988 to determine that the "maximum allowable sulfate discharge loading" for the Keetac Tailings Basin is 1,370 tons per year. (Keetac Tailings Basin Application, p. 24). They conclude that treatment reducing 50 percent of the sulfate load from the existing scrubber wastewater treatment system is needed to comply with nondegradation requirements:

The existing sulfate wastewater treatment system will be upgraded to remove 50% of the sulfate load in the effluent from the existing system. This installation will occur concurrent with the Keetac expansion project and will address nondegradation concerns. (Keetac Tailings Basin Application, pp. 3-4)

It was determined that removing 50 percent of the existing sulfate load in the discharge from the scrubber wastewater treatment system will enable the worst case sulfate discharge from the tailings basin to stay below the allowable sulfate discharge loading of 1370 tons per year. (Keetac Tailings Basin Application, p. 25)

Despite these conclusions based on projections of sulfate loadings under various conditions,

neither the draft permit for the Keetac Mine nor the draft permit for the Tailings Basin limit sulfate loading to 1,370 tons per year or set any other mass loading limit for sulfate. Neither the draft permit for the Keetac Mine nor the draft permit for the Tailings Basin require upgrades to wastewater treatment to remove 50 percent of the existing sulfate load.

As discussed in more detail in the next section, the first compliance requirements that pertain to sulfate discharge *outcomes* are requirements that Keetac comply with sulfate concentration limits by August 17, 2019, at the Mining Area and by August 17, 2020 at the Tailings Basin. (Keetac Mine Permit, p. 15; Keetac Tailings Basin Permit, p. 12).

The Tailings Basin application also relies upon a proposed wastewater treatment system upgrade to ensure that increased hardness doesn't degrade Minnesota waters. U.S. Steel's consultants conclude based on 1988 hardness concentrations and the maximum allowable discharge flow that the "maximum allowable hardness discharge loading" is 5,200 tons per year. (Keetac Tailings Basin Application, p. 25). The application states that hardness is expected to increase as compared to pre-2006 levels due to addition of a scrubber and use of lime as a precipitating agent; that scrubber and wastewater treatment add 596 tons of hardness per year; and that U.S. Steel has assumed in its nondegradation review that the wastewater treatment system upgrade will remove 50 percent of the calcium ions (hardness) as well as 50 percent of the sulfate. (*Id.*)

Neither the draft permit for the Keetac Mine nor the draft permit for the Tailings Basin limit hardness loadings to 5,200 tons per year or set any other loading limit for hardness. Neither permit sets any treatment requirements that might reduce hardness. As discussed later in these comments, neither Keetac draft NPDES/SDS permit sets any water quality based effluent limit for hardness. There is only one monitoring location for hardness, and that location (SD012) is in the mining area. (Keetac Mine Permit, pp. 8, 12) At the Tailings Basin, where the permit applicant specifically identified the problem with hardness, no monitoring for hardness is required for the duration of the permit, although monitoring for calcium and magnesium is required at one station to apply for permit reissuance. (Keetac Tailings Basin Permit, p. 15).

The permit record is sufficient to demonstrate that even under Minnesota's "all waters" nondegradation rules, discharge loading limits should be set for sulfate and hardness and wastewater treatment upgrades should be required to prevent degradation of Minnesota waters.

WaterLegacy would request that discharges of iron and mercury be analyzed to evaluate the potential for degradation, to establish maximum discharge loading limits and, if necessary, to require specific collection or treatment upgrades to comply with those limits.

4. The Keetac Mine and Tailings Basin permits should impose current effluent limits for sulfate. The "schedule of compliance" in the draft permits is inconsistent with applicable law.

The record demonstrates that the Keetac mine and tailings basin discharge sulfate in violation of the 10 mg/L wild rice sulfate standard contained in Minnesota Rule 7050.0224, Subp. 2. Stands of natural wild rice have been identified downstream of the Keetac mine in Hay Lake and Swan Lake. (Keetac Mine Application, p. 22; Keetac Tailings Basin Application, p. 19). The FEIS for the Keetac expansion summarizes:

Swan Lake, Swan River, Hay Lake, and Hay Creek all currently exceed the state water quality standard for sulfate concentration. Until the water quality standard of 10 mg/L is met, either during or at the end of the compliance schedule, the Proposed Project would have a significant, adverse effect on the water quality of these water bodies by continuing to discharge sulfate above the standard. (Keetac FEIS, p. 4-57)

The MPCA concluded that sulfate from the Keetac Mine discharges via SD002, SD003, and

SD012 and sulfate from the Keetac Tailings Basin discharges via SD001, SD005, and SD009 reaches waters that are used for the production of wild rice. The MPCA set effluent limitations based on a zero dilution factor since receiving waters for these discharges are above the 10 mg/L water quality standard for sulfate. (Keetac Mine Statement of Basis, p. 7; Keetac Tailings Basin Statement of Basis, p. 6). In both the Keetac Mine and Tailings Basin draft permits, the MPCA set effluent calendar month average limits for sulfate at 14 mg/L and calendar month maximums at 24 mg/L. (Keetac Mine Permit, pp. 11-12; Keetac Tailings Basin Permit, pp. 9-10)

However, in both the Keetac Mine and Tailings Basin draft permits, the water quality based effluent limitation for sulfate does not actually apply until a "Final Period." During an extended "Interim Period" the draft permits require only monitoring of sulfate and set no effluent limit. (Keetac Mine Permit, pp. 7-12; Keetac Tailings Basin Permit, pp. 7-10).

Each draft permit describes a "Compliance Schedule" for sulfate requiring various studies. Although provision of various documents -- a Sulfate Reduction Strategy Study a Water Management Study and various progress reports is, arguably, enforceable, there is no necessary connection between these documents and any change in sulfate effluent. The draft permits allow installation of any treatment technology to remain uncertain, stating, "If the Sulfate Reduction Plan proposes installation of treatment technology," various processes shall take place. (Keetac Mine Permit, p.16, ¶ 1.11; Keetac Tailings Basin Permit, p. 12, ¶ 1.5, emphasis added). The most recent update from this study process reflects a sprawling investigation of options from deep well injection to bottling water to avoid surface discharge and provides no deadline for actual sulfate effluent reduction. (*Water Management Study and Sulfate Reduction Strategy Study Six-Month Update NPDES / SDS Permits MN0031879 & MN0055948*, April 6, 2011, attached as Exhibit 6.)

The Keetac Mine draft permit and Keetac Tailings Basin draft permit also set dates by which compliance with "final" sulfate effluent limitations must be attained, unless the permit is amended. In the case of the Keetac Mine draft permit, the date by which compliance with effluent limits must be attained is August 17, 2019; for the Tailings Basin draft permit, the compliance date is August 17, 2020. (Keetac Mine Permit, p. 15; Keetac Tailings Basin Permit, p. 12).

WaterLegacy's position is that the "compliance schedule" set for sulfate in these permits conflicts with both state and federal law. A schedule of studies and reports is not a sequence of actions leading to compliance with effluent limitations under the Clean Water Act, and a deadline for compliance with water quality standards 8 or 9 years in the future (long after the permits will expire) is neither the "shortest reasonable" time nor "as soon as possible" as required by law. Since the Keetac discharges are existing discharges in violation of a WQBEL enacted in 1973, EPA guidance and precedent suggest that the Clean Water Act requires immediate compliance.

Minnesota statutes and rules require that a schedule of compliance include "an enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitation, prohibition, or standard." Minn. Stat. §115.01, Subd. 16; Minn. R. 7000.0100, Subp. 11. A schedule of compliance "must require compliance in the shortest reasonable period of time." Minn. R. 7001.0150, Subp. 2(A). If a proposed permittee will not comply with all applicable state and federal pollution control statutes and rules, there is justification for the agency to refuse to issue a new or modified permit, to refuse permit reissuance or to revoke a permit without reissuance. Minn. R. 7001.0140, Subp. 2(A).

Federal regulations enacted under the Clean Water Act define a schedule of compliance as "an enforceable sequence of interim requirements leading to compliance with the CWA and regulations." 40 CFR §122.2. Schedules must require "compliance as soon as possible," 40 CFR §122.47(a)(1), and schedules that exceed one year must have interim requirements and dates of achievement. 40 CFR §122.47(a)(3). Federal regulations suggest that interim requirements

should be directed to production of required facilities, noting that interim requirement could include “let a contract for construction of required facilities,” “commence construction of required facilities” and “complete construction of required facilities.” 40 CFR §122.47(a)(ii).

The Clean Water Act may not allow any compliance schedule for exceedances of Minnesota’s wild rice sulfate standard, since the Keetac mine and tailings basin are existing point sources and Minnesota Rule 7050.0224, Subp. 2 was enacted in 1973. EPA’s guidance on the implementation of compliance schedules under the Clean Water Act explains:

*In In The Matter of Star-Kist Caribe, Inc.*, 3 E.A.D. 172, 175, 177 (1990), the EPA Administrator interpreted section 301(b)(1)(C) of the CWA to mean that 1) after July 1, 1977, permits must require immediate compliance with (*i.e.*, may not contain compliance schedules for) effluent limitations based on water quality standards adopted before July 1, 1977, and 2) compliance schedules are allowed for effluent limitations based on standards adopted after that date only if the State has clearly indicated in its water quality standards or implementing regulations that it intends to allow them. (U.S. EPA Memorandum, Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits, May 7, 2007, attached as Exhibit 7, p. 1).<sup>5</sup>

The failure of the Keetac Mine and Tailings Basin draft permits to require immediate compliance with the wild rice sulfate standard and the process-oriented nature of the “compliance schedule” could allow exceedance of sulfate water quality standards for nearly a decade of potential delay.

5. Permits for the Keetac Mine and Tailings Basin should contain WQBELs for selenium, specific conductance, hardness and mercury.

The draft permits for the Keetac Mine and Tailings Basin set no water quality-based effluent limits for selenium, specific conductance, hardness or mercury. WaterLegacy believes that there is sufficient information in this record to support WQBELs for these additional parameters.

a. Selenium and Specific Conductance

The need for WQBELs for selenium and specific conductance is established in the permit record. The MPCA’s Statement of Basis for the Tailings Basin draft permit concludes that both selenium and specific conductance have the reasonable potential to exceed water quality standards. (Keetac Tailings Basin Statement of Basis, p. 8). The Statement of Basis explains that, as a result of nondegradation analysis, “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.” (Keetac Tailings Basin Statement of Basis, p. 9)

However, the draft permit for the Keetac Tailings Basin has no WQBEL for specific conductance; the only requirement is for monitoring. (Keetac Tailings Basin Permit, pp. 7-11). The draft permit for the Keetac Tailings Basin also has no WQBEL for selenium; once again, the only requirement is monitoring. (Keetac Tailings Basin Permit, pp. 8, 10).

b. Potential to Exceed Analysis

In reviewing the potential to exceed analysis for specific conductance and mercury at the Keetac mine and for a variety of parameters at the Keetac tailings basin, WaterLegacy questions whether the MPCA potential to exceed analysis may have maximized the potential for dilution. The reasonable potential analysis for the Keetac mining area applied a 15.1 million gallons per day

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<sup>5</sup> U.S. EPA Memo, Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits, May 7, 2007 available at <http://water.epa.gov/lawsregs/guidance/wetlands/upload/signed-hanlon-memo.pdf> (last visited August 15, 2011).

(mgd) plant design flow for SD002, a 5.85 mgd flow for SD003 and a 4.32 mgd flow for SD012. (Keetac Mine Statement of Basis, pp. 8-10). However, according to the Keetac Mine permit application, these flow rates represent the maximum flow; the average flow is 1.2 mgd at SD002, 2.9 mgd at SD003 and 1.15 mgd at SD012 (Perry Pit). (Keetac Mine Application, Mining Area Attachment for Industrial Surface Water Discharge, WL Exhibit 1, page 41 out of 111).

The reasonable potential analysis for the Keetac tailings basin applied a 23 mgd flow for SD001 and SD005 and a 4.75 mgd flow for SD2009. (Keetac Tailings Basin Statement of Basis, pp. 7, 8). However, according to the Keetac Tailings Basin permit application, SD001 is an emergency overflow discharge with an average flow of 0 mgd and a maximum flow of 9.4 mgd; average flows are 3.1 mgd at SD005 and 3.1 mgd at SD009 (Sargent Pit). (Tailings Basin Application, Tailings Basin Attachment for Industrial Surface Water Discharge, WL Exhibit 2, page 42 out of 125). Where no limit is placed on mass loading of pollutants and maximum flows are far in excess of average dilution, using only the maximum flow in reasonable potential analysis may mask the need for effluent limitations to protect water quality as well as placing downstream waters at risk of degradation.

#### c. Hardness

As discussed previously (*infra*, p. 7), the Tailings Basin application detailed concerns about mass loading of hardness absent specific treatment upgrades. A more complete analysis of hardness resulting from the mine expansion is likely to demonstrate that reasonable potential for exceedance of water quality standards downstream of the Keetac discharge requires WQBELs for hardness in the Mine and Tailings Basin permits.

The FEIS for the Keetac mine expansion predicts that discharge from the Tailings Basin is expected to reach 362 mg/L, considerably above the baseline average hardness concentration of 235.8 mg/L in 1988. (Keetac FEIS, p. 4-56; Tailings Basin Application, p. 25). However, hardness is not discussed at all in either the Tailings Basin draft permit or its Statement of Basis, and there are no Discharge Monitoring Reports (DMRs) evaluating hardness under existing conditions for the Tailings Basin permit. (Discharge Monitoring Reports for MN003189 and MN0055948, "DMRs", attached as Exhibit 8, pp. 23-36).

Monitoring results for hardness from the Perry Pit Dewatering SD012 at the Keetac Mine for 2010 and 2011 all exceed 200 mg/L. (DMRs, pp. 16, 20). The Keetac Mine Statement of Basis reflects a maximum measured effluent value of 256 mg/L, but concludes, using a maximum flow and the water quality standard of 500 mg/L that there is no reasonable potential to exceed. (Keetac Mine Statement of Basis, p. 10).

WaterLegacy believes that the reasonable potential to exceed analysis for hardness is inadequate. No evaluation is provided for the Keetac tailings basin, where the permit application has raised red flags regarding hardness levels. For both the Keetac mine and tailings basin, additional analysis should review reasonable potential for exceedance where dilution is not at maximum levels and analyze impacts of hardness discharge on Class 2B waters downstream of the outfalls, where hardness limits are 250 mg/L. Minn. R. 7050.0220, Subp. 5a(8) rather than 500 mg/L.

#### d. Mercury

WaterLegacy recommends that an effluent limit of 6.9 ng/L should be set for discharge of mercury at the Keetac mine and tailings basin, with a provision that a standard of 1.3 ng/L would be applied to any discharge impacting waters of the Lake Superior Basin. As discussed before in connection with nondegradation analysis, maximum discharge loading levels should also be set for mercury and other pollutants of concern.

Downstream receiving waters for the Keetac Mine and Tailings Basin are impaired for mercury as follows:

- O'Brien Reservoir (Reservoir #4) Mercury in Tissue
  - Swan Lake (Main Basin) Mercury in Tissue
  - Swan River (to Mississippi) Mercury in Tissue
  - Mississippi River Mercury in Tissue, Mercury in Water Column.
- (Keetac Mine Application, p. 26; Keetac Tailings Basin Application, p. 27).

Where waters are impaired with a bioaccumulative toxin, it seems problematic to dismiss the potential to exceed water quality standards using a methodology that increases the potential for dilution. The Keetac Mine Statement of Basis reflects a maximum effluent level of 5.2 ng/L at SD003 -- prior to the proposed mine expansion. (Keetac Mine Statement of Basis, p. 9). This measurement is more than 75 percent of the legal limit outside the Lake Superior Basin. The maximum historical mercury concentration at Tailings Basin outflows SD001 and SD005 is 2.4 ng/L. (Keetac Tailings Basin Statement of Basis, p. 7).

As explained previously (*infra*, pp. 9-10) the flow level used by the MPCA in its reasonable potential analysis at Keetac Mine SD003 is more than twice the average flow for that outfall. The flow level applied in the reasonable potential analysis for Tailings Basin SD001 and SD005 applied a 23 mgd flow to outfalls that have a combined average flow of 3.1 mgd, reflecting a seven-fold difference in the potential for dilution of mercury.

The Keetac Mine Expansion FEIS anticipated that mercury standards would be set in the NPDES/SDS permits for the facility:

It is understood that water bodies in the vicinity of the Proposed Project are impaired for mercury in fish tissue. Minnesota's Mercury TMDL Implementation Plan attempts to reduce these fish tissue levels. Mercury levels in fish tissue in downstream water bodies are accounted for in the issuance of the NPDES/SDS permit. As downstream water bodies are already impaired for mercury the standard established for mercury in water discharges is reflected in the NPDES/SDS permit for the facility. (Keetac FEIS, p. 4-53)

Neither the Keetac Mine draft permit nor the Keetac Tailings Basin draft permit set an effluent limit for mercury. As previously discussed, neither permit sets a discharge loading limit for mercury. Neither Statement of Basis evaluates whether the Keetac mine expansion will degrade waters that are already impaired for mercury or sets any conditions related to mercury.<sup>6</sup> WaterLegacy believes that monitoring alone is insufficient to prevent further degradation of mercury-impaired waters as the Keetac mine expands.

6. Permits for the Keetac Mine and Tailings Basin should require additional monitoring for hardness (calcium and magnesium), aluminum and manganese and multiple monitoring sites should be required to identify impacts of mine expansion.

WaterLegacy recommends that the Keetac draft permits also require monitoring for hardness (calcium and magnesium), aluminum, and manganese at multiple locations. The need for both monitoring and limits for hardness at the tailings basin has been previously established. The need to monitor for hardness at the mining area and to monitor for aluminum and manganese is explained below. It is recommended that permits be written to trigger establishment of WQBELs should monitoring identify the reasonable potential to exceed water quality standards.

Monitoring for hardness at the tailings basin and the mine is needed to ensure that WQBELs and loading limits for hardness would be met. Monitoring is also needed at the Keetac mining area

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<sup>6</sup> The Keetac Mine Statement of Basis states at page 5, "Permit conditions with regard to mercury for this permit modification are discussed later in this statement of basis." However, no such discussion is provided.

due to the use of magnesium chloride solution as a dust suppressant compound on roads and areas around the plant. Magnesium from this application can impact discharge water quality both in the mine dewatering discharges (to O'Brien Creek or Welcome Creek) and discharges to the ten settling basins. (Keetac Mine Application, page 55 of 111 in Exhibit 1). It is insufficient to have a single monitoring station for hardness for the entire Keetac facility, as proposed in the draft permits, (Keetac Mine Permit, pp. 8, 12); particularly since the mine footprint is proposed to increase by over 2,000 acres.

Monitoring for aluminum is needed due to the proposed use of aluminum chlorhydrate to enhance settling rates in ten new settling basins described in the application for the Keetac Mine permit. Effluent from the turbidity settling basin has the potential to impact discharges through SD002 to Welcome Creek. (Keetac Mine Application, p. 17 and page 55 of 111 in Exhibit 1).

Ongoing monitoring for manganese is needed due to sampling results described in the application for the Keetac Tailings Basin permit. A single sample for manganese was taken at the Sargent Pit (SD009) on August 18, 2008. The measured concentration of manganese was 480 µg/L, more than four times Minnesota's Health Risk Limit of 100 µg/L. Minn. R. 4717.7500, Subp. 61. Samples for manganese from Tailing Basin SD005, although they did not exceed Minnesota HRLs, averaged 37 µg/L, with a concentration as high as 49.3 µg/L. (Tailings Basin Permit Application, page 55 out of 125, Table 3 in Exhibit 2).

Data from other mining facilities also suggests that aluminum and manganese are potential chemicals of concern. Monitoring data from the LTVSMC tailings basin shows exceedances of aluminum, manganese, mercury and iron at the tailings basin and in downgradient wells in the surficial aquifer (PolyMet NorthMet DEIS,<sup>7</sup> p. 4.1-12, Table 4.1-6; p. 4.1-15, Table 4.1-8).

In addition to requesting monitoring for the above specific pollutants, WaterLegacy has concerns that there are too few sampling sites and too few sampling occasions and data points to validate conclusions regarding discharge concentrations. WaterLegacy disagrees with the position taken by the MPCA that three sampling data points are sufficient to document concentrations of identified parameters for the Keetac mine expansion permit. (Keetac Mine Application, p. 22).

WaterLegacy also has concerns about the frequency of sampling, particularly for mercury. In 2006, the year when a 5.2 ng/L discharge was noted at the SD003 mine outfall, there were only two mercury samples reported for the entire year -- the 5.2 ng/L level in September and a 1.4 ng/L level in December. (DMRs for MN0031879, page 7 out of 36). An average mercury concentration based on these data points would be misleading, yet the draft permit for the Keetac mine requires only 2 samples a year without specifying required sampling months. (Keetac Mine Permit, pp. 7, 8, 10, 11, 12,14).

Considering the massive size of the Keetac mine, plant and tailings basin facilities, WaterLegacy believes that ongoing compliance with water quality standards requires additional monitoring sites. In particular, WaterLegacy believes that additional sampling sites are needed to assess impacts of the expansions of the Keetac mine and tailings basin on waters of the Lake Superior Basin and to assess the potential for discharge from expanded mining activities and tailings basin discharge. Sampling should determine impacts on surface waters from expanded mining pits and waste rock stockpiles, impacts of leaks and seeps from the tailings basin on groundwater and surface water and the extent of inter-basin transfers and impacts, particularly those resulting from the proposed East Mine Pit expansion at the Keetac mine.

7. The permit review process should address additional concerns: mercury methylation, rating of mine expansion permits as "minor," and accessibility of public information.

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<sup>7</sup> PolyMet NorthMet Draft Environmental Impact Statement available at [http://www.dnr.state.mn.us/input/environmentalreview/polymet/eis\\_toc.html](http://www.dnr.state.mn.us/input/environmentalreview/polymet/eis_toc.html) (last visited August 16, 2011)

In addition to the threat that sulfate mass loading will result in degradation of Minnesota waters and that sulfate effluent concentrations will violate Minnesota's wild rice sulfate standard, WaterLegacy is concerned that sulfate discharge from the Keetac mining area and tailings basin will increase mercury methylation and mercury concentrations in fish tissue in waters that are already impaired for mercury. The Keetac FEIS noted that "Sulfate may sometimes also be a factor in the process of mercury methylation and thus can contribute in the bioavailability of methylmercury," (Keetac FEIS, p. 1-6). Specifically, increased sulfate concentrations could affect mercury methylation in Swan Lake and require mitigation measures. (Keetac FEIS, pp. 5-94, 5-125). WaterLegacy was unable to find any discussion of the potential for increased mercury methylation in any part of the Keetac Mine or Tailings Basin permit record. The extended and uncertain "compliance schedule" for sulfate makes this omission particularly troubling.

WaterLegacy would also request that review be provided regarding the process by which the MPCA rates "major" and "minor" permits for purposes of U.S. EPA review. The NPDES Permit Rating Worksheet for both the Keetac Mine and Tailings Basin permits concluded that these were "minor" permits, with 75 points each, whereas a "major" permit has a score equal or greater to 80. (NPDES Permit Rating Worksheet for MN0031879, attached as Exhibit 9; NPDES Permit Rating Worksheet for MN0055948, attached as Exhibit 10). If NPDES/SDS permits for more than a 50 percent expansion at huge mining facilities are rated as "minor" permits, the potential for EPA review of state delegated authority to control mining pollution is markedly diminished.

WaterLegacy's prior comments (August 5, 2011) requesting an extension of the time for public comment raised concerns about the adequacy of public process. Public notices did not provide electronic access to draft permits for the Keetac Mine and Tailings Basin and the changes in discharge resulting from the Keetac mine expansion were not described in either the draft permits or even Statement of Basis documents. WaterLegacy recommends that the Keetac permits be revised to describe the changes in facilities and discharges proposed; that Statement of Basis documents explain nondegradation analysis and other assessments used to establish or reject permit conditions and that documents from the permit record, such as permit applications and Discharge Monitoring Report summaries, be easily accessible on line for public review.

WaterLegacy looks forward to a public hearing at the MPCA Citizens' Board to address the above issues and other concerns that citizens may raise regarding the draft/proposed NPDES/SDS permits for the Keetac Mine and Keetac Tailings Basin. Please inform us when the public hearing is scheduled and feel free to contact me (651-646-8890) if you have any questions regarding these comments.

Sincerely,



Paula Goodman Maccabee

cc: Jeffrey Smith, MPCA Industrial Division Director (jeffrey.smith@state.mn.us)  
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**Exhibits**

- Exhibit 1 U.S. Steel, Application for Keetac Mine Area NPDES/SDS Permit MN0031879 (December 2009)
- Exhibit 2 U.S. Steel, Application for Keetac Tailings Basin Area NPDES/SDS Permit MN0055948 (December 2009)
- Exhibit 3 MPCA, Keetac Mine Area NPDES/SDS Permit MN0031879 Statement of Basis (2011)
- Exhibit 4 MPCA, Keetac Tailings Basin NPDES/SDS Permit MN0055948 Statement of Basis (2011)
- Exhibit 5 U.S. Steel Keetac Taconite Mine Expansion Project Final Environmental Impact Statement, Figure 5.8.1 (November 2010)
- Exhibit 6 *Water Management Study and Sulfate Reduction Strategy Study Six-Month Update NPDES / SDS Permits MN0031879 & MN0055948*, April 6, 2011
- Exhibit 7 U.S. EPA Memorandum, Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits (May 7, 2007)
- Exhibit 8 Discharge Monitoring Report Summaries for MN0031879 and MN0055948
- Exhibit 9 Permit Rating Worksheet Keetac Mine MN0031879
- Exhibit 10 Permit Rating Worksheet Tailings Basin MN0055948