

U.S. STEEL KEETAC TACONITE MINE EXPANSION PROJECT

Final Environmental Impact Statement



Prepared by

**Minnesota Department of
Natural Resources**



in cooperation with

U.S. Army Corps of Engineers



**Executive
Summary**

November 2010

Executive Summary

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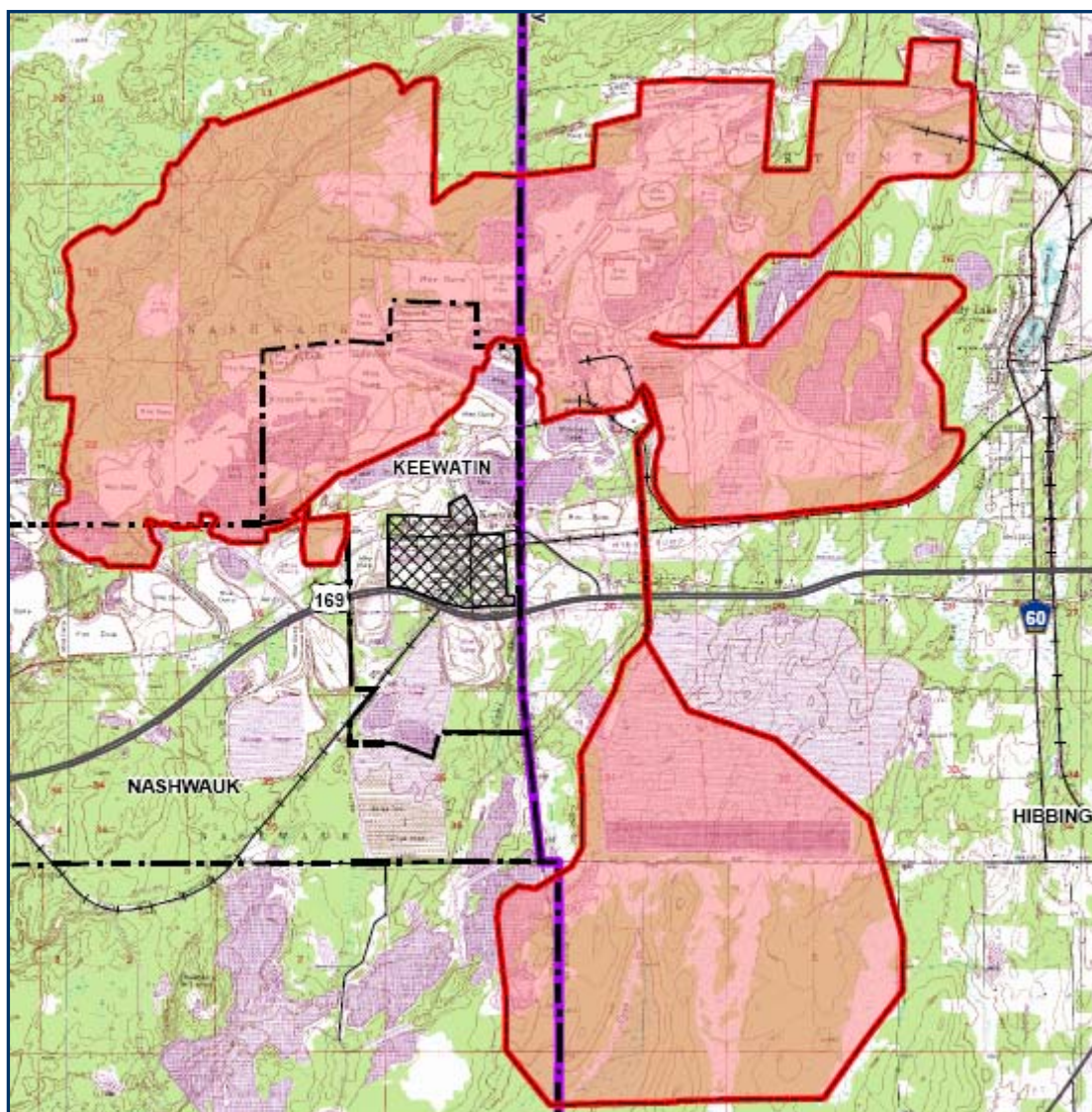
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Introduction

United States Steel Corporation (Project Proposer) proposes to restart an idled production line and expand contiguous sections of its open pit iron ore mine (Proposed Project) at its existing Keetac mine and processing facility near Keewatin, Minnesota (ES Figure 1). The estimated cost of the Proposed Project is over \$300 million. Mine planning and detailed design were prepared for a 25-year horizon. Due to the magnitude of the Proposed Project, an Environmental Impact Statement (EIS) is required under the National Environmental Policy Act (NEPA).

This Executive Summary (ES) describes the process of developing the Final Environmental Impact Statement (FEIS), including the alternatives to the Proposed Project that were considered based on evaluation criteria and environmental analysis. It provides an overview of the Proposed Project, its alternatives, potential effects on the environment, and mitigation measures.



ES Figure 1: Project Location Map

Keetac EIS Process

What is the need for this EIS?

There are a number of reasons, both discretionary and regulatory, that an EIS is being completed for this project. It typically depends on the type of project being proposed, its magnitude, and what state and federal regulations are required for environmental review and permitting specific to the proposed project.

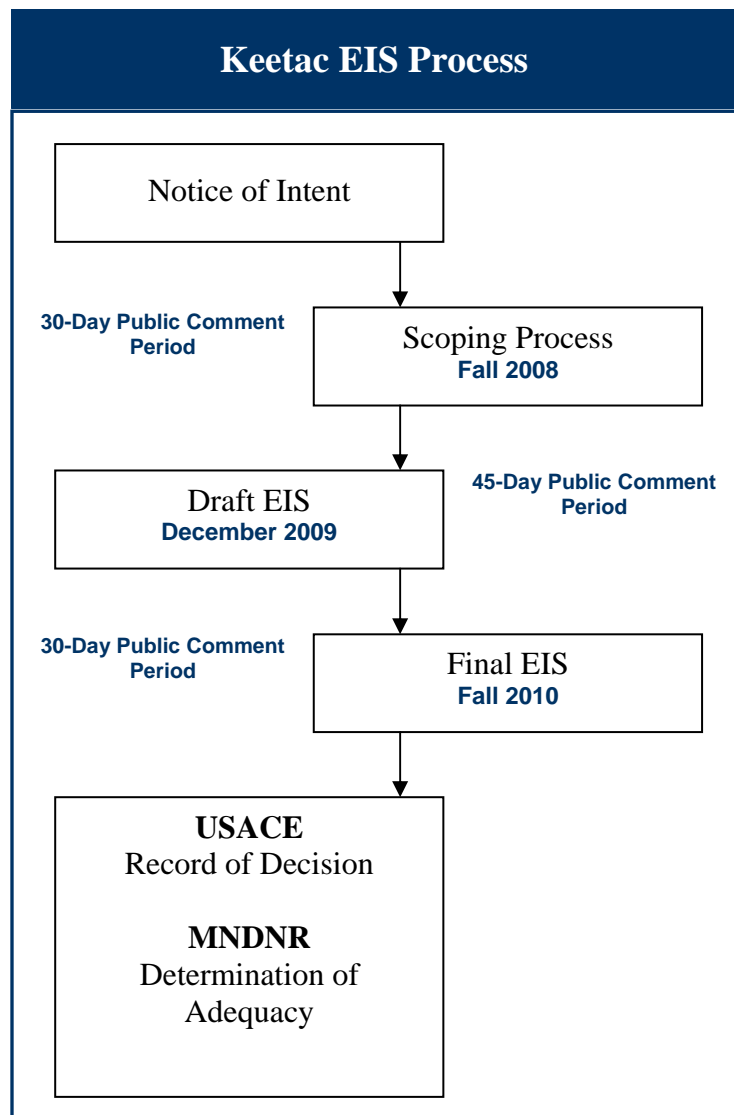
The purpose of an EIS is to:

- Evaluate a proposed project's potentially significant environmental and socioeconomic effects;
- Consider reasonable alternatives;
- Explore mitigation measures for reducing or avoiding adverse effects; and
- Provide information to the public and to project decision-makers.

The Proposed Project requires an EIS under NEPA due to the magnitude of wetland impacts. These wetland impacts are considered a federal action for which the United States Army Corps of Engineers (USACE) has jurisdiction through the Clean Water Act (CWA) Section 404 permitting process. The Project Proposer has also agreed to complete a discretionary EIS under the Minnesota Environmental Policy Act (MEPA). The Minnesota Department of Natural Resources (MNDNR) and USACE have jointly prepared this EIS to evaluate the Proposed Project in accordance with MEPA, Minnesota Statute §116D, and NEPA, 42 USC §§ 4321-4347.

Although not mandatory under MEPA, the Project Proposer and the MNDNR agreed that a discretionary EIS would be prepared for the Proposed Project in accordance with Minnesota Rules, part 4410.2000, subp. 3B. The EIS is required to meet the applicable requirements of Minnesota Rules, parts 4410.0200 to 4410.7800 that govern the Minnesota Environmental Review Program.

The FEIS is intended to provide information to units of government on the environmental, economic and social impacts of a project before approvals or necessary permits are issued and to identify measures necessary to avoid, reduce, or mitigate adverse environmental effects. An EIS is not a means to approve or deny a proposed project.



Keetac EIS Process (cont.)

What process was used to develop this FEIS?

In September 2008, as required by NEPA and MEPA, the MNDNR in partnership with the USACE prepared a Scoping Environmental Assessment Worksheet (SEAW) and a Draft Scoping Decision Document (DSDD) to provide information about the project, identify potentially significant environmental effects, and determine what issues and alternatives would be addressed in the EIS. Public notification and opportunities to receive information and public comment on the project began during the project scoping process.

A public meeting was held on October 1, 2008, at the Nashwauk-Keewatin High School in the City of Nashwauk to provide additional information on the project and allow for comments (verbal and written) and questions. The comments received during the scoping period were considered as part of the scoping process, prior to the agencies issuing the Final Scoping Decision Document (FSDD) on November 5, 2008. On November 17, 2008, the USACE published a Notice of Intent (NOI) to prepare an EIS in the Federal Register.

What is the Final Scoping Decision Document?

The FSDD satisfies the scoping requirements of MEPA and NEPA and serves as the blueprint for preparing the EIS for the project. Both the SEAW and FSDD are included in the FEIS as Appendix A and B, respectively. Responses to public comments received during the scoping process are included in Appendix C.

The MNDNR and USACE reviewed and considered the environmental issues identified and described in the SEAW, and then placed these issues into four categories in the FSDD according to significance and level of analysis required in the EIS. These categories are briefly described below along with a list of topics that are included in each category.

Not Addressed in EIS

These topics were considered not relevant or were so minor that they would not be addressed in this EIS:

- Water surface use
- Vehicle-related air emissions
- Compatibility with plans and land use management regulations

No Significant Impacts Expected

The MNDNR and USACE determined that the following topics are not expected to present potentially significant impacts, but would be addressed in the EIS using limited information beyond that provided in the SEAW, commensurate with the anticipated impacts. These topics include:

- | | |
|---|---|
| • Land Use | • Odors, Noise, and Dust |
| • Cover Types | • Amphibole Mineral Fibers |
| • Water-Related Land Use Management Districts | • Mineland Reclamation |
| • Erosion and Sedimentation | • Socioeconomics |
| • Surface Water Runoff/Water Quality | • Infrastructure and Public Service |
| • Geologic Hazards and Soil Conditions | • Visual Impacts |
| • Solid Wastes, Hazardous Wastes, and Storage Tanks | • Recreational Trails |
| • Traffic Impacts | • Federal Trust Responsibilities to Indian Tribes |
| | • Historic Properties |

Keetac EIS Process (cont.)

Potentially Significant Impacts

The MNDNR and USACE identified the following topics in the FSDD that may result in potentially significant impacts and would include a substantial amount of additional information in the EIS beyond that included in the SEAW.

- Wetlands and Water Resources
- Fisheries and Aquatic Resources
- Wildlife Resources
- Threatened and Endangered Species
- Wild Rice Resources (added after scoping)
- Water Appropriations
- Wastewater/Water Quality
- Stationary Source Air Emissions
- Human Health



A detailed analysis of Wild Rice Resources was included in this FEIS.

Potential Cumulative Effects

Potential cumulative effects were also outlined in the FSDD for inclusion in the EIS. Potential cumulative effects associated with combined environmental effects of the Proposed Project and of past, present and reasonably foreseeable future actions include:

- | | |
|---|---|
| • Loss of Wetlands | • Threatened and Endangered Species and Species of Concern |
| • Biomass | • Stream Flow and Lake Level Changes |
| • Climate Change | • Inter-basin Transfer of Water |
| • Aquatic Habitat and Fisheries | • Wastewater/Water Quality |
| • Wild Rice Resources (added after scoping) | • Class I Areas – Potential Impact to Air Quality |
| • Mercury Emissions, Deposition, and Bioaccumulation | • Ecosystem Acidification Resulting from Deposition of Air Pollutants |
| • Wildlife Habitat Loss/Fragmentation and Travel Corridor Obstruction | • Human Health |
| | • Ecological Health |

What is each agency's role in this EIS process?

The MNDNR serves as the lead state agency in preparing this joint state/federal EIS and has coordinated with other state agencies (i.e., Minnesota Pollution Control Agency [MPCA] and the Minnesota Department of Health [MDH]) and participated with the USACE at two public meetings. The MNDNR is responsible for determining EIS adequacy pursuant to MEPA.

The USACE is the lead federal agency in preparing this joint state/federal EIS. The USACE has determined that its action on the CWA Section 404 permit would be a major federal action that has the potential to significantly affect the quality of the human environment, requiring the preparation of a federal EIS pursuant to NEPA and its implementing regulations (40 CFR 1500-1508).

Keetac EIS Process (cont.)

The USACE has coordinated with other federal agencies including the U.S. Environmental Protection Agency (USEPA), U.S. Forest Service (USFS), and the U.S. Fish and Wildlife Service (USFWS). The USACE offered the seven federally-recognized Native

American bands in northern Minnesota an opportunity to consult with the USACE regarding the project. Bois Forte Band requested to become a cooperating agency for the preparation of the EIS. The USACE will determine whether the EIS satisfies NEPA and the environmental review requirements of Section 404 of the CWA, and will prepare the federal Record of Decision (ROD).

The MNDNR serves as the lead State agency, the USACE serves as the lead Federal agency, and the Bois Forte Band is a cooperating agency, in preparing the Keetac FEIS.



What is the public's role in this EIS process?

In addition to the public meeting and comment period for the DSDD, the Draft Environmental Impact Statement (DEIS) was published and circulated in accordance with the rules and requirements of Minnesota Rules (EQB Rules) 4410, MEPA, and NEPA requirements. Citizens, organizations, tribal entities, and government entities were given a 45-day comment period in which to submit written comments on the Keetac DEIS. Additionally, a public meeting was held on Monday, January 11, 2010 in Hibbing, Minnesota to present information on the DEIS, answer questions, and provide a forum for oral and written public comments. Comments received were taken into account in assessing potential project impacts and potential mitigation for the FEIS. Responses to comments received were prepared and included in the FEIS. The USACE and MNDNR will receive comments on the adequacy of the FEIS during a 30-day public comment period, after which, the MNDNR will make a determination of adequacy, and the USACE will issue a ROD.

Description of the Proposed Project

What is the purpose of the Proposed Project?

The purpose of the Proposed Project is to increase the rate and total quantity of taconite pellet production at the Keetac facility using existing infrastructure. The need of the Proposed Project is to satisfy global demand for steel. The Project Proposer would achieve the project purpose by expanding an existing mine at Keetac and refurbishing and operating the currently idle Phase I taconite processing line to increase taconite pellet production by 3.6 MSTY to a total output of 9.6 MSTY. The Proposed Project need would be accomplished by shipping taconite pellets to steel mills, which would be used to produce steel to meet the domestic and worldwide demands.

The purpose of the Proposed Project is to increase the rate and total quantity of taconite pellet production at the Keetac facility in order to satisfy global demand for steel. This would be achieved through the expansion of an existing mine pit and re-starting an existing idle indurating line.

It was determined early that an alternative mine site would not be practicable for meeting the purpose of the Proposed Project. While an alternative iron ore mine pit could facilitate the mining of taconite, it would not take advantage of the existing infrastructure at the Keetac site. As a result, new infrastructure such as the processing plant, roads, power lines, tailing basin dam, etc., would need to be put in place at an alternative location. The construction of new infrastructure could greatly decrease the profitability of the mine. Furthermore, constructing a mine at an alternative site would likely not be less environmentally damaging than the Proposed Project.

Who is the Project Proposer?

United States Steel Corporation headquartered in Pittsburgh, Pennsylvania, is an integrated steel producer, with a raw steelmaking capability of 31.7 MSTY. Producing steel for over 100 years, United States Steel has production operations in the United States, Canada, and Central Europe. The company manufactures a wide range of steel sheet and tubular products for the automotive, appliance, container, industrial machinery, construction, and oil and gas industries. United States Steel is also involved in transportation services (railroad and barge operations) and real estate.



U.S. Steel operates two iron ore mines in Minnesota.

The company operates two iron mines through its Minnesota Ore Operations on the Mesabi Iron Range. They are Minntac in Mt. Iron and Keetac in Keewatin. Minntac and Keetac both mine taconite and concentrate it into taconite pellets. More information about United States Steel is available on their website: www.ussteel.com.

Description of the Proposed Project (cont.)

What is the Proposed Project?

Keetac is located on the Mesabi Iron Range, near Keewatin, Minnesota. The Mesabi Iron Range is a major, well-known geologic feature oriented roughly northeast to southwest across more than 120 miles of northeastern Minnesota from near Babbitt to near Grand Rapids. The Iron Range has been the largest source of iron ore produced in Minnesota since the 19th century, making Minnesota a predominant source of iron ore in the United States.

Taconite mining and taconite pellet production have been ongoing at Keetac site since 1967. Keetac began production using rotary hearth technology; this technology was soon abandoned for grate kiln technology. The original Phase I grate kiln pellet line began operation in 1969. In 1977, the Phase II expansion added a second grate kiln pellet line. The Phase I facility was idled in December 1980. Currently, there is one operating pellet producing line (Phase II) with an annual production rate of approximately 6.0 MSTY.

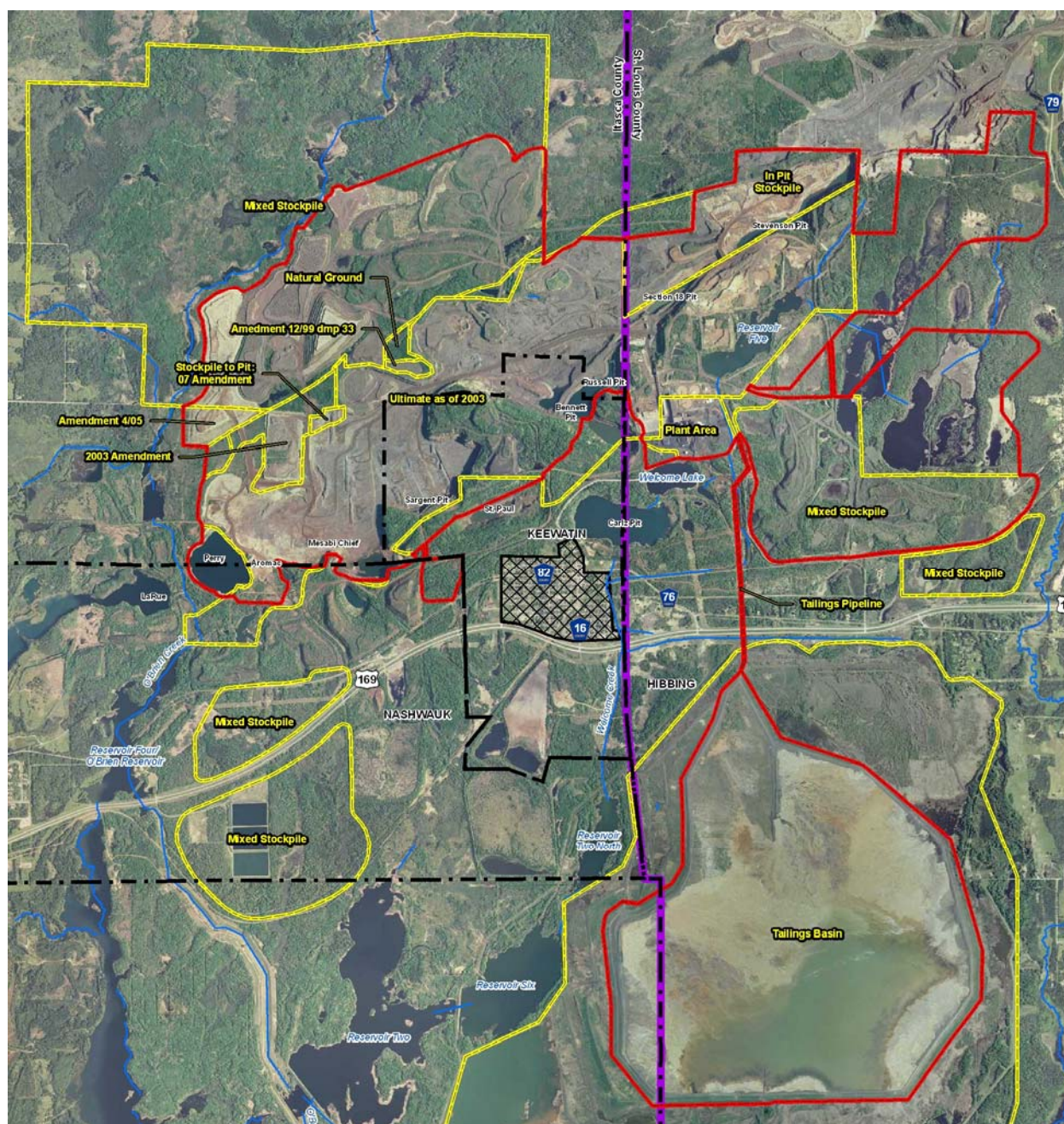


Taconite pellet production has been ongoing at Keetac since 1967. Currently the annual production rate of taconite pellets is 6.0 MSTY.

The Proposed Project would increase the taconite pellet production capacity by expanding the mine pit, adding stockpile areas, upgrading the concentrating and agglomerating processes, and restarting the Phase I line. The Proposed Project would increase Keetac's taconite pellet production output by 3.6 MSTY to a total annual output of 9.6 MSTY until about the year 2036.

Keetac's current footprint and the facility limit, established in the MNDNR Permit to mine, are shown on ES Figure 2, and include mining pit limits, waste rock and surface stockpiles, and tailings basin. The Keetac facility is an active mine that can continue taconite pellet production at 6.0 MSTY until about the year 2021 under existing permits.

Description of the Proposed Project (cont.)



ES Figure 2: Comparison of Current and Proposed Keetac Footprint and Current MNDNR Permit to Mine Facilities Limit

With an estimated cost in excess of \$300 million, the Proposed Project includes installation of energy-efficient technologies and new emission controls at the plant, expansion of mining and stockpiling, upgraded concentrating and agglomerating processes, a vertical expansion of the tailings basin, and construction of a biomass processing facility. The Proposed Project would increase the mine, waste rock and surface stockpiles, and tailings basin by approximately 2,075 acres. Existing rock crushing facilities and existing infrastructure (public roads, railroads) and utilities (water, electric, gas and sewer) are adequate to accommodate both existing operations and the Proposed Project. A spatial overview of the current and proposed Keetac footprint, including Proposed Project plans for the mine expansion, stockpile expansions, and tailings basin are shown on ES Figure 3.

Description of the Proposed Project (cont.)

The indurating furnace equipment from the idled Phase I line would be refurbished and fueled by natural gas and biomass with coal and fuel oil used as backup fuels. Upgrades to the concentrating, and agglomerating processes would be required to supply additional material to the refurbished and restarted indurating furnace

equipment. Additional process water would be required to increase production of the facility. The height of the current tailings basin would increase by approximately 80 feet to accommodate the additional tailings with a potential slight change in the horizontal footprint.

The potential environmental and socioeconomic effects of the Proposed Project are those that would occur if the mine expands beyond the No Action Alternative. This would increase taconite pellet production by 3.6 MSTY for a total annual output of approximately 9.6 MSTY.

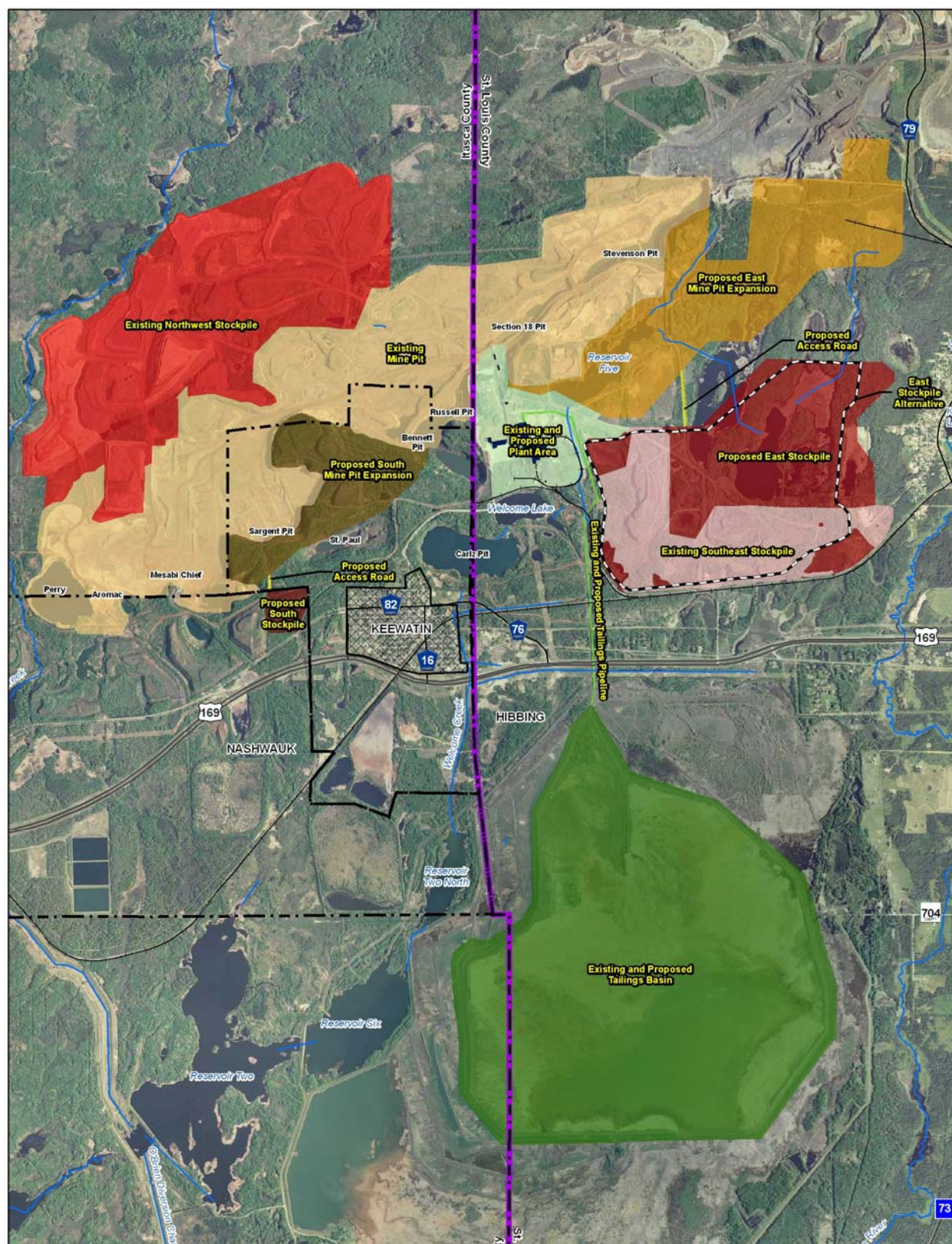
The Project Proposer proposes to restart an idled production line and expand contiguous sections of the open pit taconite mine at its existing Keetac mine and processing facility. The Proposed Project would change the operation of the Keetac facility under new permits, or amendments to existing permits that would increase water discharges or air emissions and/or disturb additional land outside the Permit to Mine facility limit. The potential environmental and socioeconomic effects of the Proposed Project are those that would occur if the mine expands operations beyond the No Action Alternative (described below).

The proposed Keetac footprint illustrates the extent of the Proposed Project area, where potential environmental impacts would occur. A different sequence of mine development would occur under the No Action Alternative, compared to the Proposed Project. The Proposed Project would not start after the completion of the No Action Alternative, rather the proposed mine pit expansion would occur simultaneously in areas identified in both the No Action and Proposed Action Alternatives. Mine pit expansion would occur in these areas in order to meet the purpose and need of the Proposed Project (i.e., increased production to 9.6 MSTY).



Taconite pellet production would be increased by 3.6 MSTY.

Description of the Proposed Project (cont.)



ES Figure 3: Current and Proposed Keetac Footprint Areas

Description of the Proposed Project (cont.)

A 25-year mine plan for the Proposed Project is evaluated in this EIS. Actions beyond 25 years or outside the Proposed Project boundary may require additional environmental review. Likewise, mine permits are being requested for a 25-year mining program. Air and water-related permits are issued for shorter timeframes, typically with renewal at specified intervals (i.e., Title V air permit renews every five years) and permit amendments for actions that do not create an increased discharge or emission.

Open pit methods (as currently used at Keetac) would be used for the Proposed Project mining activities. Two main areas of the existing mine pit would be expanded. The first of these two expansion areas (proposed south mine pit expansion) is located west of the plant, expanding the existing Bennett/Russell Pit south. The second area of pit expansion (proposed east mine pit expansion) would include dewatering Reservoir Five to expand the Section 18 Pit east. In addition, the largest portion of the expansion would occur east of the Stevenson Pit continuing north, adjacent to and abutting the Hibbing Taconite (Hibtac) mine. The proposed south mine pit expansion and proposed east mine pit expansion are shown on ES Figure 3.

Expansion of the mine pit requires a Permit to Mine Amendment Application to the MNDNR. The Project Proposer submitted a preliminary draft Permit to Mine Application in July 2009. The Project Proposer currently plans to begin stripping and mining activities in both the proposed south and east mine pit expansions during the initial 5-year period of the new mine plan (2012 to 2017).

The Proposed Project is defined as the incremental change beyond what is allowed under the No Action Alternative and existing permits. Key features of the Proposed Project include:

- *Starting the new indurating line and upgrading concentrating and agglomeration processes*
- *Refurbishing the Phase I grate kiln furnace and changing the mixture of fuels used at Keetac to include biomass*
- *Expanding mine pit and stockpile boundaries*

Description of the No Action Alternative

Keetac is an operating taconite mine and taconite pellet processing facility. The No Action Alternative is defined as the continued operation of the mine and processing facility which would produce approximately 6.0 MSTY of taconite pellets. The No Action Alternative describes potential environmental and socioeconomic effects that would occur if the Proposed Project is not developed and the mine continues to operate. Mining at Keetac is anticipated to continue for approximately 12 years (until 2021) without the Proposed Project or new (amended) permits.

The No Action Alternative is to continue operating the facility under its current capacity and permits.



Mining at Keetac is anticipated to continue for approximately 12 years (until 2021) without the Proposed Project or new permits.

The No Action Alternative includes ongoing actions (i.e., mining, taconite processing, and transport) at Keetac that would occur under the existing Permit to Mine, existing wetland permits, actions occurring under permits that undergo renewal at specified intervals, and permit amendments for actions that do not create an increased discharge or emission (i.e., water appropriations permit amendment to maintain same pumping rate from a new source within current Permit to Mine facility limit).

The geographic boundary of the No Action Alternative encompasses areas within the current facility limit of the Permit to Mine that have been or would be developed without the need for new or amended permits.

Alternatives Considered and Evaluated in the EIS

Was an alternative site evaluated?

Minnesota Rules Chapter 4410 requires an evaluation of site location alternatives. Minnesota Rules Chapter 4410 allows the RGU to exclude alternative sites if other sites do not have significant environmental benefit compared to the project as proposed, or if other sites do not meet the underlying need and purpose of the Proposed Project.

The FSDD states that, “the MNDNR and USACE do not propose to evaluate alternative mine pit sites for the Proposed Project. An alternative mine site would not meet the underlying need or purpose of the Proposed Project. The mineralization of desired elements [presence of iron ore] within a geologic deposit dictates the location of the mine pit.”



Taconite mine pits refill with groundwater at mine closure.

Geologic deposits in the Iron Range have the desired characteristics for the Project Proposer to operate a mine site. Outward expansion of the mine is determined by the location and formation of the ore body. The Proposed Project would utilize the ore body for mining and taconite production by expanding the existing mine pit further into the ore body.

While an alternative iron ore mine pit could facilitate the mining of taconite, it would not take advantage of the existing infrastructure at the Keetac site. As a result, new infrastructure which may include the processing plant, roads, power lines, tailing basin dam, etc., would need to be put in place at an alternative location. The increased impacts of constructing this infrastructure would not provide an environmental benefit when compared to the Proposed Project. The complement of existing usable infrastructure and available iron ore makes the Proposed Project practicable.

What alternative technologies were analyzed?

Best Available Control Technology (BACT)

The FSDD states that the EIS will evaluate air pollution control methods and/or technologies on sources of air pollutants, and Best Available Control Technology (BACT) where applicable. Emission units associated with the Proposed Project require a BACT analysis for SO₂, PM, PM₁₀, and PM_{2.5}. BACT analysis includes the following steps, which are consistent with the process utilized to identify, evaluate, and select alternatives during the environmental review process:

- Step 1 – Identify all control technologies
- Step 2 – Eliminate technically infeasible options
- Step 3 – Rank remaining control technologies by control effectiveness
- Step 4 – Evaluate the most effective control technologies and document results
- Step 5 – Select BACT

Alternatives Considered and Evaluated in the EIS (cont.)

The BACT analysis documents the process utilized to assess air pollution control technologies for the Proposed Project. Based on the findings of this analysis, proposed air pollution control technologies are selected.

Mercury Emissions

The FSDD stated that the EIS will identify all sources of mercury emissions, review mercury control technology for the Proposed Project, and summarize other potential mercury control technologies.

Based on the review of the available mercury control technologies, the Project Proposer has chosen to install activated carbon injection to control mercury emissions for the new line.

As part of this EIS analysis, mercury emissions and controls were evaluated. These evaluations reviewed the technical feasibility of possible mercury emission controls for the Proposed Project. The Project Proposer used a BACT-like analysis to evaluate the prospective mercury emissions controls.

The majority of research and published information of mercury control technologies focuses on coal-fired utility boilers. Research for mercury control technologies at taconite processing plants is ongoing. The mercury control technologies are classified into three categories of availability: commercially available, emerging technology, and in the research and development stages. These technologies were evaluated on their technical feasibility to the Proposed Project, their control effectiveness, and other impacts that may occur.

Based on the review of the available mercury control technologies, the Project Proposer has chosen to install activated carbon injection to control mercury emissions for the new line.

Greenhouse Gas Emissions

The FSDD states that the EIS will compare greenhouse gas (GHG) emissions from project alternatives and discuss the conclusions from the analysis. New and evolving environmental guidance and regulations on the state and federal levels recognize the potential consequences of GHG emissions on climate change. To address that issue, a methodology to analyze the cumulative effects of climate change was tailored for the Proposed Project by the MNDNR Briefing Sheet (MNDNR, 2008C).

To address the cumulative effects of climate change, Project Alternatives analyzed by the Project Proposer are summarized as follows:

- *Develop a carbon footprint for the Proposed Project with and without proposed GHG reduction activities.*
- *Develop fuel mix alternatives.*

Alternatives Considered and Evaluated in the EIS (cont.)

What modified designs or layouts were evaluated?

Minnesota Rules, part 4410.2300 requires an evaluation of modified designs or layouts of the facility. The FSDD states that the following major components of the Keetac facility will be evaluated in the EIS:

- Plant and Pit Location on Site
- Tailings Thickener and Tailings Basin Locations
- Stockpile Location and Design, including Haul Roads
- Recreational Trails

The Proposed Project is an expansion of an existing facility with the major components, as listed above, included as part of current operations. A modified design or layout evaluating the inter-relationship of these components would require the relocation of two or more of the components listed above. This would be a major undertaking and require construction of new facilities, which would likely not have significant environmental benefit compared to the Proposed Project.

Plant Site

The FSDD states that, “the MNDNR and USACE do not propose to evaluate alternative mine plant sites for this Proposed Project. An alternative processing plant site would not have significant environmental benefit over the Proposed Project.

The new processing line would be located on the existing Phase I plant footprint. A new plant location would alter land cover types and terrestrial habitats. Moreover, it would not meet the underlying need and purpose of the Proposed Project which includes reusing existing plant infrastructure” already in place for use by the Proposed Project.

The MNDNR and USACE determined that an alternative plant site, pit location, tailings thickener site, and tailings basin site would not have a significant environmental benefit over the Proposed Project, and therefore did not further evaluate these alternatives in the EIS.

Pit Location

As stated in the FSDD, “the MNDNR and USACE do not propose to evaluate alternative mine pit sites for the Proposed Project. An alternative mine site would not meet the underlying need or purpose of the Proposed Project.”

Geologic deposits in the Iron Range have the desired characteristics for the Project Proposer to operate a mine site. Outward expansion of the mine is determined by the location and formation of the ore body. The Proposed Project would utilize the ore body for mining and taconite production by expanding the existing mine pit further into the ore body.

While an alternative iron ore mine pit could facilitate the mining of taconite, it would not take advantage of the existing infrastructure at the Keetac site. As a result, new infrastructure which may include the processing plant, roads, power lines, tailing basin dam, etc., would need to be put in place at an alternative location. The increased impacts of constructing this infrastructure would not provide an environmental benefit when compared to the Proposed Project. The complement of existing usable infrastructure and available iron ore makes the Proposed Project practicable.

Tailing Thickener

The FSDD also states, “the MNDNR and USACE do not propose to evaluate tailing thickener sites for the Proposed Project. An alternative tailing thickener location would not have significant environmental

Alternatives Considered and Evaluated in the EIS (cont.)

benefits over the proposed location because the proposed tailings thickener locations are adjacent to the existing plant on previously disturbed ground. No other locations have significant environmental benefits over the proposed location.”

Tailings Basin

The FSDD stated that the MNDNR and USACE do not propose to evaluate alternative tailings basin sites for the Proposed Project. The Proposed Project intends to maintain the existing area of the tailings basin and build the basin vertically as tailings are produced, which would slightly expand the footprint of the active tailings basin. Without mitigation, a taller tailings basin may generate more fugitive dust, because of greater wind erosion across the surface of the basin. However, these possible adverse effects are offset by the land disturbance a new tailings basin would create, and can feasibly be mitigated. A new tailings basin location would therefore have no environmental benefits compared to the existing tailings basin.

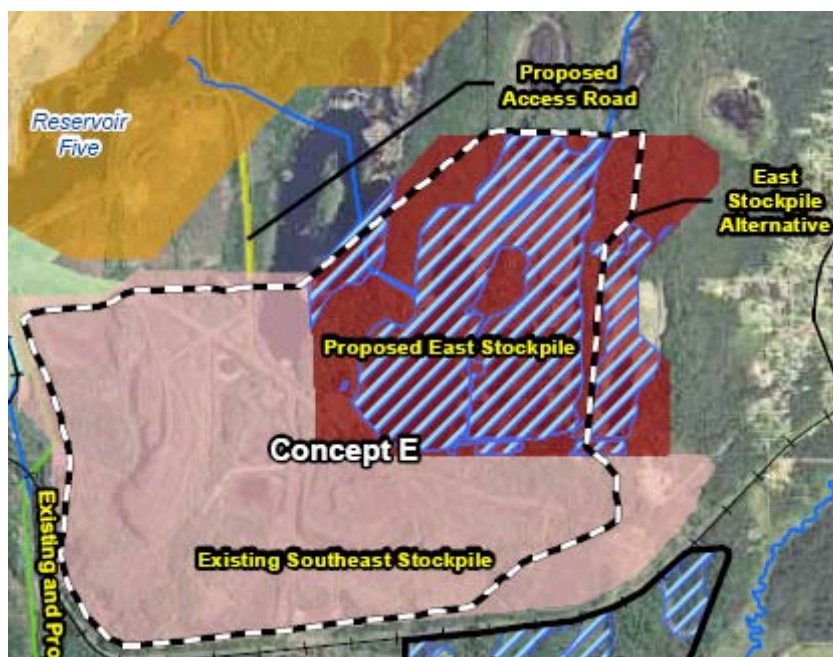
Stockpile Design

The MNDNR and USACE do not propose to evaluate an alternative stockpile design. The proposed design would adhere to the relevant rules (Minnesota Rules Chapter 6130) for the construction of a stockpile for mining activities that are prescriptive in nature, defining maximum slope/bench configurations and vegetation requirements.

Stockpiles

The location and positioning of stockpiles for the Proposed Project is important because of impacts to wetlands. The FSDD states:

Positioning of stockpiles is crucial to minimizing impacts to wetlands and potentially other natural resources. The EIS will evaluate the potential environmental effects of the proposed stockpile locations as well as alternative stockpile locations. In addition, the EIS will evaluate in-pit stockpile opportunities; in-pit stockpiles can help create future shallow-water habitat when pits are abandoned and reclaimed. This stockpile location analysis will consider not only potential wetland impacts, but also air emissions from haul truck and wind erosion, haul road location, lease fee-holder requirements, in-pit stockpile opportunities and other operational and environmental issues.



An alternative east stockpile configuration was identified.

Alternatives Considered and Evaluated in the EIS (cont.)

A detailed stockpile location analysis was completed for this FEIS, which evaluated the two proposed stockpile locations (south and east), five alternative stockpile location concepts, and in-pit stockpile opportunities. This analysis along with supporting documentation is presented in Appendix E of the FEIS, and is summarized below.

The stockpile location analysis used a number of criteria to evaluate potential alternative stockpile locations. These criteria included the following:

- Wetland Acreage and Condition
- Upland Acreage
- Natural Habitat
- Threatened and Endangered Species
- Air Quality
- Location Relative to Iron Formation
- Surface Ownership, Control, and Mineral Rights Ownership
- Quantity and Duration of Stockpile Activity
- Haul Route Configurations and Haul Truck Operation
- Community Factors
- Feasibility and Economic Factors
- Safety Factors



View of proposed east stockpile area. These wetlands would be impacted.

The Project Proposer estimated and MNDNR mining engineers confirmed that with maximization of in-pit stockpiles and existing out of pit stockpile options, an additional 118 million bank cubic yards (Mbcy) of overburden from the proposed mine pit expansion would need to be stockpiled. Overburden would need to be removed over 21.5 years to continue uninterrupted mining of taconite. Using the stockpile capacity needs as a baseline to determine stockpile area size, several stockpile concepts were evaluated using the criteria listed above. The results of the analysis concluded that there is not a practicable alternative location to the proposed south stockpile. However, a practicable alternative to the proposed east stockpile does exist and was included as an alternative within the FEIS.

Was scale or magnitude evaluated as an alternative?

The FSDD states, “the MNDNR and USACE do not propose to evaluate proposed project scale or magnitude alternatives. The infrastructure requirements to mine and process ore are such that alternative scale or magnitude changes would not meet the underlying need for or purpose of the Proposed Project.”

Potential Environmental Effects and Mitigation Measures

The purpose of the environmental review process is to determine what potential environmental effects a proposed project could have on natural resources and the human environment. The MNDNR and USACE evaluated these potential environmental effects for the Proposed Project and its alternatives. The agencies' preferred alternative and the environmentally preferred alternative were identified. Criteria used for the EIS evaluation resulted in the identification of several different levels of potential environmental effects: no effect; less than significant effect; and significant effect. Where appropriate, these effects were also characterized as adverse or beneficial.

Evaluation and analysis completed for the FEIS resulted in a number of resources identified as having no potential effect from the Proposed Project or its alternatives. The effects were either associated specifically with the Proposed Project or were evaluated in the FEIS for potential cumulative effects (CE). These included:

- Water levels
- Fisheries and aquatic resources in Swan Lake, Welcome Lake, Hay Lake, West Swan River, and Reservoirs 2, 2N, 4, and 6
- Threatened and endangered animal species: Bald eagle and Canada lynx
- Odors
- Recreational Trails: Lawron Trail and Mesabi Trail
- Infrastructure and public services
- Dam safety
- Groundwater resources
- Inter-basin transfer of water
- Visual Impacts
- Solid waste, hazardous waste, and storage tanks
- Amphibole mineral fibers
- Human Health
- Traffic
- CE Biomass
- CE Climate change
- CE Water levels
- CE Fisheries and aquatic resources
- CE Threatened and endangered animals: Bald eagle and Canada lynx
- CE Class I Area impacts to air quality
- CE Ecosystem acidification

ES Table 1 summarizes potential environmental effects with associated mitigation and monitoring measures for the Proposed Project. The table indicates if the mitigation or monitoring measure has been adopted as part of the Proposed Project or has been identified as a measure that could be implemented. In some instances, possible mitigating measures are identified which could be implemented should monitoring indicate that an effect is occurring. Additional information related to mitigation for the Proposed Project is provided in the corresponding chapters of this FEIS for each topic area.

During analysis for the FEIS, the east stockpile alternative was developed. In most cases, the east stockpile alternative did not change the potential environmental effects compared to the Proposed Project. However, in some instances, the east stockpile alternative changed the magnitude of the potential environmental effects. Wetlands are the resource most affected by the east stockpile alternative by preventing the impact to approximately 100 acres of wetlands.

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ES TABLE 1: SUMMARY OF PROPOSED PROJECT POTENTIAL IMPACTS, MITIGATION AND MONITORING MEASURES			
Major Environmental Resource	Potential Environmental Impact	Incorporated Into Proposed Project	Additional Identified Measures ¹
Wildlife Resources	<ul style="list-style-type: none"> Loss of wildlife habitat in Proposed Project area and corridor obstruction Loss of 30 state-listed T&E plants Likely to affect, but not adversely affect gray wolf 41 acres of farmland soils 761 acres of wetlands 560 acres of forest 	<ul style="list-style-type: none"> Revegetation through Mineland Reclamation Minnesota Rules Chapter 6130 On-site wetland creation in inactive tailings basin Maximize in-pit stockpiling 	<ul style="list-style-type: none"> Transplantation of endangered plant species Land acquisition and preservation of endangered plant species sites Conservation research funding Ensure that Corridor #4 which is outside of the Proposed Project footprint remains open Additional in-pit stockpiling, if feasible Consider monetary contributions from proposed projects that could be used by the MNDNR or the USFS to manage or create forest land
Water Levels, Fisheries and Aquatic Resources	Potential effect to Hay Creek due to bankfull flows, but no significant effect from the Proposed Project anticipated to fisheries and aquatic resources or other water bodies	<ul style="list-style-type: none"> Water quality monitoring required through NPDES/SDS permit Monitoring of dewatering pumping flow rates 	<ul style="list-style-type: none"> Monitoring of water levels in Swan Lake If necessary, modification to outlet weir to control Swan Lake water levels and flow to Swan River If dewatering rates differ from projected, additional stream and lake monitoring and/or biological monitoring of habitat could occur Conversion of mine pits to public fishing resources after project completion
Wetlands	Approximately 761 acres of wetland impacts.	<ul style="list-style-type: none"> On-site wetland creation within inactive tailings basin area Off-site mitigation in Aitkin County Monitor wetlands adjacent to mine features Control erosion from stockpiles 	
Water Quality	<ul style="list-style-type: none"> 10 mg/L modeled increase from existing concentration in Swan Lake sulfate concentration level (cumulative effect) 2.6 mg/L modeled increase from the No Action Alternative concentration in Swan Lake sulfate concentration level (cumulative effect) 	<ul style="list-style-type: none"> Installation of a sulfate removal treatment system on the existing wet scrubber Permit limits in NPDES/SDS permit Water quality monitoring required through NPDES/SDS permit Storm Water Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs) Revegetation through Mineland Reclamation Minnesota Rules Chapter 6130 Collection and re-use of stormwater Spill Prevention Control and Countermeasure (SPCC) Plan 	<ul style="list-style-type: none"> Installation of additional sulfate removal technology Water re-use Alternative water discharge location

ES TABLE 1: SUMMARY OF PROPOSED PROJECT POTENTIAL IMPACTS, MITIGATION AND MONITORING MEASURES			
Major Environmental Resource	Potential Environmental Impact	Incorporated Into Proposed Project	Additional Identified Measures ¹
Air	<ul style="list-style-type: none"> Fugitive dust emissions Major stationary sources of air emissions Air quality impacts to Class I areas Air quality impacts to Class II areas Mercury bioaccumulation in fish 	<ul style="list-style-type: none"> Testing and monitoring to confirm proper operation and compliance with emission limits Continued implementation of fugitive dust control plan Installation of best available air pollution control technologies Using a mix of biomass and natural gas fuel to minimize Class I impacts MPCA Implementation of the Mercury Air Emission Reductions Schedule of Compliance Installation of activated carbon injection system on new line Technology testing, installation of controls, and emission reductions at Minntac Installation of dry scrubber air pollution control for SO₂ removal Installation of a sulfate removal treatment system on the existing wet scrubber Permit limits in NPDES/SDS permit Low NOx burner 	<ul style="list-style-type: none"> Install additional emission reduction/control equipment Enforceable reductions in emissions from the Proposed Project or nearby sources Secure and retire tradable emission allowances On-site green energy generation Implementation of Regional Haze State Implementation Plan
Wild Rice	Unknown, however the changes in water levels and sulfate concentrations resulting from Proposed Project appear to be within the observed range of variation for lakes containing wild rice	<ul style="list-style-type: none"> Installation of dry scrubber air pollution control for SO₂ removal Installation of a sulfate removal treatment system on the existing wet scrubber Permit limits in NPDES/SDS permit Water quality monitoring required through NPDES/SDS permit 	<ul style="list-style-type: none"> Conduct follow-up field surveys to monitor the extent of wild rice and track changes in density Monitor water levels in affected water bodies during critical life cycle stages of wild rice Monitor sulfate concentrations in affected water bodies Installation of additional sulfate removal technologies Alternate discharge location and/or water re-use
Noise and Dust	<ul style="list-style-type: none"> Noise during stockpile operations Potential for tailings basin and stockpile dust 	<ul style="list-style-type: none"> Setbacks and quieting dozer equipment Fugitive Dust Control Plan 	<ul style="list-style-type: none"> Noise monitoring
Historic Properties	Destruction of Bennett No. 2 Shaft Mine	Phase III data recovery	
Trails and Recreation	<ul style="list-style-type: none"> Current alignment for Hibbing South Spur Trail eliminated 440 acres of land taken out of public access 	Re-route trail segment	

¹ One or more measures that could be undertaken by the Project Proposer as a permit condition, or if an action of the Proposed Project identifies an impact. Monitoring could be used to determine if impacts are occurring and to identify if and/or a type of mitigation which could be further implemented.

Steps in the Proposed Project Process

What is the estimated project schedule?

The Project Proposer has been working with the MNDNR and USACE to move the Proposed Project forward. An estimated timeline until full operation was created based on the steps in the regulatory processes including environmental review and permitting, as well as an anticipated construction schedule.

The Proposed Project timeline is dependent on numerous factors including completion of the EIS process, acquiring all necessary permits (federal, state and local), and the construction of the Proposed Project. The following timeline is presented to provide a general understanding of the anticipated project schedule, which is subject to change.

ES TABLE 2: Estimated Project Schedule

Complete the EIS, obtain permits and acquire project financing	2010 – 2011
Start construction Year 1 – Year 2	2011 – 2013
Complete construction and begin water management plan for the Proposed Project including dewatering of mine pits	2013 – 2015
Begin full operation of Proposed Project	2013 – 2015

What permits and approvals would be required prior to construction and operation of the Project?

ES Table 3 provides a list of the possible permits and approvals that have been identified for the Proposed Project. Additional details are included in Chapter 2.0 of the FEIS.

Steps in the Proposed Project Process (cont.)

ES TABLE 3: Permits and Approvals

Unit of Government	Type of Application	Status
U.S. Army Corps of Engineers	Clean Water Act Section 404 Wetlands Permit	To be applied for
	Section 7 Endangered Species Act Consultation with U.S. Fish & Wildlife Service	To be completed by USACE
	National Historic Preservation Act Section 106 Determination for Cultural Resources	To be completed by USACE
U.S. Fish and Wildlife Service	Federal Endangered Species Permits	To be applied for
Minnesota Department of Natural Resources	Permit to Mine	To be amended, substantial change
	Water Appropriation Permit	To be amended
	Dam Safety Permit	To be amended
	Public Waters Permit	To be amended
	Wetland Conservation Act	To be amended
	Burning Permit (land clearing)	To be applied for, if needed
	Takings Permit (for Endangered or Threatened Species)	To be applied for
Minnesota Pollution Control Agency	Air Emissions Permit (Part 70 Operating Permit and PSD Construction Permit) – Major Permit Modification	To be applied for
	Clean Water Act Section 401 Water Quality Certification	To be applied for in conjunction with USACE Section 404 Permit Application
	NPDES/SDS Permit for Industrial Wastewater Discharge and Storm Water Discharge for Industrial Activity (Permit No. MN0031879) – Plant and Mine	Amendment in progress
	NPDES/SDS Permit for Industrial Wastewater Discharge and Storm Water Discharge for Industrial Activity (Permit No. MN0055948) – Tailings Basin	Amendment in progress
	Waste Tire Storage Permit	To be amended, if needed
	Storage Tank Permits (fuel tanks)	To be amended, if needed
	Hazardous Waste Generator License	To be amended
Minnesota Department of Health	Radioactive Material Registration (low-level radioactive materials in measuring instruments)	To be amended
City of Hibbing	Building Permit	To be applied for, if needed
	Shoreland Alteration Permit for construction in a shoreland management district	To be applied for, if needed
	Zoning Variance or CUP	To be applied for, if needed
City of Nashwauk	Zoning (Land Use) Permit	To be applied for, if needed

Organization and Content of the Final EIS

This FEIS analyzes potential impacts from the Proposed Project for various topics as identified in the FSDD. Volume I of the FEIS is broken into the following components:

- **Chapter 1 – Introduction** provides a project overview, describes the purpose and need for the EIS and Proposed Project, and lists pollutants of interest that were analyzed in the FEIS.
- **Chapter 2 – Government Approvals** lists and describes the various permits and agencies that would review the project prior to construction and operation.
- **Chapter 3 – Alternatives and Proposed Actions** provides detailed information on the Proposed Project and the alternatives evaluated in the FEIS. It also describes the No Action Alternative, east stockpile alternative and current conditions of the existing Keetac facility.
- **Chapter 4 – Affected Environment and Environmental Consequences** describes the potentially affected environment in which the No Action Alternative, Proposed Project, and East Stockpile Alternative would occur. Environmental consequences of the Proposed Project and alternatives are analyzed and a discussion of potential impacts is presented for each topic area, considering short-term, long-term, beneficial, and adverse effects, and the significance of those effects.
- **Chapter 5 – Cumulative Effects** presents the results of the analysis that identified the potential for cumulative effects within a local, regional, and in one case global context.
- **Chapter 6 – Consultation and Coordination** describes how the MNDNR and USACE developed the FEIS in coordination with other state and federal agencies, tribal entities, and the public. The agencies' preferred alternative and the environmentally preferred alternative is discussed and identified in this chapter. This chapter also includes a distribution list of the individuals and organizations that will receive the FEIS.
- **Chapter 7 – List of Preparers** provides a list of preparers and document reviewers, their qualifications, and areas of responsibility.
- **Chapter 8 – References** provides a list of references that were used during the evaluation and analysis for the FEIS and are cited in the FEIS text.
- **Figures and Appendices** are also included in the FEIS as Volume II and Volume III, respectively, and the reader is directed to these sources of information as needed throughout the FEIS.

What changed between the DEIS and the FEIS?

The public comment period for the DEIS identified areas within the text that needed to be revised or clarified. There are changes that occurred to the DEIS that are reflected in the FEIS. These changes have added clarity to the document as well as provided additional analysis of a stockpile alternative. Wetland impacts, updated analysis of potential impacts for Class I and II areas, discussion of financial assurance, and an expanded discussion of wild rice resources are some of the modifications.

Organization and Content of the FEIS (cont.)

The organization of the DEIS was based on the FSDD and potential project-specific impacts. These were discussed in both Chapter 4.0 and Chapter 6.0. The MNDNR and USACE determined that reorganization of the DEIS would provide more clarity to the reader of the FEIS. Additionally, it was logical to group and describe all project-specific topics and potential impacts together in one chapter and group related topics into new subsections. The combined chapter in the FEIS is Chapter 4.0 – Affected Environment and Environmental Consequences. Chapter 5.0 remained focused on cumulative effects, although some of the original subsection numbering changed based on grouping of related topics into the same subsections.

What are the findings of the FEIS?

Based on analysis and review completed for the FEIS, the Proposed Project with the East Stockpile Alternative would be the environmentally preferable alternative, and the agencies' preferred alternative for this project. It is also likely that this alternative would be the LEDPA. However, the LEDPA cannot be identified until the Section 404(b)(1) analysis is complete. The LEDPA will be identified prior to and presented in the ROD that will be prepared by the USACE.

The main difference between the preferred alternative and the Proposed Project with regard to potential environmental effects is the reduction in the number of wetland acres impacted under the preferred alternative. Although the preferred alternative would still significantly affect wetlands, the overall footprint of the east stockpile area would be reduced. This would reduce the number of acres of impacted wetlands by avoiding wetlands that would otherwise be affected by the proposed east stockpile. Approximately 100 acres of wetlands would be avoided under the preferred alternative compared to the Proposed Project.