

DRAFT BIOLOGICAL ASSESSMENT
PROPOSED KEETAC MINE EXPANSION PROJECT
ST. LOUIS AND ITASCA COUNTIES, MINNESOTA

August 31, 2010

1.0 INTRODUCTION

The purpose of this document is to assess the effects of the Proposed Project on federally listed threatened and endangered species. The Proposed Project is the expansion of the existing Keetac iron ore mine and taconite pellet processing facility near Keewatin, Minnesota. The Project Proposer is U.S. Steel. U.S. Steel, headquartered in Pittsburgh, Pennsylvania, is an integrated steel producer, with a raw steelmaking capability of 31.7 MSTY. The Project Proposer operates two iron mines through its Minnesota Ore Operations on the Mesabi Iron Range. They are Minntac in Mt. Iron, and Keetac in Keewatin. More information about U.S. Steel is available on their website: www.ussteel.com.

A Section 404 permit under the federal Clean Water Act will be required due to wetland impacts that would occur as a result of the Proposed Project.

2.0 PROJECT DESCRIPTION

A detailed description of the Proposed Action is provided in Chapter 3.3 of the Keetac Draft Environmental Impact Statement dated November 2009 (Draft EIS), and will be available in the Chapter 3.3 of the Final EIS due to be released in the fall of 2010. See Figure 1 for the location and features of the Proposed Project.

2.1 Overview

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. Due to the substantial upgrading required to the Phase I line, it is referred to as the new indurating line in the DEIS.

Increasing pellet production capacity would require mine pit and stockpile expansion and increasing concentrating capacity. No additional crushing capacity is needed. Open pit methods, as currently used at Keetac, would continue to be used for the Proposed Project mining activities. Stockpiling would occur with surface overburden and waste rock deposited in existing stockpiles, new stockpiles, and in-pit stockpiles. An additional 9 million long tons per year (MLTY) of tailings would result from the Proposed Project

concentrating process and would also be pumped as slurry to the existing tailings basin. The Proposed Project would increase mine, stockpiles and tailings basin areas by a total of about 2,075 acres. The overall 2,621-acre footprint of the active tailings basin would increase approximately 100 acres to 2,721 acres. The existing stockpile area would be expanded by 777 acres to a total of 2,783 acres, and the mine pit would be expanded by 1,197 acres to a total of 3,410 acres. An alternative configuration for the proposed east stockpile is still being evaluated (shown as dashed line on Figures 1 and 2). This alternative configuration would impact about 100 fewer wetland acres. The decision of whether or not to implement this alternative configuration will be made prior to signing the Record of Decision.

In addition to the upgrades mentioned, the Proposed Project would also include the construction of a biomass chipping, drying and storage facility, which would be located in the southwest corner of the plant site. The biomass facility would provide biomass fuel to the new indurating line. The Project Proposer plans to use natural gas and biomass as fuel for the new indurating furnace with coal and fuel oil as the primary backup. The Project Proposer plans to use a target rate of 1:1 biomass (up to 50,000 oven dried tons per year) and natural gas.

The mine plan for the Proposed Project is broken up into phases as shown below. Most of the adverse effects within the footprint of the mine features at the surface, such as wetland and forest habitat loss, will occur within Period I. These phases are referenced throughout the Draft and Final EISs for the project.

Period I – 2012 to 2016

Period II – 2017 to 2021

Period III – 2022 to 2026

Period IV and V – 2027 to 2036

In summary, 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

2.2 Mining Processes

Taconite mining at Keetac occurs in the subcrop of the Biwabik Iron Formation of the Mesabi Iron Range. The iron formation has a thickness ranging from 300 to 700 feet and is divided into four layered members. These are, from top to bottom, Upper Slaty, Upper Cherty, Lower Slaty, and Lower Cherty. The Pokegama Granite Formation lies below the iron formation. The low-grade magnetic iron ores, known as taconite, are mined predominantly from the Lower Cherty member plus smaller amounts of taconite ore coming from both the Upper Cherty and Upper Slaty members.

Open pit methods, as currently used at Keetac, would continue to be used for the Proposed Project mining activities. After overburden is removed, waste rock and taconite are drilled, blasted, and loaded into mine trucks by diesel-hydraulic shovels. Waste rock is used to construct dikes and haul roads, or placed in waste rock stockpiles. During and following each phase of mining, reclamation of the overburden and waste rock stockpile slopes is completed according to MNDNR mineland reclamation requirements. The raw ore is trucked to the primary crushers for processing. As part of the Proposed Project, two main areas of the existing mine pit would be expanded. The first of these two expansion areas, the proposed south mine pit expansion, is located west of the plant, and involves expanding the existing Bennett/Russell Pit south. The second area of pit expansion, the 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 Hibbtac mine.

Due to mine expansion, the Proposed Project generates the need for handling additional surface overburden and waste rock. The Project Proposer would stockpile these materials in existing stockpiles, new stockpiles, and in-pit stockpiles. Two new stockpile areas are proposed to serve the two mine pit expansion areas for placement of surface overburden. These two areas are the proposed east stockpile and the proposed south stockpile (Figure 1). Additional stockpiling for the proposed south mine pit expansion would occur with in-pit stockpiling and by utilizing existing capacity in the northwest stockpile area.

2.3 Ore Processing

Crude ore is trucked from the mine pits to the primary crushers for size reduction to approximately eight inches in diameter. Crushed ore is conveyed to the existing crude ore storage building. From the crude ore storage area, crushed ore is conveyed to the concentrator where the magnetic iron oxide minerals (concentrate) are separated from the nonmagnetic waste (tailings). In the concentrator, the ore passes through a series of wet mills that grinds the rock to a flour-like consistency. Magnetic separators separate the magnetic iron minerals, as concentrate, from the tailings. Concentrate is pumped to the pellet plant for further processing. Tailings from the concentrator are pumped to the three tailings thickeners where excess water is removed. After thickening, the tailings slurry is pumped to the tailings basin for disposal and water recovery. The water is separated from the tailings via sedimentation, and overflows to a series of reservoirs. The majority of the water is recycled back to the plant as process water.

In the pellet plant, wet iron oxide concentrate from the concentrator is dewatered in vacuum filters, mixed with binder and limestone, and then converted to unfired pellets in balling drums. The unfired pellets are moved to the existing indurating furnace in the Phase II line and fired into hardened taconite pellets. The fired pellets are cooled and conveyed to a stockpile and loaded into rail cars for shipping.

In the Proposed Project, the taconite concentration and agglomerating processes would be expanded, but would remain similar to existing equipment in the existing indurating line. The most significant improvement to the processing facility is the restarting the Phase I

indurating line, which originally began operating in 1969 and was subsequently idled in 1980. The indurating furnace equipment from the Phase I line would be refurbished and upgraded. This line would be fueled by natural gas and biomass with coal and fuel oil used as backup fuels. Restarting the Phase I line will increase the plant capacity by 60% or 3.6 million tons per year. The increase in pellet production would necessitate the installation of three to four new grinding mills and associated material handling equipment throughout the processing plant. In addition, two additional tailings thickeners, one additional tailings pipeline, and one additional return water line would be added as part of the Proposed Project to account for the increased tailings production.

As noted above, the restarted Phase I indurating line would be fueled partially with biomass. The proposed biomass facility includes a wood chipper, biomass dryer, and storage. The proposed biomass dryer would utilize recovered heat off the existing Phase II indurating furnace to process green woody biomass into oven dried fuel. The Project Proposer would purchase biomass fuels from local suppliers, including material from forest harvesting not used in pulpwood or saw timber markets.

The tailings basin will see dimensional changes as part of the Proposed Project. About 13 MLTY of tailings are currently pumped to the existing tailings basin. An additional 9 MLTY of tailings would result from the Proposed Project concentrating process and would also be pumped as slurry to the existing tailings basin. The overall 2,621-acre footprint of the active tailings basin would increase by approximately 100 acres to 2,721 acres. The Proposed Project would increase the overall height of the tailings in the basin by approximately 58 feet compared to the No Action Alternative. The tailings basin dikes would be reinforced, as necessary to support the additional tailings to be placed in the basin.

2.4 Water Management

A Water Balance/Mine Yield Study was completed for the Proposed Project. This study provides a prediction of the changes that would be expected to occur from the plant expansion. It also provides information on the effect of those changes on downstream resources. The study concluded there are three future primary changes in the volume of Keetac discharges from the Proposed Project.

- Increased mine yield from expanded mining operations
- Increased evaporation due to a larger area of the tailings basin covered with pooled water
- Increased water locked-up in fine tails that coincides with increased production of tailings

One of these changes would result in an increase in the volume of water being discharged (pit dewatering), whereas the other two changes (evaporation and tailings loss) would decrease the volume of water being discharged. The net change in water volume being discharged due to the Proposed Project would result in a slight decrease during the early phases of the Proposed Project and a moderate increase in the latter phases of the

Proposed Project. Physical impacts on water resources are discussed in Section 4.4 of the DEIS.

The Project Proposer is currently permitted to pump water from the mine area in order to conduct mining operations, facilitate disposal of tailings, and maintain surface waters. The Proposed Project would require reallocation of mine dewatering volumes in the current water appropriations permit as the boundaries of the mine area increase. However, the Project Proposer intends to stay within the water appropriation volume limits that are currently permitted by the MNDNR during the life of the Proposed Project.

The Proposed Project would include the progression of mining in the south and east portions of the mine pit. Additional mine dewatering activities would be necessary as the boundaries of the mine area increase.

The Project Proposer would continue to recycle water for taconite processing operations for the Proposed Project. The Proposed Project includes construction of a new water line to pump additional water from Reservoir Six to the processing plant.

Dry controls would be used to control dust emissions on new material handling equipment so the Proposed Project would not result in substantial increases in water use at the crusher. The Proposed Project would require additional water for transport of additional fine tailings that are generated due to the increase in ore processing. The Proposed Project would result in increased water losses due to the processing of additional pellets.

Some minor water loss would occur from tailings basin seepage. Minor seepage is anticipated to discharge to groundwater through the bottom of the tailings basin, resulting in groundwater mounding under the basin. This water would flow radially from the tailings basin perimeter, ultimately flowing in the general direction of surface groundwater in the area.

Keetac has two existing water supply wells for potable and sanitary uses, as well as emergency pellet process cooling. The Project Proposer does not anticipate that the Proposed Project would require the installation of additional water supply wells or require additional potable water at Keetac. Impacts to public water supply are not anticipated from the Proposed Project. However, contingency plans were negotiated between the Project Proposer and the Cities of Keewatin and Nashwauk. Provisions of the plan include a well monitoring plan, mitigation response plan, and a funding mechanism if the Proposed Project activities impact city wells.

The Proposed Project is not expected to affect the current stormwater management practices or water quality related to stormwater runoff from the plant site. The Project Proposer would continue to manage stormwater runoff in compliance with the facility SWPPP and industrial stormwater rules. The SWPPP outlines the process and implementation of managing stormwater and avoiding and minimizing impacts from runoff by implementing BMPs. These BMPs include erosion prevention practices to

minimize production of sediment, such as seeding and mulching practices and special measures for steep slopes and highly erodible soils (e.g., terracing, silt fence, erosion control fabric, and ditch checks). The SWPPP would be updated as needed to reflect the Proposed Project and current regulations at the time of Proposed Project implementation.

2.5 Stationary Source Air Emissions

The Proposed Project would increase air emissions above current levels. It would require a major modification under the federal PSD regulations for several air pollutants, including particulate matter (PM), particulate matter less than 10 and 2.5 micrometers in diameter (PM10 and PM2.5) and sulfur dioxide (SO₂). The Proposed Project will limit NO_x emissions to levels below PSD major modification thresholds. Air emission permits for major sources require an air quality analysis to demonstrate that national ambient air quality standards would not be exceeded and that the project would not significantly deteriorate air quality.

Air emission point sources associated with pellet induration include combustion and pellet oxidation products. By using the hot exhaust air from the kiln and the four cooler sections the amount of fuel that must be burned to dry and fire the pellets is minimized. Minimizing fuel combustion also reduces the amount of combustion related pollutants that are generated from fuel combustion in the kiln such as NO_x, SO₂, CO, and greenhouse gases such as CO₂. Although mercury and SO₂ are generated from fuel combustion, the primary source of these pollutants is taconite. The taconite contains naturally occurring elements containing mercury and sulfur that are released from the taconite at the high temperatures in the furnace. Electrostatic Precipitators (ESPs) will be utilized to control particulate emissions, the use of a dry circulating fluidized bed (CFD) scrubber for the removal of SO₂, and injection of activated carbon for removal of mercury.

Air emission point sources associated with the material handling operations include crushing and conveying of taconite, the transfer of binder and limestone to the grate feed, and the various pellet screening and transfer conveyors. These point sources of PM will be controlled with scrubbers or fabric filters.

Fugitive air emission sources of particulates associated with the Proposed Project include material handling of the crude ore, waste rock and overburden, wind erosion of stockpiles, pellet handling, and pellet stockpiling. Fugitive air emissions are controlled by following a fugitive dust control plan that includes the use of water, dust suppressants, and other measures to minimize dust emissions, such as reclamation.

For air quality purposes, areas are divided into two classes based on local land use. These are referred to as Class I and Class II areas. Wilderness and national park areas are designated as Class I areas. All other areas are designated as Class II areas. Class I modeling has been conducted for the Proposed Project and submitted to the MPCA, National Park Service (NPS), and the USFS. Class II modeling has also been completed

and submitted to the MPCA. This modeling information has also been used to evaluate the potential for environmental impacts associated with the Proposed Project.

In addition to PSD requirements, the Proposed Project is subject to Maximum Achievable Control Technology (MACT) requirements for those sources that are part of a HAP source category or that are major HAP sources individually. Taconite ore processing is assigned a MACT category.

2.6 Haul Roads

The major haul roads are defined as that portion of the road that is between the active pit and existing or active stockpile. As the pit expands the haul road length outside the pit decreases. Within the Keetac Expansion there are three major haulage roads outside the pit (Figure 2). The eastern most road (East road) is located in the SE-NW, the NE-SW, and the SE-SW of Section 17, Township 57 North, Range 21 West and connects the pit with Stockpiles S2 and R1. As the pit expands the haulage road will decrease in length from approximately 4,000 feet long to 1,700 feet long. The middle or North road connects the pit to Stockpile S5 and is located in the North ½ of the NW of Section 13, Township 57 North, Range 22 West. Depending on the time period, this haulage road will branch into two routes with the western branch being approximately 800 feet long and the northern branch 1,300 feet long. The South road connects the pit with S1 stockpile and is located in the South ½ of the SE of Section 26, Township 57 North, Range 22 West. As the pit expands, the haul road will decrease in length from approximately 1,100 feet long to 600 feet long. The North haulage road is currently intact and will have very little changes. The East and South haulage roads are also existing roads but will require modifications to support the larger trucks and access to the stockpiles. The typical haulage road will be approximately 125 feet wide with 6 to 8 foot high safety berms on each side (total typical width depending on height is 150 to 180 feet wide including safety berms). Traffic on the haulage roads will vary significantly, depending on period and shift. It is anticipated that the average traffic on the East haulage road during Period #1 would be a truck passing a spot every 2.1 minutes, assuming 7 hours of actual operating per 8 hour shift. During Period 2 the average traffic would be a truck passing a spot every 1.7 minutes, for Period 3 every 3.5 minutes and Period 4 no traffic. For the North haulage road in Period 1, trucks would pass the same spot every 6.1 minutes, for Period 2 once an hour and minimal traffic in Periods 3 and 4. For the South haulage road during Period 1, trucks would pass the same spot every 75 minutes, and no traffic in Periods 2 thru 4. These figures are based on a truck passing the same spot twice for each load hauled. The figures are also based on an average during the Period; there will be shifts when traffic will be higher balanced by shifts with no traffic.

2.7 Connected Actions

There are no connected actions to the Proposed Action. Keetac expects to purchase biomass, natural gas, coal, and fuel oil from suppliers. Similarly, electricity would be obtained from local utilities from existing sources through existing transmission lines. The current access to TH 169 is adequate for the Proposed Project and no improvements

are expected to be necessary. Existing rail access is also adequate for the Proposed Project. The Project Proposer would periodically deliver dried biomass from Keetac to the Minntac facility. The Minntac wood storage system would not change and has capacity to accept the biomass volume generated by Keetac. There are no physical changes required at Minntac to be able to accept biomass from the Keetac facility and then subsequently use it at the Minntac facility as a fuel source. Based on a review of Minntac's air permit, biomass combustion is allowed by the permit for Agglomerator Lines 3-7, and there are emission limits for the associated process stacks (Stack/Vents [SV]103, 118, 127,144 and 151). The Hill Wood Products System (SV 195) (i.e., the Minntac wood storage system) has a process throughput limit of less than or equal to 220,000 tons per year (TPY) using a 12-month rolling sum of wood waste. Based on the Minntac capacity information, the proposed Keetac biomass facility is not considered a connected action.

2.8 Mine Life Timeline and Closure

The mine plan developed for the proposed project is scheduled to occur over a 25-year period beginning in 2012 and ending in 2036. Most of the impacts to surface habitat resources would occur in the first five years of the plan, when surface stripping activities are scheduled to occur.

The U.S. Steel Permit to Mine Application, dated July 2009, describes the proposed reclamation plan for mined areas of the Proposed Project. This reclamation plan must conform to Minnesota Rules Chapter 6130 for taconite and iron ore mineland reclamation. In summary, mineland reclamation would include the mine area, stockpile areas, tailings basin, and other areas disturbed by mining related activities. When mining activities reach the ultimate pit limit, the surface overburden portions of the pit walls would follow the standards listed in Minnesota Rules, part 6130.2900. The tailings basin would be designed and constructed according to Minnesota Rules, part 6130.3000 and in accordance with the Dam Safety Permit. Reclamation of the mining area for the Proposed Project would be conducted in accordance with Minnesota Rules, parts 6130.1000 to 6130.4100. Mineland reclamation is further discussed in Section 6.16 of this DEIS.

3.0 DESCRIPTION OF THE SPECIFIC AREA THAT MAY BE AFFECTED

A detailed description of the affected environment in the proposed project area is provided in Chapters 4 and 6 of the Draft EIS and in Chapters 4 and 5 of the Final EIS. A summary of the project area environment is as follows:

3.1 Project Site

The Keetac site consists of unconsolidated glacial deposits, ranging in thickness from 10 feet to 150 feet, overlying bedrock. A number of areas on the site have previously been or are currently being open-pit-mined, and bedrock depth is zero in those locations. Groundwater and surface water have partially filled the abandoned on-site mine pits.

GIS analysis and aerial photo interpretation isolated five general cover types in the affected area: forest, mining, open water, past mine feature: re-vegetated, and wetland. Forest cover type includes areas that have remained naturally covered by trees or have re-vegetated after pre-settlement. Based on MNDNR 2007 Mine Features mapping, the mining cover type classification was applied to all areas that have been mined or would be mined under the No Action Alternative and Proposed Project descriptions, and have not re-vegetated. The open water classification includes areas identified by the Project Proposer that would remain as water in the tailings basin for the No Action Alternative, and would become water during the Proposed Project and upon post reclamation (i.e., mine pits filling with water). Past mine feature: re-vegetated includes areas that were previously impacted by mining, such as stripping, grading, and stockpiling, and have re-established vegetation through natural succession and/or mineland reclamation measures. The wetland cover type classification was determined based on known wetland delineations completed for Keetac and wetland areas that have not been permitted for mining impacts. The cover types for the Proposed Project Alternative are tabulated on Table 6.2.2. from the Draft EIS, which is attached.

The Proposed Project would increase the mine pit by 1,197 acres, the stockpile areas by 777 acres, and the tailings basin area by 100 acres. The Proposed Project would impact approximately 761 acres of wetlands. The majority of the impacted wetlands are shallow open water (46 %), followed by shallow marsh (23%), shrub-carr (11%) and deep marsh (10%).

Table 1: Summary of Wetland Impact Acreages

Type	Proposed Project	East Stockpile Alternative
Wetland Impact	761.3	667.5
Monitored Wetlands	174.6	278.0
Totals	935.9	945.5

U. S. Steel - Keetac has proposed a mitigation plan consisting of on-site and off-site wetland mitigation. The on-site mitigation is to take place in the inactive area of the tailings basin and is expected to total 582.4 acres. An additional 304.9 acres are to be mitigated off-site, but within the same Wetland Bank Service Area.

3.2 Area Surrounding the Project Site

Abandoned open pit iron mines, waste rock and overburden stockpiles, old tailings basins, and wetlands dominate the areas immediately surrounding the Proposed Project area. The following areas will experience closer proximity to mining processes due to the Proposed Project. Kelly Lake, which is part of the City of Hibbing, is less than ½ mile

east of the proposed East Stockpile area. The City of Keewatin is less than ½ mile south of the proposed South Mine Pit Expansion area. Welcome Lake is located just south of the proposed biomass facility. In addition the proposed East Mine Pit Expansion will continue to abut the Hibbtac mining operation, as the existing Stevenson Pit currently does.

4.0 LISTED SPECIES OR CRITICAL HABITAT THAT MAY BE AFFECTED

The Proposed Project is located on the borders of St. Louis and Itasca Counties (Figure 1). The U.S. Fish and Wildlife website (<http://www.fws.gov/midwest/endangered/lists/minnesot-cty.html>) lists three federally protected species that occur in these counties: Canada lynx (*Lynx canadensis*), listed as threatened; gray wolf (*Canis lupus*), currently listed as threatened; and piping plover (*Charadrius melodus*), listed as endangered. A previously-listed species, the bald eagle (*Haliaeetus leucocephalus*), can also be found in these counties.

A number of species listed as threatened or endangered in the State of Minnesota by the Minnesota Department of Natural Resources could be affected by the Proposed Project. These species and the potential effects to them are discussed in the Draft EIS.

4.1 Piping Plover

The piping plover is a small migratory shorebird. As typical of many shorebirds, their typical habitat includes flat sandy beaches with little vegetation. They use this habitat for feeding and nesting and are sensitive to disturbance from humans and animals. Much of their habitat has been lost or altered through shoreline development and artificial water level manipulation.

The Great Lake population of piping plover was listed as endangered in 1986. Critical habitat for this population was designated effective June 6, 2001. Designated critical habitat in St. Louis County is located southeast of the Proposed Project near Duluth.

4.2 Canada Lynx

The Canada lynx is a medium-sized cat that lives in the dense forests of northern Minnesota, Maine, mountains regions of the northwestern United States, and Canada. They are specialized predators that have adapted to hunting in deep snow conditions of the boreal forests. The boreal forests are prevalent across most of Canada but extend south into the northern portions of the United States. Northern Minnesota, Wisconsin, and Michigan represent the southern extent of the range for the Canada lynx in the Midwest. Their primary prey is snowshoe hare, which has a roughly 10-year population cycle. Canada lynx also demonstrate a 10-year population cycle that mirrors the snowshoe hare's cycle with a slight lag. It's during the time immediately following a decline in snowshoe hare numbers that Canada lynx are most likely to be found in Minnesota.

The Canada lynx was federally listed as a threatened species in 2000. Critical habitat was designated for the species in 2009 and is located about 23 miles east of the Proposed Project area in Voyageurs National Park. Lynx populations are not in jeopardy in Canada and are offered no special status there.

4.3 Gray Wolf

Gray wolves are known to be habitat generalists, allowing them to utilize a wide variety of habitats across North America, including forested areas of northern Minnesota. It is a social animal that lives in packs and preys on a variety of species, primarily on ungulates. The main prey species in Minnesota is whitetail deer. The wolf is generally tolerant of human disturbance.

Gray wolves in Minnesota are part of the distinct population segment identified by the USFWS as the Western Great Lakes Population of gray wolves, which includes all of Minnesota, Wisconsin and Michigan and portions of Iowa, North Dakota, South Dakota, Illinois, and Ohio. This population of gray wolves has responded to management and protection efforts, has exceeded recovery goals, and continues to thrive. Within Minnesota, the MNDNR estimated that the population of gray wolves was 2,921 animals as of the 2007/2008 survey. This is above the management plan goal of a population of at least 1,600 wolves to ensure long term survival. There have been no significant changes or fluctuation in the population of the gray wolf in Minnesota over the last ten years. Based on this information, it appears that the gray wolf has made a full recovery in Minnesota.

The gray wolf was listed as an endangered species in 1974. However, the status of the gray wolf has changed multiple times over the last three years based on the identification of distinct populations in different regions of the United States; health of those populations; and a lawsuit filed against the USFWS for removal of identified populations of the gray wolf from the federal endangered species list. The Western Great Lakes Population of gray wolves was removed from the federal endangered species list in February 2007 and then added back to the list in September 2008 based on a U.S. District Court ruling. In April 2009, the Western Great Lakes Population of gray wolves was again removed from the federal list but a ruling on July 1, 2009, withdrew the delisting to allow for adequate public comment on the USFWS plan to delist the gray wolf. As a result, Western Great Lakes Population of gray wolves is currently listed as a federally threatened species.

4.4 Bald Eagle

The bald eagle is a large raptor that can be found throughout North America. In Minnesota, bald eagles are typically found nesting in large trees near bodies of water or large rivers, including the St. Croix and Mississippi Rivers, mainly in the northern part of the state. The current bald eagle population in Minnesota is stable. An estimate of known nests was combined with a random survey in 2005, which determined there are

about 1,300 active bald eagle nests in Minnesota. Based on this estimate, Minnesota has the third most bald eagle nests in the United States, behind only Alaska and Florida.

The bald eagle was listed as an endangered species in 1967 under the Endangered Species Preservation Act and later transferred to the list of threatened and endangered species under the 1973 Endangered Species Act. On August 9, 2007, bald eagles were removed from the federal list of threatened and endangered species. However, bald eagles remain protected under the Bald and Golden Eagle Protection Act. This act prohibits anyone from "taking" bald eagles. Among other actions, "take" includes disturbance of bald eagles.

5.0 EFFECTS ANALYSIS

5.1 CUMULATIVE HABITAT EFFECTS

Chapter 5.6 of the Draft EIS addresses cumulative impacts to wildlife habitat in terms of loss and fragmentation, and also addresses cumulative impacts to wildlife travel corridors. The overall study area that was considered in the Wildlife Cumulative Effects Study was the entire Iron Range and a five-mile buffer around the 2007 MNDNR Mining Features dataset of the Iron Range.

5.1.1 Habitat Loss and Fragmentation

The study area is a little over 1,000,000 acres in size. Under existing conditions, approximately 753,000 acres of vegetative cover provides habitat to wildlife. The remaining 249,800 acres of the study area is covered by a variety of human disturbed land uses that provide little or no habitat or ecological value to wildlife.

To estimate impacts to existing wildlife habitat as a result of reasonably foreseeable future projects, a list of known or proposed potential future projects in the study area was generated. The list of reasonably foreseeable future projects includes future mining impacts for all mine permits that have been approved or are currently under review by the MNDNR, as well as other large, planned projects in the study area. The final list includes the following 11 projects:

- US Steel – Keetac
- US Steel – Minntac
- Essar Steel (formerly Minnesota Steel)
- ArcelorMittal Minorca (former Mittal Minorca Ispat Inland)
- PolyMet Mining Inc. (Northmet Project)
- Northshore Mining (Peter Mitchell Mine Pits Expansion)
- Cliffs Erie Pellet Transfer Facility
- Mesabi Nugget (Phase II Project)
- Hibbtac
- MN Power Syl Laskin Energy Center
- Hoyt Lakes to Babbitt Connector Highway

The above reasonably foreseeable future projects would result in the disturbance of approximately 2% of the total area. Future impacts would result in impacts to 14,341 acres of existing vegetated habitats, while 4,439 acres of the impacts would occur on developed or disturbed land uses.

A total of 6,430 acres of aspen/white birch forests would be impacted due to future projects, which is 34.2% of the total future impact area. Aspen/white birch forests are the most prevalent vegetated habitat in the study area, covering 277,692 acres or some 27.7% of the total study area. The projected future loss of 6,430 acres is 2% of the existing aspen/white birch forest habitat in the study area.

Other habitats comprising the largest percentage of future project impacts include 2,201 acres of upland shrub (10.8% of future impacts), 1,199 acres of lowland conifer forest (6.4% of future impacts), 1,078 acres of lowland shrub (5.7% of future impacts) and 1,049 acres of pine forests (5.6% of future impacts). For each of the above vegetated habitats, the estimated future impacts accounts for less than 2.5% of the total available in the study area for each habitat type. Future projects would result in impacts to 786 acres of upland deciduous forests, which is 4.2% of the total future impacts. This comprises 3.4% of the total available upland deciduous forest habitat in the study area, which is the largest percentage of impacts to a single habitat type in the study area.

Two percent of the existing available vegetated wildlife habitat in the study area would be impacted as a result of the future projects. Compared to impacts from previous mining, logging, agriculture and municipal development, these projected future impacts are relatively minor.

However, future impacts to certain habitats could still be considered important due to the past historic loss and the amount of remaining available habitat in the region. For example, it is estimated that future projects would impact 1,049 acres of pine forest, which is 2.4% of existing pine forest habitat in the study area. However, based on estimates of impacts to pre-settlement vegetation in the Northern Superior Uplands portion of the study area, pine forests have experienced a historic decline of 89% in the region. Even a small additional loss of pine forest habitat could impact wildlife species that require specialized habitat, such as pine forests.

Impacts to habitat types that have experienced the most severe historic loss in the study area, including pine forests (89% historic reduction), upland conifer forest (82% historic reduction), upland deciduous forests (60% historic reductions), and lowland conifer forest (52% historic reduction) should be minimized to the maximum extent practicable.

The Proposed Project would result in impacts to approximately 1,283 acres of land within the study area, which is 7% of future impacts from reasonably foreseeable future projects. The majority of future impacts to vegetated wildlife habitat from the Proposed Project would be to early succession habitats that are abundant in the study area, including aspen white birch forest, upland shrub and lowland shrub communities. The Proposed Project

would have little to no impact on mature forest communities including upland conifer forest, upland deciduous forests, pine forests, and lowland conifer forests. The Proposed Project would contribute to the overall future cumulative impacts to wildlife habitat, but not disproportionately as compared to other future projects.

5.1.2 Impacts to Wildlife Travel Corridors

Eighteen wildlife travel corridors were identified across the Iron Range (Figure 3). Two corridors, #4 and #5, are adjacent to Keetac with Corridor #4 located on the west and Corridor #5 located on the east. Two additional corridors are located in close proximity (less than 10 miles) to Keetac, these are Corridor #3 located seven miles west and Corridor #6 located five miles east. The cumulative effects analysis of this DEIS focuses on these four corridors because they are the main corridors on the Iron Range that could be utilized by wildlife near Keetac.

Corridor #3

Corridor #3 is close to one-mile wide and is interrupted by a 600-foot wide open mining pit (former Butler Mine – now Essar Steel) in the center of the corridor. The western half of the corridor is comprised mainly of “Moderate Impact” mining features while the eastern half is mainly undeveloped natural habitat. Overall this corridor is considered a high quality corridor due to the prevalence of natural habitat. This corridor is located adjacent to the Essar Steel project area, approximately seven miles west of Keetac. It is assumed that over the next 30 years this corridor would be lost due to activities approved in the Essar Steel permit to mine. Wildlife would be forced to travel to corridors #2 or #4 to cross the west end of the Iron Range. The Proposed Project would not contribute to the loss of this corridor.

Corridor #4

Corridor #4 is located adjacent to the western edge of the Project Area, and is relatively narrow at 800 feet in width. Corridor #4 is constricted by impassable boundaries on each side with the LaRue Pit to the west and the Perry Pit to the east. It is considered a moderate quality corridor due to the narrow center constricted by the mine pits, the prevalence of Moderate Impact features such as stockpiles and the limited amount of undeveloped natural habitat. Stockpiles to the north and south of the eastern edge of the LaRue Pit extend across the majority of Corridor #4, but do not completely bisect the corridor. Although these stockpiles have re-vegetated, their relatively high elevations would make this corridor impassable to certain species, such as small mammals (i.e., rodents), reptiles and amphibians that are incapable of navigating the steep terrain. O’Brien Creek runs through the center of Corridor #4, and this riparian area of the creek likely serves as a travel corridor for upland mammals as well as semi-aquatic species. It is unlikely that direct impacts to the O’Brien Creek riparian area would be permitted and are not part of the Proposed Project. The likely regulatory protection of O’Brien Creek should ensure that this corridor remains open and available. As a result, the corridor would continue to provide habitat and safe passage for species not requiring wide corridors or that have become accustomed to moderate disturbance from existing mining activities.

Corridor #5

Corridor #5 is located adjacent to the eastern edge of Keetac. It is one of the narrowest corridors identified in the study at approximately 350 feet wide. This corridor has limited habitat and ecological value due to the narrow width and the prevalence of historic and active mining features scattered throughout the corridor. The corridor remains open due to the presence of habitat adjacent to County Road 79 which is oriented north to south through the center of the corridor. However, the corridor is bordered on both sides by active mine pits and an active haul road which intersects this corridor on the north end. The majority of the habitat within Corridor #5 has been previously impacted by past mining activities and also municipal development within the City of Hibbing. It is anticipated that this corridor would be lost over time due in part to the creation of the new stockpile area for the Proposed Project which would eliminate the forested and wetland habitat along the southwest corner of the corridor. However, the main contributing factor to the loss of this corridor would be the expansion of mining activities at Hibbtac. The expansion of active mine pits and stockpile areas would remove the majority of the remaining habitat along the north end of Corridor #5 and make the corridor either unusable or impassable to wildlife.

Corridor #6

Corridor #6 is located approximately five miles to the east of Keetac and is relatively large at a width of 2,400 feet. The corridor is considered a Moderate Quality Corridor, due to developed features that border or intersect the corridor including TH 169, the City of Chisholm, and Hebraic's active open mine pit. The habitat within the corridor is also considered of moderate value due to the presence of partially re-vegetated stockpiles. It is anticipated that this corridor would be lost in future years due to the eastward expansion of the Hibbtac mining activities on the north end of the corridor. This would essentially turn Corridor #6 into a dead end for wildlife attempting to disperse or migrate from the south to the north in this area of the Iron Range. The Proposed Project would not contribute to the loss of Corridor #6.

Overall, the Proposed Project would have a minimal impact on wildlife travel corridors on the Iron Range. Of the four corridors located within 10 miles of Keetac, the Proposed Project would not contribute to the impacts to three of the corridors, while contributing to some habitat loss of the fourth corridor (Corridor #5). Due to the anticipated loss of Corridor #3 (due to Essar Steel Mining Activities) and Corridors #5 and #6 (due to Hibbtac Mining Activities) Corridor #4 would likely be the only usable corridor for an approximate 25-mile span on the Iron Range from the City of Taconite to the City of Chisholm. The maintenance of Corridor #4 would therefore be critical to overall wildlife travel and dispersal across this section of the Iron Range. The Proposed Project would not impact Corridor #4, and there are currently no known or proposed projects that would impact this corridor.

5.2 Piping Plover

Critical habitat has been designated for this species near Duluth. The species can be seen in Duluth Harbor on occasion, but no successful nesting has been known to occur there in the last 25 years (MDNR, <http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNNB03070#>). There are no known occurrences of the species in the Project Area, though it is possible that it could be present at times, likely during migration.

Because of the rarity of the species in Minnesota and the lack of any records of its existence in the Project Area, it is unlikely that it will be present on the project site. Furthermore, if a piping plover does pass through the site, it is unlikely that the Proposed Project would have an effect on the individual because habitats directly affected by the proposed project are not suitable for this species. Therefore, it is the St. Paul District's assessment that the Proposed Project would have no effect on piping plover.

5.3 Canada Lynx

During 2009, the Project Proposer conducted field studies to determine the presence of Canada lynx in the Proposed Project area. The study area was defined as a six mile buffer around Keetac. A total of 185 miles of transects were surveyed and an additional 19 miles of transects adjacent to the study area were also surveyed. There were no lynx sightings, and there were no lynx signs observed in the study area during the 2009 survey. The findings of the field studies were provided in the 2009 Keetac Iron Ore Expansion Project Canada Lynx Assessment Report (Appendix 1).

The area near the Proposed Project was also surveyed in 2007 as part of a survey for the Essar Steel mining project. The 2007 survey also produced no lynx sightings or lynx signs in the study area. The 2009 survey determined that there is some lynx habitat available in the study area but that it occurs in small patches that are not likely suitable to support a lynx. The 2009 survey determined that lynx do not reside in the study area but that it is possible that lynx occasionally travel through the area.

Rail traffic is not expected to increase during the Proposed Project (only the length of individual trains). Thus, there is no concern for increased lynx fatalities from train traffic. There will be an increase in truck traffic, which will occur on the three new haul roads between the mine pit and the new/expanded stockpile areas. Because there has been no evidence of the presence of a lynx in the Project Area in recent times, it seems unlikely that increased truck traffic as a result of the Proposed Project would result in disturbance to lynx or a lynx fatality.

Based on the conclusion that the lynx do not reside in the Proposed Project site, the patchy nature of suitable lynx habitat in the study area, the prevalence of similar habitat in adjacent areas, the mobility of lynx, and their large home ranges; impacts to lynx or lynx populations would not be anticipated as a result of the Proposed Project. Therefore, it is the St. Paul District's determination that the Proposed Project would have no effect on Canada lynx.

5.4 Gray Wolf

The Western Great Lakes Population of gray wolves, which includes all of Minnesota, has been steadily increasing and has exceeded management goals (USFWS, April 2009 – Federal Register, vol. 74, no. 62). The Proposed Project site provides some habitat for wolves, including areas that have not been mined, re-vegetated stockpiles, and fringe areas of the tailings basin.

Based on information provided in the Wildlife Cumulative Effects Study, gray wolves were observed on the Keetac site in 2000. Calling surveys located wolves south of the Keetac site in 2004. Wolves have also been observed at other mine sites on the Iron Range. Based on this information, gray wolves near the Proposed Project and along the Iron Range are tolerating a certain amount of human disturbance and mining activity within their established territories. Since wolves are habitat generalists with large home ranges, the mining has little impact to available wolf habitat and populations.

The Proposed Project would be located outside of the area designated as critical habitat for the gray wolf in Minnesota. The expansion of the overall mine footprint is relatively small compared to the typical home range of wolf packs in Minnesota, which can reach 150 square miles. The home range of a wolf pack that potentially includes the Proposed Project site would not be significantly altered through the expansion of mining activities resulting from the Proposed Project.

The Proposed Project would lead to an increase in human disturbance to wolves in the Project Area. The effect of increased disturbance would be minor because any wolves in the area are likely accustomed to such disturbance and the increase in human activity would be relatively minor within the setting of an existing active mine. The construction and use of new haul roads and the resulting truck traffic as described above would lead to a potential increase in risk for wolf-truck collisions. However, the new haul roads would be located close to active areas of the mine and do not cross major wildlife corridors. Furthermore, two experienced U.S. Steel employees working at the Keetac site for 20 years reported no know wolf collisions at the site during their time. While the potential for collisions would increase with the Proposed Project, it seems unlikely that a wolf would be killed by a truck because of their infrequent occurrence on the site, the continued disturbance on the site and lack of collisions on site in the past. It is likely that the proposed project would have a minor effect on wolves through increased disturbance that would result in wolves avoiding the Project Area. This effect is expected to be minor because the Project Area is an existing mine that is experiencing a level of disturbance. Therefore, it is the St. Paul District's determination that the Proposed Project would affect, but not adversely affect grey wolf.

5.5 Bald Eagle

There is one known occurrence of an active bald eagle nest within the Proposed Project area. The nest is located in a tree within the tailings basin and is actually the second nest constructed in the area by this pair of bald eagles. Their first nest was just outside the outer berm of the tailings basin, but the snag fell in 2007 and the nest was destroyed. The fact that the pair returned to the same area the following year to construct a new nest indicates that they are accustomed to a certain amount of mining and human activity in the area.

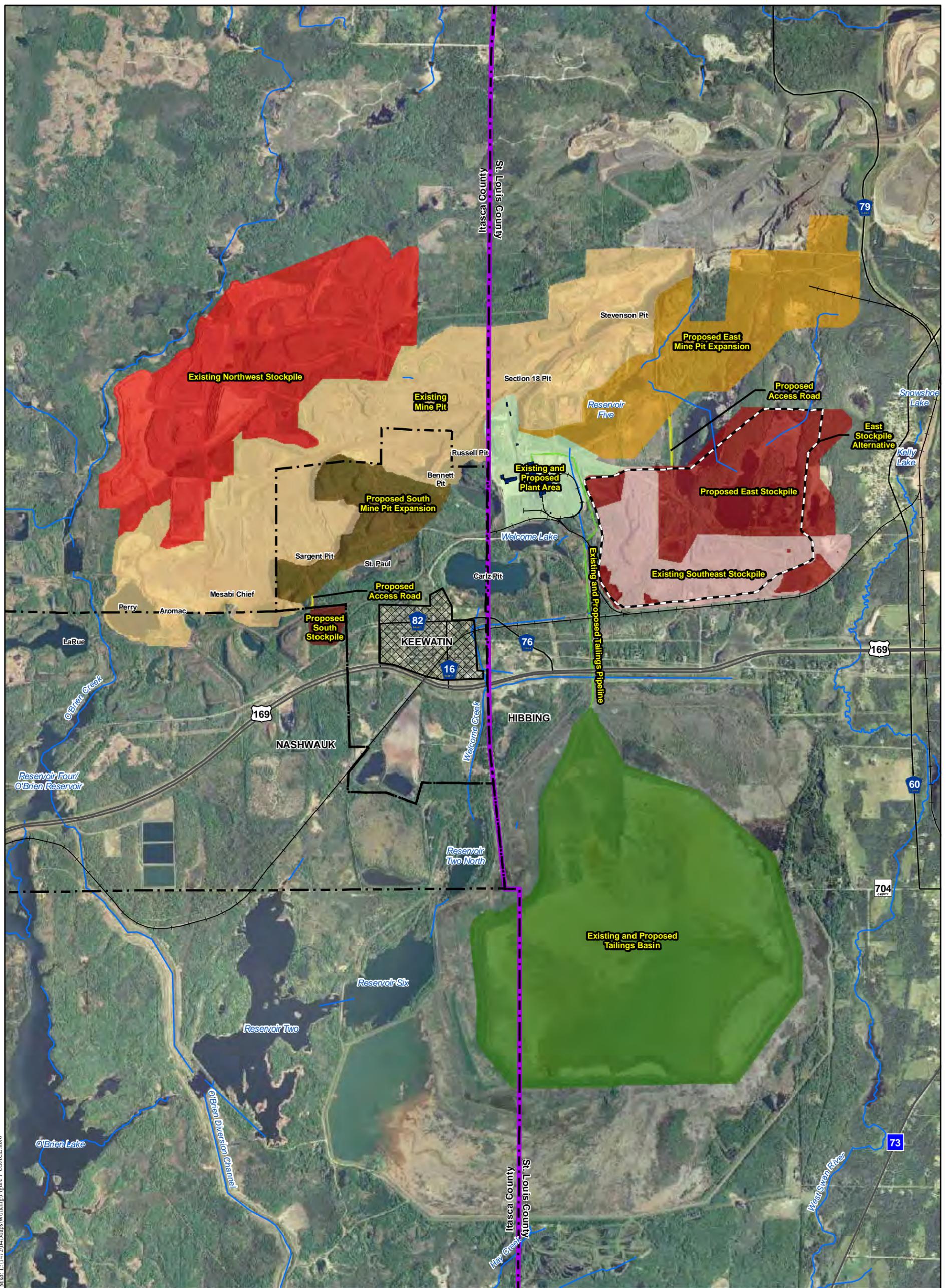
The Proposed Project would not encroach on the nest site in a manner that would alter or impact the individuals occupying the nests. The Proposed Project would add new tailings to the basin, but would not be disturbing the perimeter berm in the vicinity of the nest. As a result, no impacts from the on the bald eagle nest would be expected as a result of the Proposed Project.

6.0 CONCLUSIONS AND DETERMINATION OF EFFECTS

U.S. Steel is proposing to expand their Keetac mine facility near Keewatin, Minnesota, which will require a permit from the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. Because this is a federal action, the St. Paul District of the U.S. Army Corps of Engineers has prepared this biological assessment of potential project effects to federally-listed threatened and endangered species as required by Section 7 of the Endangered Species Act.

Three species currently listed as threatened or endangered have been recorded within St. Louis and Itasca Counties, within which the Project Area is located: Canada lynx (*Lynx canadensis*), listed as threatened; gray wolf (*Canis lupus*), currently listed as threatened; and piping plover (*Charadrius melodus*), listed as endangered. A previously-listed species, the bald eagle (*Haliaeetus leucocephalus*), can also be found in these counties.

Based primarily on the lack of evidence that the piping plover and the Canada lynx frequent the Project Area, the St. Paul District has determined that the Proposed Project would have no effect on these species. Because of the impacts to habitat and increases in disturbance in the Project Area, tempered by the gray wolf's large home range and their tolerance for disturbance, the St. Paul District has determined that the Proposed Project would affect, but not adversely affect grey wolf. While bald eagle is no longer listed under the Endangered Species Act, the St. Paul District has assessed the effects to this species and has determined that the project would have no adverse effects on eagles.



Map: E:\1472\04\Maps\Working\Figure 1 USACE.mxd

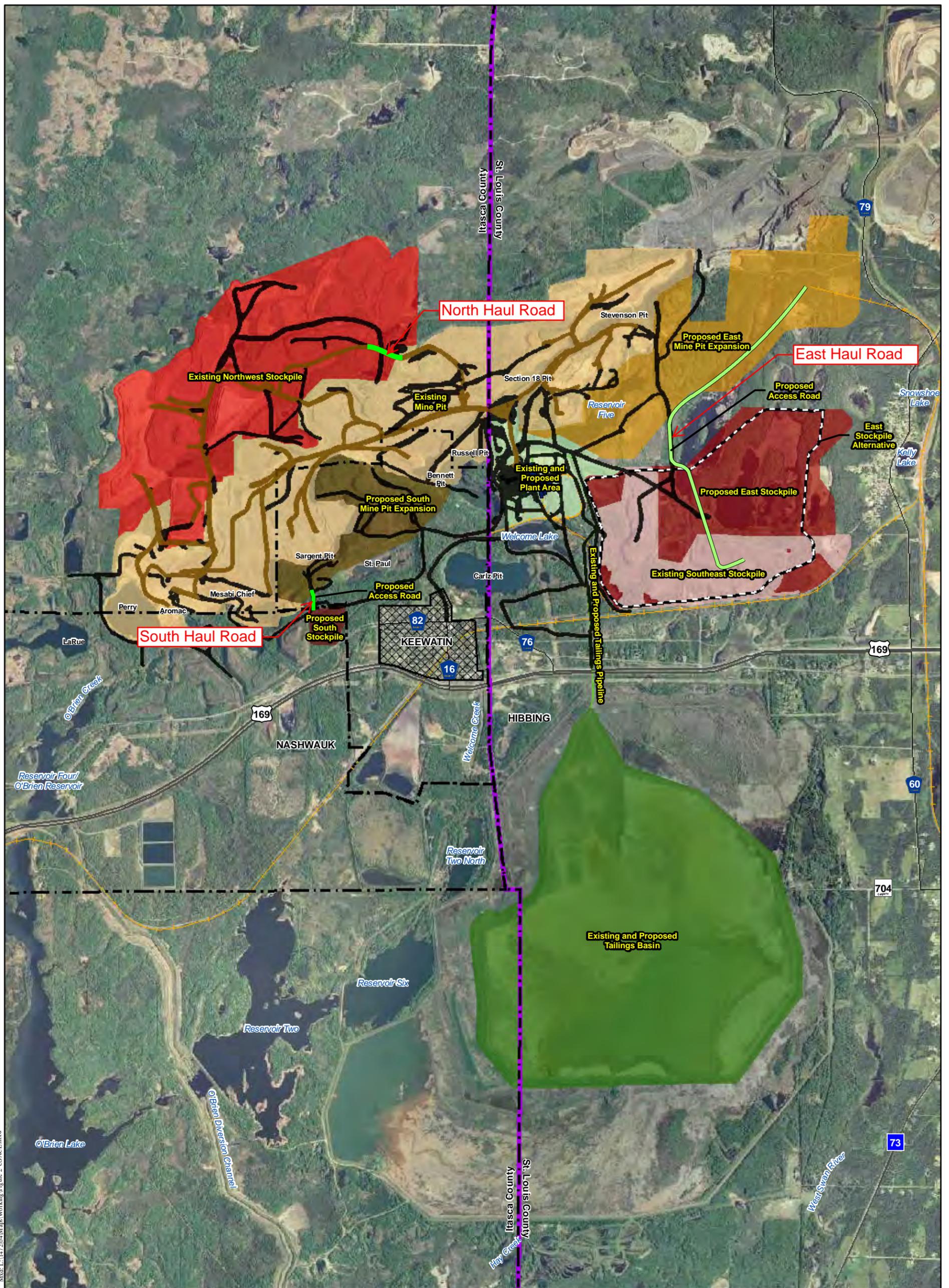
- Legend**
- Project Areas**
- Existing Southeast Stockpile
 - Existing Northwest Stockpile
 - Proposed East Stockpile
 - Proposed South Stockpile
 - Proposed Stockpile Roads
 - Existing Mine Pit
 - Proposed East Mine Pit Expansion
 - Proposed South Mine Pit Expansion
 - Plant Area
 - Tailings Basin
 - Tailings Pipeline
 - East Stockpile Alternative

- Keewatin Urban Development
- City Boundary
- County Boundary
- Streams
- Railroad



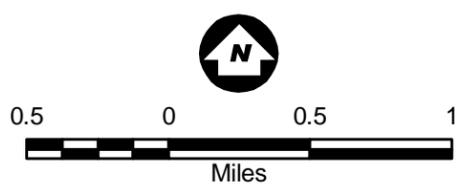
Source: USGS, Barr, LMIC, MNDNR, National Hydro Dataset, MPCA, Itasca County, St. Louis County, City of Hibbing, City of Nashauk, U.S. Steel, and Mn/DOT. 2008 Aerial Photograph

Figure 1
U.S. Steel Keetac
Keewatin, MN



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- Legend**
- | | |
|---|--|
| Existing Southeast Stockpile | Keewatin Urban Development |
| Existing Northwest Stockpile | City Boundary |
| Proposed East Stockpile | County Boundary |
| Proposed South Stockpile | Railroad |
| Proposed Stockpile Roads | Existing Access Roads |
| Existing Mine Pit | Existing Haul Roads |
| Proposed East Mine Pit Expansion | East Stockpile Alternative |
| Proposed South Mine Pit Expansion | Haul Road |
| Plant Area | |
| Tailings Basin | |
| Tailings Pipeline | |
| East Stockpile Alternative | |

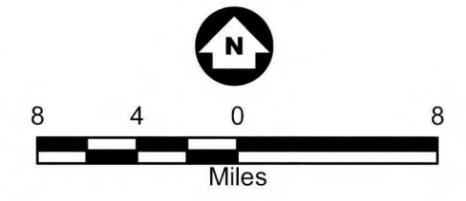


Source: USGS, Barr, LMIC, MNDNR, National Hydro Dataset, MPCA, Itasca County, St. Louis County, City of Hibbing, City of Nashauk, U.S. Steel, and Mn/DOT. 2008 Aerial Photograph

Figure 2
U.S. Steel Keetac
Keewatin, MN



- Legend**
- Current and Proposed Keetac Footprint
 - Iron Range Study Area
 - County Boundary
 - High Quality Corridors
 - Moderate Quality Corridors



Source: USGS, Barr, LMIC, MNDNR, National Hydro Dataset, MPCA, Itasca County, EOR, St. Louis County, City of Hibbing, City of Nashwauk, U.S. Steel, and Mn/DOT. 2008 Aerial Photograph

Figure 3

Existing Wildlife Travel Corridors
U.S. Steel Keetac
Keewatin, MN



Map: L:\1472\04\Mapa1 Chapter 5 Cumulative Effects Wildlife Travel Corridors.mxd

Cass County

Aitkin County

Koochiching County
Itasca County

Saint Louis County

Saint Louis County
Lake County

Current and Proposed Keetac Footprint

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