

TAMARACK MINING PROJECT

DRAFT SCOPING DECISION DOCUMENT

1.0 INTRODUCTION AND PURPOSE

1.1. BACKGROUND

The Minnesota Department of Natural Resources (DNR) will prepare an environmental impact statement (EIS) for the Tamarack Mining Project (Project) proposed by Talon Nickel (USA), LLC (Talon or Proposer) to extract nickel, copper and other metals. The EIS will allow evaluation of the Project in accordance with the *Minnesota Environmental Policy Act* (MEPA; Minn. Stat. Ch. 116D). The proposed Project is located north of Tamarack, Minnesota, in an unincorporated portion of Aitkin County. Ore and waste rock from the mine would be shipped by rail to concentrators located in Mercer County, North Dakota, and Marquette County, Michigan. Tailings would not be generated in Minnesota, and no tailings storage would occur in Minnesota.

Talon proposes to construct an underground mine and surface facilities across 378.8 acres located approximately 1.5 miles north of Tamarack, Minnesota. The surface at the Project Area is a mix of private, state-administered, and county ownership. The underground Tamarack Resource Area is a mix of state-owned and private mineral ownership.

The Project would include:

- A 206.2-acre underground boundary (surface acreage above underground workings)
- A 206.4-acre surface boundary
 - Long-term facilities (43.2 acres) supporting mine operation
- Temporary construction laydown and staging areas (17.6 acres) to support site construction
 - Other potential temporary use areas (124.4 acres) for activity such as construction access and equipment maneuvering
 - A 1.5-mile-long rail-spur connection (21.2 acres) from the mine to the Burlington Northern Santa Fe (BNSF) mainline

Extraction of ore containing nickel, copper and other metals would occur at the site over an estimated 7 to 10 years. An estimated 10.5 million short tons (9.5 million tonnes) of ore would be mined during the operational life of mine. Approximately 0.8 million short tons (0.7 million tonnes) to 1.7 million short tons (1.5 million tonnes) of waste rock would be transported out of state for processing or management. The Project proposes to excavate portions of the Tamarack Resource Area within the Tamarack Intrusive Complex for the target minerals, where much of the rock to be extracted to access the ore is from within the Thomson Formation.

Surface facilities would include an enclosed Ore Transfer Building, a Contact Water Treatment Building, two surface raises, two industrial stormwater ponds, a rail yard, an electrical substation, storage and staging areas, an outdoor backfill materials buffer stockpile and parking. The Ore Transfer Building would

be an enclosed structure connected to the Portal Section of the Decline Ramp and would contain an ore buffer area, material conveyors, crushers, a waste rock buffer area, a backfill batch plant, a rail loadout area and service areas (vehicle maintenance, warehouse, wash bay, refueling bays, emergency vehicle bay). The Contact Water Treatment Building would contain: the Contact Water Treatment Plant, which would be a wastewater treatment plant that would treat contact water and gray water; ancillary pumps and components; and the potable water treatment plant.

The construction phase of the Project would include topsoil removal, overburden excavation using deep soil mixing in fine overburden, a cutoff cell combined with dewatering and Sequential Excavation Method in coarse overburden, drill and blast methods in bedrock, as well as drop raise and raise bore development. The operations phase of the Project would include ore extraction via drift and fill mining and longhole stoping, indoor storage of material, loading, hauling and backfilling (Cemented Rock Fill and Uncemented Rock Fill). Subsequent phases would be reclamation, closure and potential postclosure maintenance.

Excavated material consisting primarily of overburden from the Portal and SEM Sections of the Decline Ramp would be hauled to the surface and loaded onto trucks for transport off-site to a licensed landfill. Ore and waste rock not designated for backfill from the site would be loaded onto rail cars and transported via rail to Talon-owned off-site concentrators in Mercer County, North Dakota, and Marquette County, Michigan. To connect the mine with the BNSF mainline, an approximately 1.5-mile-long rail spur would be constructed for the Project.

The DNR is the Responsible Governmental Unit (RGU) for environmental review of the proposed new mine's construction, operations, reclamation and closure pursuant to Minn. R. 4410.4400, subp. 8b. This Draft Scoping Decision Document (DSDD) is a companion to the Scoping Environmental Assessment Worksheet (Scoping EAW), prepared by the DNR operating as RGU.

1.2. SELECTION OF APPROPRIATE ENVIRONMENTAL REVIEW DOCUMENT

An EIS is mandatory for this project pursuant to Minn. R. 4410.2000, subp. 2. The rule directs that an EIS shall be prepared if the project meets or exceeds the thresholds of any of the EIS categories listed in Minn. R. part 4410.4400. Minnesota Rules 4410.4400, subp. 8.B, prescribes mandatory preparation of an EIS for construction of a new facility for mining metallic minerals.

1.3. PURPOSE AND NEED OF THE PROJECT

The purpose of the Project is to mine ore containing nickel, copper, and additional metals from the Tamarack Resource Area within the Tamarack Intrusive Complex near Tamarack, Minnesota, by underground mining methods and to transfer metal ore and waste rock outside of Minnesota to processing facilities in Mercer County, North Dakota, and Marquette County, Michigan. Given the Project would not be carried out by a governmental unit, neither the need for the Project nor the beneficiaries are required to be addressed in the Purpose Statement.

2.0 PROJECT ALTERNATIVES

Minnesota R. part 4410.2300, subp. G, requires an EIS to address one or more alternatives of each of the following types, or provide an explanation of why no alternative of a particular type is included in the EIS: alternative sites, alternative technologies, modified designs or layouts, modified scale or magnitude, and alternatives incorporating reasonable mitigation measures identified through comments received during the comment periods for EIS scoping or for the Draft EIS. The alternative of no action shall also be addressed.

The rule allows the RGU to exclude an alternative from detailed analysis if it meets one or more of the following conditions: it would not meet the underlying need for or purpose of the project; it would likely not have significant environmental benefit compared to the project as proposed; or another alternative, of any type, would likely have similar environmental benefits but substantially less adverse economic, employment or sociological impacts. Alternatives developed during scoping or included in the scope of the EIS that were considered but eliminated will be discussed in the Draft EIS, as well as the rationale for their elimination.

2.1. PROPOSED PROJECT

The EIS will describe the proposed Project and the potential environmental, economic, employment and sociological effects outlined in Section 3.0.

2.2. NO ACTION ALTERNATIVE

The EIS will describe the expected condition if the proposed Project is not developed with respect to the potential environmental, economic, employment and sociological impacts outlined in Section 3.0.

2.3. ALTERNATIVE SITES

To assist the RGU in assessing potential alternative sites, the Minnesota Environmental Quality Board's (EQB) *Guide to Minnesota Environmental Review Rules (2010)* identifies several factors the RGU should consider when evaluating whether a potential site can reasonably meet the project's underlying purpose.

The DNR does not propose to evaluate alternative mine sites for the Project. The mineralization of the desired elements within a geologic deposit dictates the location of the mine, therefore, an alternative mine site would not meet the purpose of the Project.

2.3.1. Contact Wastewater Treatment Plant Effluent Discharge Locations

The EIS will evaluate alternative locations for discharging treated effluent from the Contact Water Treatment Plant. The EIS will evaluate the suitability and benefits of alternative discharge locations. The evaluation will rely on existing data and additional information developed during preparation of the EIS,

including predicted water quality and hydrologic changes to receiving waters of effluent discharged from the Contact Water Treatment Plant.

Pipe effluent to discharge to the Tamarack River – Under this alternative, treated effluent would be conveyed by pipeline from the Contact Water Treatment Plant to a discharge point on or in the immediate vicinity of the Tamarack River. The EIS will evaluate the potential effects of Contact Water Treatment Plant discharges on hydrology (e.g., flows; geomorphology) and aquatic biota of receiving waters. The EIS will also evaluate the potential effects of discharge on water quality and quantity to the Tamarack River and downstream waters, including aquatic biota. Finally, the EIS will assess potential impacts to wild rice and methylmercury production from sulfate discharges and/or hydrologic changes to receiving waters.

Pipe effluent further on the proposed route to be discharged farther downstream – Under this alternative, treated effluent would be piped from the Contact Water Treatment Plant to a discharge point located farther downstream within the north ditch (i.e., County Ditch 13) network. The EIS will evaluate the potential effects of Contact Water Treatment Plant discharges on hydrology (e.g., flows; geomorphology) and aquatic biota of receiving waters. The EIS will also evaluate the potential effects of discharge on water quality and quantity to the Tamarack River and downstream waters, including aquatic biota. Finally, the EIS will assess potential impacts to wild rice and methylmercury production from sulfate discharges and/or hydrological changes to receiving waters.

2.4. ALTERNATIVE TECHNOLOGIES

2.4.1. Mining Technologies

Use electric trucks and equipment for mining – Under this alternative, the EIS will assess the feasibility of utilizing electric trucks and electric-powered mining equipment in place of internal combustion engine-powered vehicles and equipment. The analysis will consider factors such as equipment availability, operational safety and infrastructure and grid requirements. The EIS will also evaluate the potential effects of this alternative on air emissions from mobile sources, including onsite vehicles and other equipment. Additionally, the EIS will evaluate the alternative's potential to generate greenhouse gas (GHG) emissions, considering both direct and indirect emissions during the life of the mine. The evaluation will rely on existing data and on additional information developed during preparation of the EIS.

2.4.2. Transportation Technologies

Transport ore and/or waste rock by rail to a port on Lake Superior, then transport it by ship to Marquette County, Michigan – Under this alternative, the EIS will assess the feasibility of sending ore by rail to a Minnesota port on Lake Superior, then transferring it to an ore ship or freighter for delivery to Marquette County. The analysis will consider factors such as equipment availability, infrastructure needs and regulatory requirements. The EIS will also evaluate the potential effects of this alternative on air emissions from mobile sources, including rail and ship. Additionally, the EIS will evaluate the alternative's

potential to generate GHG emissions, considering both direct and indirect emissions during the life of the mine. The evaluation will rely on existing data and on additional information developed during preparation of the EIS.

2.5. MODIFIED DESIGNS OR LAYOUTS

The DNR will not evaluate alternative designs and layouts for ore transportation from the mine to the processing plants in North Dakota and Michigan. The proposed Project includes using existing railroads with construction of a railroad spur at the mine site. Alternative modified designs and layouts would not likely provide significant environmental benefit over the proposed Project.

2.5.1. Overburden Management Locations

The EIS will evaluate alternative locations for managing overburden generated during construction and subsequently used during reclamation. Both alternatives account for uncertainty about the potential chemical reactivity of the overburden. The evaluation will rely on existing data and on additional information developed during preparation of the EIS, including a materials characterization analysis to determine chemistry and reactivity of the overburden. The EIS will evaluate the suitability and benefits of alternative overburden management locations. Because the materials characterization analysis will impact which alternative is analyzed in the EIS, it will be assessed first.

Manage non-reactive overburden in proximity to or within the Project Area – Under this alternative, overburden characterized as non-reactive would be stockpiled for storage in a dedicated area on Talon-owned property either within or adjacent to the Project Area that is currently planned for use as construction staging areas, laydown areas or operational support areas. The EIS will include an analysis to determine the overburden levels of mercury and carbon (e.g., CO₂) that are sequestered and could be released to the environment. The EIS will also evaluate the potential for fugitive particulate emissions from wind erosion and material transfer. Finally, the EIS will assess the alternative's potential to generate GHG emissions.

Manage reactive overburden within the Project Area – Under this alternative, overburden identified as reactive would be stockpiled in a dedicated area for storage within the Project Area that would be used in coordination with construction staging, operational support and site infrastructure. The EIS will include an analysis to determine the overburden levels of mercury and carbon that are sequestered and could be released to the environment. The EIS will also evaluate the potential for fugitive particulate emissions from wind erosion and material transfer. In addition, the EIS will assess the quantity and quality of contact water runoff, including leachate, from the stockpile storing reactive overburden. The EIS will also assess the alternative's potential to generate GHG emissions.

2.6. MODIFIED SCALE OR MAGNITUDE ALTERNATIVES

The DNR does not propose to evaluate scale or magnitude alternatives to the project. The location and orientation of the Tamarack deposit combined with the infrastructure requirements to mine the ore are

such that alternative scale/magnitude would likely not have significant environmental benefits compared to the proposed Project.

2.7. INCORPORATION OF MITIGATION MEASURES IDENTIFIED THROUGH PUBLIC COMMENTS

The EIS will consider all mitigation measures suggested through public comment. Those mitigation measures that were identified but not carried forward for analysis will be discussed briefly in the EIS as well as the reasons for their elimination.

3.0 EIS ISSUES

For environmental impacts, the EIS will provide a thorough but succinct discussion of potentially significant adverse or beneficial effects, be they direct, indirect or cumulative, generated for the proposed Project and each alternative identified in Section 2. Data and analyses shall be commensurate with the importance of the impact and relevance of the information to a reasoned choice among alternatives and to the consideration of the need for mitigation measures. Less important material may be summarized, consolidated or simply referenced. The EIS shall identify and briefly discuss any major differences of opinion concerning significant impacts of the proposed Project on the environment.

Potential significant environmental issues were identified and described in the Scoping EAW and are recategorized below by significance and the amount of additional analysis proposed to be included in the EIS. Significance was determined by the RGU based on Project information in the EAW, input from subject matter experts and regulatory criteria, and takes into consideration likely public interest in the topic. Mitigation measures that could reasonably be applied to eliminate or minimize potentially adverse project effects will also be identified in the EIS.

3.1. TOPIC HAS BEEN ADEQUATELY ADDRESSED AND WILL NOT BE EXPANDED UPON IN THE EIS

There are no topics in the Scoping EAW that fall into this category. Every topic from the Scoping EAW will be discussed in greater detail in the EIS.

3.2. TOPIC REQUIRES ADDITIONAL ANALYSIS IN THE EIS TO DETERMINE SIGNIFICANCE

Several topics did not have enough information available at the time of Scoping EAW development to assess potential significance. Information beyond that provided in the Scoping EAW and analysis will be included in the EIS. These topics include:

- Climate Adaptation and Resilience (Scoping EAW Item 7)
- Land Use (Scoping EAW Item 10)
- Geology, Soils, and Topography (Scoping EAW Item 11)

- 207 • Contamination, Hazardous Materials, and Waste (Scoping EAW Item 13)
- 208 • Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Scoping EAW Item 14)
- 209 • Historic Properties (Scoping EAW Item 15)
- 210 • Visual (Scoping EAW Item 16)
- 211 • Greenhouse Gas Emissions/Carbon Footprint (Scoping EAW Item 18)
- 212 • Noise (Scoping EAW Item 19)
- 213 • Transportation (Scoping EAW Item 20)
- 214 • Cumulative Potential Effects (Scoping EAW Item 21)

215 **3.2.1. Climate Adaptation and Resilience (Scoping EAW Item 7)**

216 **3.2.1.1. Discussion Topics**

217 The EIS will assess climate adaptation and resilience as it relates to the effect of climate change on mine
218 operation, reclamation and closure, as well as the effect of the Project on climate change.

219 The EIS will include a detailed discussion of topics including:

- 220 • Documented historical climate trends for Minnesota, northeastern Minnesota and the Project
221 Area
- 222 • Modeled future climate projections for Minnesota, northeastern Minnesota and the Project Area
- 223 • Impacts of the proposed Project (and alternatives to the proposed Project) on climate trends
- 224 • Impacts of climate change on the proposed Project (and alternatives to the proposed Project)
- 225 • Cumulative impacts on resources as a result of both the proposed Project and climate change
- 226 • Mitigation and/or adaptation strategies to address impacts such as drought conditions, wind,
227 extreme heat and other factors and scenarios

228 **3.2.1.2. Proposed EIS Treatment**

229 The EIS will provide a detailed analysis of the topic that will update and expand upon information
230 contained in the Scoping EAW.

231 The EIS will discuss present trends and predicted changes in temperature and precipitation for
232 Minnesota, northeastern Minnesota and the Project Area. Temperature trends will be reported for
233 daytime, nighttime and season (i.e., winter, summer) conditions of the period of record. Precipitation
234 trends and predicted changes will be provided, including the frequency and intensity of heavy
235 precipitation events.

236 The EIS will address how climate change may affect the full life cycle of facilities and mining operations at
237 construction, operations, reclamation, closure and postclosure, as well as how it may affect rail-based
238 infrastructure (i.e., rail spur) facilitating transport of materials to the processing facilities. The EIS will
239 identify the mitigation and/or adaptation strategies needed to address these potential impacts, including
240 drought conditions, wind, extreme heat and extreme precipitation events. The criteria to be considered
241 will include the 200 year, 24-hour event and the 500 year, 24-hour event, along with projected future

storm intensities; if warranted, potentially larger storm events may be considered. The projected overall Project timeline is:

- Finalize EIS and permitting (Duration to be determined for the EIS)
- Construction (2 years)
- Mine operation (10 years)
- Site Reclamation (Duration to be determined for the EIS)

The assessment will also consider emergency management measures to address potential impacts to Project infrastructure in the event of an extreme precipitation event or any other climate-related circumstance.

The EIS will acknowledge uncertainty in Global Climate Models (GCMs) and the downscaling of GCMs. Mid-century climate change projections will be used to assess vulnerabilities and risk to inform resilient Project planning and design.

A detailed evaluation of how climate trends could influence water resources during and after operations will also be part of the EIS. While the stormwater management system has been designed to meet or exceed the requirements of the Minnesota Pollution Control Agency (MPCA) Construction Stormwater General Permit, additional analysis of system performance and resilience to future precipitation trends will be addressed in the EIS if the Project design is further refined.

Consideration of long-term climate trends, including precipitation and temperature changes, will inform the development of reclamation and closure plans during the EIS and permitting phases. These plans will be based on the best available climate science at the time of their development and will be designed to ensure long-term stability and function under a range of plausible future climate conditions.

Mitigation measures for adverse impacts will be described.

3.2.1.3. Data Needs

Publicly available data and/or additional data needs that can be used to assist in developing the EIS include:

- Local site data, including topography, mapping of wetlands and saturated soils and local knowledge of historical data
- U.S. Environmental Protection Agency (USEPA) Streamflow Projections Map
- Minnesota Climate Trends Tool
- Minnesota Climate Explorer
- Representative Concentration Pathway (RCP) 8.5 higher emissions scenario
- Minnesota CliMAT (Climate Mapping and Analysis Tool) projections available at the County level
- Shared Socioeconomic Pathway (SSP) 370 and 585 emissions scenarios
 - UMN future climate datasets including mid-century 2040-2059 projections
- Climate Mapping for Resilience and Adaptation (CMRA) tool for hazard focused indicators like extreme heat, flooding and similar factors

- 278 • The MN Climate Calculator
- 279 • 2060 USEPA Climate Resiliency Evaluation and Awareness Tool
- 280 • USDA Wildfire Risk Tool
- 281 • Historical Aitkin County flooding data
- 282 • National Oceanic and Atmospheric Administration Atlas 14, Volume 8
- 283 • Full range of storm events including 200 year and 500 year storm events/intensities

284 **3.2.2. Land Use (Scoping EAW Item 10)**

285 **3.2.2.1. Discussion Topics**

286 The EIS will evaluate the effect of surface operations on land use at and near the proposed mine,
287 including as it relates to Aitkin County planning and zoning policies and plans.

288 The EIS will include a detailed discussion of topics including:

- 289 • Current land use and jurisdictional designations and changes to land use associated with Project
290 construction and operation
- 291 • Compatibility of Project changes with Aitkin County's Mining and Reclamation Ordinance and
292 zoning requirements
- 293 • Impacts to access to public lands and open space, including hunting ground, forest recreation and
294 gathering activities
- 295 • Direct and indirect effects on Savanna State Forest, Grayling Wildlife Management Area (WMA),
296 and other state-owned lands
- 297 • Effects on local flooding as it relates to the Aitkin County Flood Insurance Study and local hazard
298 mitigation plans
- 299 • Impacts to wild rice harvesting, including both tribal and non-tribal harvesters

300 **3.2.2.2. Proposed EIS Treatment**

301 The EIS will provide a detailed analysis of the topic that will update and expand upon information
302 contained in the Scoping EAW.

303 The EIS will characterize existing and proposed land uses associated with the Project based on
304 information compiled by Talon from public and state sources, as well as Project mapping. It will describe
305 current land uses and jurisdictional designations, then summarize changes associated with project
306 construction and operation. A baseline inventory will be prepared for an area of interest that includes
307 the Project footprint, including laydown, storage and rail corridors, and surrounding buffers suitable for
308 local planning review. Land use classes from parcel, zoning and comprehensive plan datasets will be
309 reconciled using a simple crosswalk so that classes remain comparable across jurisdictions. Acreage by
310 class will be calculated for the footprint and for buffers. Where public lands are present, the analysis will
311 note governing authority and any stated purpose relevant to land use decision making.

The EIS will assess compatibility by comparing project elements to applicable zoning and comprehensive plan policies, identifying whether the use is permitted, conditional or not listed, and whether overlay districts introduce additional criteria such as shoreland or airport zones. Transportation access will be summarized by identifying primary approaches and any functional class constraints. Where trails or recreation features intersect the Project area of interest, the analysis will describe proximity and applicable management guidance. Change in land use will be quantified by overlaying project elements on the baseline land use and zoning layers to compute conversion acreages by class.

As part of the analysis, the EIS will identify the importance to Tribes of manoomin (wild rice) and other resources within the Project Area and other areas as determined appropriate. The EIS will also identify culturally significant hunting, fishing and gathering resources in the Project Area. A map of Tribal Reservation lands and waters in the area near the Project site will be included in the EIS.

Mitigation measures for adverse impacts will be described.

3.2.2.3. Data Needs

Publicly available data and/or additional data needs that can be used to assist in developing the EIS include:

- County parcel and tax classification data
- Local and county zoning layers
- Transportation layers
- Ownership and public land maps
- Locations of nearby residences, farms and businesses
- Aitkin County Comprehensive Land Use Plan
- Aitkin County Mining and Reclamation Ordinance
- Aitkin County Tactical Forest Management Plan
- Minnesota Natural Wild Rice Harvester Survey-2007
- Minnesota Natural Wild Rice Harvester Survey-2022
- DNR 350 Important Wild Rice Waters in Minnesota
- MPCA Wild Rice Inventory
- Minnesota Natural Resources Atlas
- Natural Resources Conservation Service (NRCS) Web Soil Survey
- Federal Emergency Management Agency Flood Insurance Rate Map
- Cultural resource inventory developed from coordination and input from Tribes

3.2.3. Geology, Soils, and Topography (Scoping EAW Item 11)

3.2.3.1. Discussion Topics

The EIS will evaluate how the area's geology, soils, and topography could affect and be affected by mining operations. The EIS will include a detailed discussion of topics including:

- A materials characterization analysis to determine predicted chemistry and reactivity of overburden, ore, waste rock, fines and backfill
- Environmental effects of handling ore and waste rock generated by extraction
- Risk of tunnel failure and/or subsidence during operations, closure and postclosure and a mitigation plan
- Methods to avoid or minimize construction on peat or muck soils
- Hydrologic alteration that could affect peat soils
- Levels of mercury and carbon that are sequestered in soils and could be released to the environment

3.2.3.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

Geology

The EIS will estimate the amount of overburden, ore and waste rock proposed for offsite transport.

The EIS will include geological information derived from multiple sources. Information provided will include regional and site-specific surficial geology mapping, stratigraphic descriptions of Quaternary deposits, bedrock geology descriptions of the Tamarack Intrusive Complex and surrounding Thomson Formation, and summaries of exploration drilling and geophysical data used to characterize subsurface conditions. Supporting materials may include maps, cross-sections and tabulated summaries derived from geological investigations conducted to date. Mapping of known and inferred faults, fractures and fissures will be utilized throughout the underground mine workings area, based on publicly available geological information and proposer-collected data, including borings. Surficial geology will be summarized using established glacial stratigraphic frameworks to describe the distribution and thickness of tills, glaciolacustrine sediments, outwash and organic soils. Bedrock geology will be described using lithologic, structural and mineralogical classifications developed through drilling, logging and analytical programs.

The EIS will include the results of a materials characterization agreed to by the DNR. The materials characterization will include a full suite of samples subjected to static and kinetic test methods whose results are statistically robust and representative of materials disturbed detailing how the material(s) would weather when exposed to moisture. Pursuant to Minn. R. 6132.1000, subps. 1 and 2, the materials characterization will include chemical analysis of mine waste, mineralogical and petrological analysis of mine waste and laboratory tests describing acid generation and dissolved solids release from mine waste. Because materials characterization may also include the provisions of subp. 2, item C, the RGU may require the following supporting information in the EIS, specifically: 1) particle size distribution; 2) chemical composition, mineralogical composition and specific surface area as a function of particle size; and 3) laboratory dissolution tests to describe the effect of rock composition, in particular, acid-producing and acid-consuming mineral content, on acid generation and dissolved solids release. Information collected by the materials characterization program will be used to determine source inputs

for the EIS water quality impact modeling. This information may also be used in other impact modeling or other analyses if determined appropriate.

The EIS will include detailed geologic cross-sections, including project surface layouts. Geotechnical analysis and modeling will include identification of potential fractures, joints and faults. Cut and fill estimates will be provided and will consider void space of ore and waste rock, and the space required for handling them. The EIS will require mapping and modeling of known or inferred zones of enhanced high water inflow, including artesian conditions. The potential for postclosure subsidence of the bedrock surface and at the ground surface will be evaluated. The crown pillar area rock quality and additional subsidence analysis with assessments of potential long-term deflection over the life of the Project and beyond will be incorporated into the EIS. A mitigation plan for subsidence postclosure, should it occur, will also be included.

The EIS will include a map detailing known sand and aggregate resources located in Aitkin County and Carlton County.

Mitigation measures for adverse impacts will be described.

Soils

The EIS will provide a detailed analysis of the topic that will update and expand upon information on existing soil conditions contained in the Scoping EAW. The EIS will identify potential contamination resulting from project activities or potential migration of contaminants from project components. This will include identification of specific contamination mechanisms, sources, and/or pathways resulting in contamination. Avoidance and mitigation measures will be identified.

The EIS will require an engineering evaluation of soils to be conducted as part of the Project design for areas that would be impacted by construction and operation. This will include an analysis to determine the overburden levels of mercury and carbon that are sequestered and could be released to the environment. The EIS will evaluate the potential for excavated peat to result in mercury releases to the environment, as well as the potential effects of peat wetting and drying resulting in mercury and/or sulfate mobilization and subsequent changes in methylmercury production.

Mitigation for adverse impacts will be identified.

3.2.3.3. Data Needs

Publicly available data and/or additional data needs for geology and soils that can be used to assist in developing the EIS include:

- Results from tests performed as part of the Materials Characterization Program as approved by DNR
- Results of groundwater hydrology program, including pump tests and piezometers, to identify deep and shallow groundwater interactions, flows and recharge patterns
- County Geologic Atlas
- Minnesota Geological Survey

- 421 • Proposer drill core data and interpretation
- 422 • NRCS Web Soil Survey.
- 423 • Aitkin County Land Department Studies
- 424 • National Wetlands Inventory (NWI)
- 425 • Primary permeability and enhanced permeability zones of the site
- 426 • Levels of mercury and carbon that are sequestered and could be released to the environment by
- 427 Project activities
- 428 • Field data to create maps of the soil types along the site to identify peat and muck areas
- 429 • Clearer reporting of soil type coverage in the Project Area, including a revised version of the
- 430 summary table from the Scoping EAW

431 **3.2.4. Contamination, Hazardous Materials, and Waste (Scoping EAW Item 13)**

432 **3.2.4.1. Discussion Topics**

433 The EIS will describe and evaluate known contamination within the Project Area and the potential for
434 contamination associated with Project activities. The EIS will also describe hazardous materials used by
435 the Project and hazardous waste generated during the life of the Project. The EIS will include a detailed
436 discussion of topics including:

- 437 • A summary of existing conditions and the potential increase in environmental risk posed by
- 438 project activities
- 439 • Hazardous materials that may be generated or exposed
- 440 • Probability of an accidental release of representative hazardous materials during transportation
- 441 to and from the Project site, based on regional or representative transportation data
- 442 • Waste management best practices to be employed during the life of the Project, including
- 443 handling and storage methods
- 444 • Potential environmental effects from solid waste handling, storage, and disposal, including
- 445 potential releases from Ore Transfer Building
- 446 • Applicable regulations the proponent will comply with during construction, operations, closure
- 447 and postclosure of the mine

448 **3.2.4.2. Proposed EIS Treatment**

449 The EIS will provide a detailed analysis of the topic that will update and expand upon information
450 contained in the Scoping EAW.

451 The EIS will describe waste and materials information using a descriptive, systems-based approach. For
452 each category, it will explain how materials are generated, handled, stored and transferred within the
453 Project, and how those activities align with applicable regulatory frameworks. For existing contamination
454 or environmental hazards, it will describe the presence and location of known features and explain their
455 spatial relationship to the proposed Project footprint, without evaluating significance. The EIS will

describe the role of contingency planning, spill prevention planning and response action planning as part of an integrated materials management framework.

The EIS will assess storage needs for materials used or generated by the Project.

An offsite wastewater treatment facility proposed to handle Project-generated toilet waste, and how wastewater would be conveyed to the offsite facility, will be analyzed in the EIS.

The EIS will provide data on waste streams relating to wastewater treatment, including reverse osmosis (RO) reject, filter backwash solids and sludge.

A spill prevention plan will be developed for the EIS. This plan will include information on the chemicals and/or hazardous materials that will be used and their method of storage. In addition to the spill prevention plan, the number, location and size of any new above or below ground tanks to store petroleum or other material will be provided in the EIS.

The EIS will require specific information on railyard procedures, such as where covers will be stored before installation on rail cars and whether they will be re-used. Cleaning procedures as well as construction and operation of the Ore Transfer Building and potential releases will be provided in the EIS. Contingency strategies to manage materials if the storage capacity of the building and railcars are exceeded will also be provided in the EIS.

Other information that will be provided in the EIS includes the management of materials generated during operation of the Project, such as solid waste streams and fine particles collected from underground settling pumps.

The EIS will discuss polyfluoroalkyl substances (PFAS) content of products that would be expected to be used in significant quantities for the Project, with a focus on intentionally-added PFAS (i.e., products where PFAS is deliberately added during manufacturing to achieve a specific quality or function, such as stain resistance or waterproofing).

A Contingency or Response Action Plan will be addressed at a conceptual level in the EIS for tanks, wastewater treatment and hazardous waste generation associated with the Project.

Mitigation for adverse impacts will be identified.

3.2.4.3. Data Needs

Publicly available data and/or additional data needs that can be used to assist in developing the EIS include:

- What's in My Neighborhood web mapping tool for previously contaminated properties, environmental permits, emergency management activities and more
- The Minnesota Geospatial Commons
- Safety Data Sheets for materials used and/or stored during the Project

- A list of the chemicals and/or hazardous materials that would be used and/or stored during the Project
- Amount of estimated toilet waste to be generated by the Project
- US Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration reports and Hazmat Incident Database
- USDOT Federal Motor Carrier Safety Administration Hazardous Materials Report
- USDOT Bureau of Transportation Statistics Hazardous Materials Transportation Incidents 2010 and 2017-2023

3.2.5. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Scoping EAW Item 14)

3.2.5.1. Discussion Topics

The EIS will discuss potential impacts to fish and wildlife habitats and to federally and state-protected species and sensitive ecological resources.

The EIS will include a detailed discussion of topics including:

- Direct and indirect impacts to terrestrial wildlife species and habitat
- Direct and indirect impacts to aquatic species, including fish, and habitat
- Direct and indirect impacts to wild rice stands, wetlands and other aquatic resources
- Direct and indirect impacts to native plant communities
- Direct and indirect impacts to nearby sensitive and rare ecological communities and habitat for state- and federally protected species associated with construction and mining operations
- Direct and indirect impacts to wildlife moving in vicinity of the Project Area during construction and operation
- Vegetation clearing and movement of equipment during construction that could make Project Area susceptible to the introduction and spread of invasive plant species

3.2.5.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

The EIS will discuss potential direct and indirect impacts to fish and wildlife species and habitats, and sensitive ecological resources. The EIS will address impacts at the site-specific and regional scales. The EIS will address the potential for impacts to federal and state threatened and endangered species, and species of special concern. Where information is insufficient to confirm the presence of any of the listed species, the EIS may require collection of additional data on a case-by-case basis.

The following surveys, studies, data and analyses will be reviewed to assess direct and indirect impacts to fish, wildlife, plant communities and sensitive ecological resources:

- 523 • Aquatic survey
- 524 • Freshwater mussel survey
- 525 • Acoustic monitoring for bat resources
- 526 • Wild rice habitat survey and sediment study (including downstream waterbodies)
- 527 • Water quality and quantity modeling and associated studies needed to assess habitat, aquatic
- 528 and wetland resources and communities.
- 529 • WMAs within proximity to Project site
- 530 • Baseline mercury data, including speciation in peat, wetlands and streams
- 531 • Effects of mercury and methylmercury on aquatic and terrestrial biota
- 532 • Site plan review to determine interactions between wildlife and operations
- 533 • Vegetation survey study
- 534 • Biological resources baseline study to document terrestrial and aquatic species (including invasive
- 535 species present), including desktop review, habitat assessment and species surveys

536 Talon will provide survey and habitat data through specialized studies to support the EIS. This includes
 537 surveys for potential maternity roost trees for bats.

538 The EIS will assess future climate trends in the area, which indicate anticipated increases in temperature
 539 and variability in precipitation, and will provide a more detailed assessment of potential indirect and
 540 cumulative climate impacts on fish and wildlife associated with the Project.

541 Mitigation measures for adverse impacts will be described.

542 **3.2.5.3. Data Needs**

543 Publicly available data and/or additional data needs for fish and wildlife habitats that can be used to
 544 assist in developing the EIS include:

- 545 • The Minnesota Natural Heritage Information System (NHIS)
- 546 • The Minnesota Biological Survey (MBS)
- 547 • The Minnesota Rare Species Guide
- 548 • The Minnesota State Wildlife Action Plan Species of Greatest Conservation Need
- 549 • The US Fish and Wildlife Service Information for Planning and Consultation (IPaC) system
- 550 • DNR 350 Important Wild Rice Waters in Minnesota
- 551 • Natural Wild Rice in Minnesota: A Wild Rice Study document submitted to the Minnesota
- 552 Legislature by the Minnesota Department of Natural Resources. February 15, 2008.
- 553 • Minnesota DNR Shallow Lakes Program Plan
- 554 • Minnesota DNR Duck Action Plan
- 555 • Minnesota Natural Resource Atlas
 - 556 ○ DNR Lakes of Biological Significance
 - 557 ○ Minnesota Natural Resource Atlas - DNR Model of Wild Rice Presence
- 558 • Minnesota DNR GIS layer - Floating & Emergent Lake Plants
- 559 • MPCA Wild Rice Waters List

- MPCA Environmental Quality Information System (EQulS)
- Wild Rice Monitoring Handbook and Field Guide
- USEPA Ecoregions of North America
- DNR Ecological Classification System

3.2.6. Historic Properties (Scoping EAW Item 15)

3.2.6.1. Discussion Topics

The EIS will identify potential historic properties, archaeological properties and cultural resources present in the Project Area. Historic resources include extant structures, such as buildings and bridges, as well as districts and landscapes. Archaeological resources include prehistoric, pre-contact (contact with Euro-Americans) and post-contact historic artifacts, structural ruins or earthworks and are often partially or completely below ground. Cultural resources can include sacred and burial locations and areas where traditional practices, resources, or cultural properties are used; they can also include artifacts, bodies of water, wild rice waters and rivers, wildlife, and medicinal plants.

The EIS will include a detailed discussion of topics including:

- Direct and indirect impacts to archaeological resources and unmarked human burials as a result of construction, including the surface-mine facility and below-ground activities, railroad spur and utility installation
- Direct and indirect impacts to historical buildings and structures as a result of construction of the above-ground mine facility and disturbance in neighboring areas
- Direct and indirect impacts to cultural resources from construction-related site disturbance, including the surface-mine facility and below-ground activities, and subsequent direct and indirect impacts during operations, reclamation and closure of the mine

3.2.6.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

The EIS will develop counts and categories of cultural resources including archaeological and historic resources, sacred places, Traditional Cultural Properties and Traditional Cultural Landscapes within the study area and project vicinity. The EIS will evaluate direct and indirect impacts to cultural resources.

Known cultural resources that are eligible for, listed in, or nominated but unevaluated for listing in the Minnesota State Historic Sites Network and the Minnesota State Register of Historic Places will be included in the EIS. In addition, the EIS will assess impacts to known historic properties that are eligible for, listed in, or unevaluated for listing in the National Register of Historic Places (NRHP). The National Historic Preservation Act defines the term “historic property” to include districts, sites, buildings, structures, landscapes, and objects included in or eligible for the NRHP (54 U.S. Code 300308). Impacts

to Tribal resources, such as historic hunting grounds, water, lands and treaty-related interests will also be evaluated.

Proposed analyses for the EIS include:

- Archaeological, Historical and Ethnographic Resources Inventories
- Phase I archeological survey completed in 2025, which includes Phase Ia visual assessment and Phase Ib survey (e.g., pedestrian survey; shovel testing)
- Phase II archaeological surveys (if warranted)
- Ethnographic Resources Consultation

Other information developed for the EIS relevant to the impact assessment includes an aquatic survey, a baseline wild rice study (downstream waterbodies), a viewshed analysis, a noise and vibration study, and water quality and quantity modeling and reports.

Mitigation for adverse impacts will be identified.

3.2.6.3. Data Needs

Publicly available data and/or additional data needs for historic properties that can be used to assist in developing the EIS include:

- Minnesota State Historic Preservation Office (SHPO) and the Minnesota Office of the State Archeologist (OSA) inventory files
- NRHP records
- Historic maps (e.g., Trygg Composite Maps; General Land Office survey maps and notes)
- Reports, notes, and libraries from Tribal Historic Preservation Offices (THPO) or Tribal governments
- Regional historical and archaeological overviews and previous archaeological survey reports
- Dirt Divers Tribal Cultural Resources Study
- Barr Phase I Cultural Resources Report

3.2.7. Visual Resources (Scoping EAW Item 16)

3.2.7.1. Discussion Topics

The EIS will assess potential project impacts to visual resources in the Project vicinity and surrounding landscape.

The EIS will include a detailed discussion of topics including:

- Visual impacts to area residences and travelers along County Road 31 and the City of Tamarack as a result of mining operations
- Light pollution from outdoor Project lighting
- Potential visual impacts from vapor plumes

- 627 • Impacts to nearby Traditional Cultural Properties, Traditional Cultural Landscapes, cultural and
- 628 historic resources and traditional cultural uses
- 629 • Potential mitigation strategies

630 **3.2.7.2. Proposed EIS Treatment**

631 The EIS will provide a detailed analysis of the topic that will update and expand upon information
632 contained in the Scoping EAW.

633 The EIS will include viewshed analysis and modeling to assess visual impacts and identify mitigation
634 methods. A visibility analysis including night-time conditions will also be included. A screening plan will
635 be developed, especially as it relates to nearby traditional cultural places for Native Americans. The
636 modeling will include “With Trees” and “Without Trees” analyses. A maximum height equal to the tallest
637 proposed structure will be used in the modeling. Photographic documentation of existing conditions may
638 be included as supportive data. The analysis, modeling and reporting will conform to Aitkin County
639 zoning ordinances and currently accepted industry standards.

640 The analysis will include details of:

- 641 • A screening buffer around the Project boundary and how existing trees and new tree plantings
- 642 would be used
- 643 • How this screening barrier would create habitat for wildlife and improve ecological diversity
- 644 • Effects of the barrier on Project emissions, such as air pollutants and noise
- 645 • How Bureau of Land Management (BLM) guidance for lighting and dark sky compliant lights
- 646 would be used in the design, including (1) aiming floodlights down; (2) shielding light fixtures to
- 647 emit light only below the horizon; (3) using vegetation to screen light sources; (4) using the
- 648 minimum level of illumination necessary; (5) employing lighting controls such as motion sensors;
- 649 and (6) installing wildlife-friendly light colors such as amber, orange or red lighting where possible

650 Mitigation for adverse impacts will be identified.

651 **3.2.7.3. Data Needs**

652 Publicly available data and/or additional data needs that can be used to assist in developing the EIS
653 include:

- 654 • Current visual conditions from representative locations and descriptions of existing ambient
- 655 lighting conditions
- 656 • Bortle Dark Sky Scale
- 657 • Data from dark sky measurements from similar locations near the proposed mine site to
- 658 determine the pre-mine level of light pollution in the area using the Bortle scale or similar
- 659 • Aitkin County Mining and Reclamation Ordinance
- 660 • DNR Division of Forestry visual quality guidelines (VMQs) for Aitkin County
- 661 • BLM guidance on lighting and dark sky lighting (BLM Technical Note 457)

- Other (e.g., non-BLM) guidance on lighting and dark sky lighting
- Project plans and topographic information to be used in viewshed analysis and modeling

3.2.8. Greenhouse Gas Emissions/Carbon Footprint (Scoping EAW Item 18)

3.2.8.1. Discussion Topics

The EIS will assess the Project's potential to generate GHG emissions. The EIS will provide information assessing the proposed Project's GHG emissions and assist in identifying opportunities to reduce GHG emissions and improve environmental outcomes.

The EIS will include a detailed discussion of topics including:

- Direct emissions from stationary combustion sources, mobile combustion sources, stationary or area industrial process sources, land clearing and GHG emissions from land use change, including disturbed peat and soils
- Indirect emissions associated with purchased electricity
- GHG lifecycle analysis
- GHG emission calculations for construction and operation
- GHG reduction quantifications for selected mitigation measures
- Cumulative GHG impacts

3.2.8.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

The EIS will require a GHG analysis that considers direct emissions from mobile equipment, stationary combustion sources, fugitive sources from blasting and permanent land use conversion. Indirect emissions will also be evaluated as appropriate and may include items such as purchased electricity, rail transportation, or other relevant activities associated with project construction and operation.

The EIS will require a detailed GHG emissions quantification as part of the emissions inventory; this will include guidance from EQB regarding quantifying GHG emissions. This will include annual emissions in CO₂-equivalent (CO₂e) metric tons by Scope 1, 2 and 3 emissions classifications, net lifetime GHG emissions calculation over entire Project operational period and quantification of GHG reduction benefits from selected mitigation measures. Potential tools for this analysis include:

- MN Climate Calculator
- USEPA Greenhouse Gas Emission Factors Hub for fuel use
- USEPA WARM model for waste management
- U.S. Department of Energy's Greenhouse Gases, Regulated Emissions and Energy Use in Technologies (GREET) life cycle analysis
- eGRID for electricity

- SmartWay for rail transportation
- Proposer data submittal

Relevant standards for the Project include:

- MEPA compliance
- USEPA 40 CFR Part 98 – Mandatory Greenhouse Gas Reporting
- Minnesota Next Generation Energy Act (2007) and Climate Action Framework (2023) requirements
- Intergovernmental Panel on Climate Change (IPCC) Guidelines with AR5 GWP₁₀₀ and subsequent revisions
- ISO14064/14067 GHG reporting standards
- USEPA Center for Corporate Climate Leadership reporting protocols

The EIS will describe and quantify reductions from planned mitigation, if proposed to be implemented for the Project's GHG emissions. Options to further reduce or offset emissions will also be evaluated including activities such as the purchase of carbon credits, planting trees and using different or additional alternatives. The EIS will identify measures taken in reclamation and closure that result in onsite carbon sequestration (i.e., negative emissions) that should be reflected in the closure-condition GHG inventory.

Mitigation for adverse impacts will be identified.

3.2.8.3. Data Needs

Publicly available data and/or additional data needs that can be used to assist in developing the EIS include:

- Proposer's emissions inventory
- USEPA Greenhouse Gas Reporting Program (GHGRP)
- Greenhouse Gas Inventory and Analysis for the United States – University of Maryland Center for Global Sustainability
- International Energy Agency
- U.S. Energy Information Administration (EIA)
- Material/fuel quantities
- Waste disposal quantities and methods
- Estimates of land use area changes with soil and vegetation classifications

3.2.9. Noise (Scoping EAW Item 19)

3.2.9.1. Discussion Topics

The EIS will assess potential noise impacts from the Project to the surrounding area.

The EIS will include a detailed discussion of topics including:

- Noise associated with construction of above-ground facilities, Decline Tunnel, in-mine construction, including blasting and vehicle noise
- Operational noise from above-ground and below-ground operations such as crushing, loading, vehicles, dust suppression, the Ore Transfer Building ventilation system, ventilation raises and blasting
- Road and rail traffic into and out of the facility
- Potential impacts to nearby Traditional Cultural Properties, Traditional Cultural Landscapes, cultural and historic resources, wild rice stands and ceremonial areas
- Potential impacts to nearby noise sensitive receptors, including rural residences and City of Tamarack, wildlife and sensitive and listed species
- Operational and structural mitigation to prevent potential impacts
- Compliance with Minnesota Rules for Noise Standards (Minn R. Ch. 7030)
- Compliance with Minnesota Rules for Air Overpressure and Ground Vibrations from Blasting (Minn. R. 6132.2900)

3.2.9.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

The EIS will analyze noise impacts by utilizing studies of noise sources and mitigation measures, including baseline noise monitoring and ambient conditions assessment, noise impact modeling analysis for construction and operational phases, mitigation measure effectiveness evaluation, and assessment of compliance with applicable noise standards. Maps with contour lines of calculated decibel levels for project components during construction, operations, reclamation, closure and postclosure will be developed for the impact assessment.

The EIS will include noise propagation and vibration modeling and will address the enclosed and non-enclosed noise sources, the blasting process, best practices, blast monitoring, pre-blast surveys, reporting requirements, standards and blast and vibration mitigation measures to ensure compliance with adopted standards. It will include daytime and nighttime noise models for construction, operations, reclamation, closure and postclosure. It will also account for the numerous stationary and mobile noise sources in models of daytime and nighttime activity, with results required to be compared with measured daytime and nighttime noise levels (to assess increase over existing and potential noise, including surface noise) to address compliance with MPCA noise standards.

The EIS will also evaluate construction noise levels using Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) methods that identify equipment and noise levels used during each phase of construction and closure. The assessment of noise from construction and closure will reflect actual equipment likely to be used. Federal Railroad Administration (FRA) methods will be used to evaluate noise from Project-related rail traffic.

An assessment of Project noise and potential impact on the use of Traditional Cultural Properties, Traditional Cultural Landscapes, cultural and historic resources, wild rice stands and the Sandy Lake Memorial Event will be included in the EIS.

Mitigation measures for adverse impacts will be described.

3.2.9.3. Data Needs

Publicly available data and/or additional data needs that can be used to assist in developing the EIS include:

- Identification and mapping of noise monitoring locations and sensitive receptors
- Noise area classification assessment based on receptor land use activity
- Baseline ambient noise level monitoring at representative locations
- Equipment noise specifications for construction and operational machinery
- Underground operations noise and vibration data

3.2.10. Transportation (Scoping EAW Item 20)

3.2.10.1. Discussion Topics

The EIS will assess project-related impacts to and from traffic. It will identify reasonable measures to reduce the amount of truck traffic and mitigate traffic-related noise and emissions. Opportunities to schedule traffic arrival/departure times, reduce traffic during summer months and winter weekends, and manage employee parking offsite will be identified.

The EIS will include a detailed discussion of topics including:

- Increased traffic volumes on rural roadways and intersections near the Project with limited existing capacity
- High peak hour factor-associated congestion during shift-change periods
- Potential heavy vehicle traffic conflicts with weight restrictions and local roadway turning geometry
- Suitability of the existing at-grade rail crossing in the City of Tamarack
- Traffic safety considerations at access points and intersections
- Coordination with existing rail operations and potential conflicts
- Emergency response management in the case of an accidental release or derailment
- Cumulative traffic impacts when combined with other regional development, including aggregate and binder (e.g., cement) delivery to the site, garbage removal, fuel deliveries and toilet waste removal from the site
- Potential for increased traffic, maintenance, seasonal closures and weight limits, and other factors on state and local access roadways from aggregate usage

3.2.10.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

The EIS will assess changes in traffic patterns associated with construction, operations, and closure including from truck and rail traffic into and out of the facility, and a review of applicable local regulations, rules and best practices regarding transportation and traffic management.

The EIS will identify roadway, intersection, highway, traffic management and maintenance-related improvements or measures that would be taken to address Project-related transportation needs. Capital cost estimates may be provided where the improvement or measure is sufficiently defined and reliable cost information is reasonably available.

The EIS will include a map detailing the rail route proposed to transport ore and waste rock across Minnesota to Mercer County, ND, and Marquette County, MI.

The EIS will also include an analysis of transportation resources in accordance with the Minnesota Department of Transportation (MnDOT) Access Management Manual. Elements of the analysis will include but are not limited to:

- Analysis of multiple scenarios, including existing conditions, future conditions without the Project and future conditions with the Project
- Timeframes including current year, year of opening and timeframes after opening
- Level of Service (LOS) and delay analysis for affected roadway segments and intersections
- Evaluation of traffic safety and crash history for affected roadway segments and intersections
- Development of mitigation strategies

Any analysis, modeling and reporting used in the EIS will conform to MnDOT, Local (Aitkin County; City of Tamarack; Carlton County), and Federal (FHWA, FRA) standards and processes as well as currently accepted industry standards, including Institute of Transportation Engineers (ITE) trip generation methodologies and Highway Capacity Manual (HCM) procedures.

Mitigation measures for adverse impacts will be described.

3.2.10.3. Data Needs

Publicly available data and/or additional data needs that can be used to assist in developing the EIS include:

- State, local and regional transportation and comprehensive plans
- MnDOT Traffic Mapping Application
- Minnesota Crash Mapping Analysis Tool (MnCMAT2) or equivalent crash data source
- Site-specific traffic counts and intersection-level traffic counts (turning movement counts) during applicable time periods
- Detailed Project site plan including proposed rail facilities, public roadway ingress/egress layouts and parking facilities

- 836 • Estimated timelines for Project construction and initiation of operations
- 837 • Refined operational schedule and personnel estimates
- 838 • Assumptions regarding the residence location (city-level) of workers and personnel during
- 839 construction and operations
- 840 • Construction phase traffic generation estimates, scheduling and potential use of personnel shuttle
- 841 services
- 842 • Estimate of construction and operations use of Oversize/Overweight Superload Corridor permits
- 843 • Heavy vehicle traffic projections and rail logistics for materials and equipment transport
- 844 • Identified locations where aggregate sources are located or sourced for Project construction and
- 845 operations
- 846 • Traffic forecasting approach in coordination with applicable State and Local transportation
- 847 authorities

848 **3.2.11. Cumulative Potential Effects (Scoping EAW Item 21)**

849 **3.2.11.1. Discussion Topics**

850 The EIS will assess impacts of the Project in the context of baseline conditions and reasonably
851 foreseeable future actions to determine cumulative potential effects of the Project. Issues to be
852 considered include the following:

- 853 • Air quality
- 854 • GHGs
- 855 • Climate change
- 856 • Tribal lands and ceded territories
- 857 • Mercury impairments
- 858 • Loss of federally and state-protected species and sensitive ecological resources
- 859 • Wetland loss and degradation, including traditionally important wild rice stands
- 860 • Peatland loss, degradation and dewatering
- 861 • Wildlife habitat loss and fragmentation
- 862 • Surface water flow changes
- 863 • Water quality changes
- 864 • Historic properties impact
- 865 • Visual resource impacts
- 866 • Changes in noise patterns
- 867 • Water level changes to discharge waters
- 868 • Traffic
- 869 • Economic impacts

870 **3.2.11.2. Proposed EIS Treatment**

The EIS will include a cumulative potential effects analysis in accordance with Minn. R. 4410.0200, subp. 11a. The affected resources related to the cumulative potential effects issues will be used to determine the appropriate geographic and temporal scope of the analysis. In turn, the geographic and temporal scope will be used to identify specific past, present and other projects that might be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid to be considered in the cumulative potential effects analysis.

Potential projects types to be considered include silviculture, peat mining, metallic mineral exploration, transportation, rural town development and agricultural uses. Statewide environmental conditions to be considered include GHG emissions, water resources management and air quality.

Construction considerations include temporary impacts such as increased traffic, noise and habitat disruption. The long-term effects of the Project, including emissions, water usage and land disturbance, will be evaluated in the context of existing regional and statewide environmental conditions.

For the purposes of this assessment, future projects actually planned or for which a basis of expectation have been laid are defined as those actions with environmental impacts that are included in existing prepared plans with specifications, approved planning documents, have approved funding, are permitted, or have a currently active federal or state permit or site plan application under review; see EQB publication *Guide to Minnesota Environmental Review Rules (2010)* at 17-18. Reasonably likely future projects identified by the RGU to date, where there is sufficiently detailed information available about the project to contribute to the understanding of cumulative potential effects, include:

- Premier Horticulture, Inc. Black Lake Bog and Wright Bog Projects
- Aitkin Agri-Peat McGregor Project
- Talon Metals mineral exploration program
- Timber harvest on state- and county-administered lands
- Other reasonably foreseeable future projects as they become known to the RGU

3.3. TOPIC IS SIGNIFICANT AND REQUIRES IN-DEPTH ANALYSIS IN THE EIS

Several topics have been deemed significant and require information beyond what was provided in the Scoping EAW to be included in the EIS. These topics are listed below:

- Surface Water and Wetlands (Scoping EAW Item 12)
- Groundwater (Scoping EAW Item 12)
- Wastewater (Scoping EAW Item 12)
- Air (Scoping EAW Item 17)
- Elongate Mineral Particles

3.3.1. Surface Water and Wetlands (Scoping EAW Item 12)

3.3.1.1. Discussion Topics

The EIS will provide a major discussion of how project-related water releases could affect surface waters and wetlands. The EIS will assess potential impacts from industrial stormwater discharges to nearby wetlands and ditches. Impacts due to discharges from the Contact Water Treatment Plant to County Ditch 13 and downstream receiving waters will be evaluated.

The EIS will include a major discussion of the topic including:

- Potential effects to the northern ditch network, altered stream and wetlands as well as the downstream Tamarack and Prairie Rivers and Big Sandy Lake from increased flow from Project discharges (e.g., Contact Water Treatment Plant, construction stormwater, industrial stormwater) on hydrology, wetlands, shallow and deep groundwater systems, and aquatic biota over the life of the project into closure
- Potential effects on water quantity and quality (including water chemistry) in receiving and downstream waters and surface water-groundwater interactions
- Climate trends' influence on potential Project effects on surface waters
- Direct and indirect wetland impacts
- Wetland impact avoidance and minimization

3.3.1.2. Proposed EIS Treatment

The EIS will provide a detailed analysis of the topic that will update and expand upon information contained in the Scoping EAW.

The EIS will include baseline information for surface water and wetlands. Surface water data would describe lakes, streams, ditches, intermittent channels, public waters, designated uses, wild rice waters, impaired waters, hydrology, connection with groundwater and recharge, seasonality and flooding. Monitoring data would include flow, water level and water quality measurements collected at multiple locations over extended periods. Wetland data would include delineation results, water level and quality, soil and sediment characteristics and vegetation information.

Stormwater

The EIS will evaluate the effects on surface hydrology from impervious surface creation. The EIS will address the following factors: control of stormwater discharge volumes and rates, industrial stormwater treatment systems and industrial stormwater requirements under a National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permit. Additional quantitative assessments will be performed and provided in the EIS data submittal.

These analyses will be included in the EIS:

- Stormwater management to maintain pre-development discharge rates for different storm events (1-yr, 2-yr, 10-yr, 100-yr, 200-yr and 500-yr storm events)
- Further details on industrial stormwater treatment system design
- Additional detail on discharge volumes, flow paths and receiving channels

- 940 • Additional detail on construction-phase stormwater management, including specific best
941 management practices (BMPs), will be provided in the EIS and developed as part of the
942 Stormwater Pollution Prevention Plan (SWPPP), which is required for permitting under the
943 Construction Stormwater General Permit (CSWGP)

944 Mitigation measures for adverse impacts will be described.

945 **Wetlands**

946 The EIS will evaluate changes to wetland hydrology due to the Project. Talon is monitoring wetland water
947 levels and water quality within and near the Project Area to characterize baseline wetland conditions.
948 Wetland baseline data will be provided for the EIS, which will be reported separate from the impact
949 analysis.

950 The baseline data will be used to develop a conceptual model of the wetland system within and near the
951 Project Area, which will be presented in the EIS. Results from quantitative models, subject to
952 validation/calibration and quality assurance/quality control (QA/QC), with inputs and assumptions
953 clearly stated, will be presented for the EIS to estimate the potential effects of the Project on wetland
954 resources.

955 These analyses will be included in the EIS:

- 956 • Monitoring data on wetland water levels and water quality within and near the Project Area to
957 characterize baseline wetland conditions. Wetland baseline data will be provided for the EIS
958 • Further evaluation of wetland types, including identification of peatlands
959 • Potential impacts to mercury cycling as indirect wetland impacts due to altered hydrology that
960 can affect mercury fate and transport in peatlands
961 • Information on pre- and post-construction watersheds to wetlands where changes in stormwater
962 discharges would occur
963 • Review of available wetland credits applicable within the Project location (Bank Service Area 5)
964 • Review of permit requirements for wetland impacts

965 The EIS wetlands analysis will include impacts due to construction of the railway spur, including
966 placement of coarse rock and culverts. Potential impacts to be addressed include wetland hydrology on
967 either side of the spur, peat compaction, and impacts to wild rice, fish habitat and other wildlife.

968 The EIS will include an analysis of mercury cycling, as indirect wetland impacts due to altered hydrology
969 can affect mercury fate and transport in peatlands, including mercury methylation.

970 The EIS will evaluate proposals for avoidance, minimization and mitigation of direct and indirect effects
971 on wetlands. Information will be provided in the EIS on available wetland credits from applicable service
972 banks, or potentially project-specific wetland mitigation, and the approximate wetland impact credits
973 that would be required to mitigate impacts from the proposed Project. Wetland areas proposed to be
974 restored or replaced as part of the permitting process will be identified in the EIS.

975 Mitigation measures for adverse impacts will be described.

Other Surface Waters

The EIS will evaluate changes to surface water hydrology due to the Project. Talon is monitoring surface water levels, flows and quality within and near the Project Area to characterize baseline surface waters condition. The EIS will present baseline data, which will be reported separately from the impact analysis.

The baseline data will be used to develop a conceptual model for surface water flow and quality. Results from quantitative models, subject to validation/calibration and QA/QC with inputs and assumptions clearly stated, will be presented for the EIS to estimate the potential effects of the Project on surface water resources. Potential contributions from wetlands will be considered in the EIS.

These analyses will be included in the EIS:

- Surface water modeling to assess flow routing, changes to geomorphology, and water quality
- Effects of fate and transport of pollutants, through Project activities or natural processes, on downstream waters
- Evaluation for potential contamination of water quality by atmospheric deposition from dust or other air emissions to surface waters
- Mass balance modeling to account for inflows, outflows, reuse and discharges across project phases
- An historical analysis of flooding and flood risks within the watershed to determine how topography of the site might impact the mine during flood events. The analysis would include historical flooding data and Proposer's observations

The EIS will include an analysis of hydrologic impacts of mine construction and dewatering on the hydrologic conditions of wild rice waters downstream of the Project site.

An evaluation on channel-forming flow will be addressed in the EIS, along with hydrologic modeling to assess potential stream response. Potential effects related to increased discharge volume, including stream stability and wetland response, will be further evaluated in the EIS.

The EIS will assess the potential effects of Contact Water Treatment Plant discharges on hydrology (e.g., flows; geomorphology), wetlands, shallow and deep groundwater systems, and aquatic biota of receiving waters.

The EIS will include predicted water quality from all types of water that will be released to the northern watershed, including discussion in the context of meeting water quality objectives.

Mitigation measures for adverse impacts will be described.

3.3.1.3. Data Needs

Publicly available data and additional data needs for development of the EIS include:

- U.S. Geological Survey (USGS) topographic maps and digital elevation models
- NRCS soils data
- NWI

- 1011 • DNR Public Waters and Public Waters Wetlands Inventory
- 1012 • USGS National Hydrography Dataset
- 1013 • Aerial photography
- 1014 • Onsite wetland delineations
- 1015 • Baseline vegetation data from surveys
- 1016 • Climatological data
- 1017 • USGS National Water Information System
- 1018 • MPCA Surface Water Data Tool
- 1019 • Minnesota Geospatial Commons
- 1020 • Proposer-collected hydrological monitoring data on surface water and groundwater flows and
- 1021 quantities, recharge and relationships to characterize baseline surface water conditions
- 1022 • Proposer-collected baseline water level data for downstream wild rice waters
- 1023 • Proposer-collected monitoring data on surface water quality
- 1024 • MPCA Designated Wild Rice Waters
- 1025 • Minnesota Natural Resource Atlas
- 1026 ○ Lakes of Biological Significance
- 1027 ○ Model of Wild Rice Presence
- 1028 • DNR LakeFinder database
- 1029 • DNR 350 Important Wild Rice Waters in Minnesota
- 1030 • DNR report "Natural Wild Rice in Minnesota"
- 1031 • DNR GIS layer - Floating & Emergent Lake Plants
- 1032 • MPCA EQUIS water chemistry database
- 1033 • Wild Rice Monitoring Handbook and Field Guide
- 1034 • MPCA Fish Tissue Concentrations
- 1035 • MPCA List of Wild Rice Waters
- 1036 • Mississippi River Watershed Restoration and Protection Strategy (WRAPS)
- 1037 • Big Sandy Lake Total Maximum Daily Load (TMDL)

1038 **3.3.2. Groundwater (Scoping EAW Item 12)**

1039 **3.3.2.1. Discussion Topics**

1040 The Project would appropriate groundwater and DNR water appropriation permits would be required.
 1041 Groundwater would be withdrawn for four purposes: temporary construction dewatering, potable use,
 1042 non-potable use and removing inflow of groundwater to the underground mine.

1043 The Project and baseline data will be used to develop a conceptual model of the water balance for
 1044 the Project, which will be presented in the EIS. Results from quantitative models, subject to
 1045 validation/calibration and QA/QC with inputs and assumptions clearly stated, will be presented
 1046 for the EIS to estimate the water inflows, uses, and outflows associated with construction,
 1047 operations, reclamation, closure and postclosure of the mine.

1048 The EIS will include a major discussion of the topic including:

- 1049 • Current water quality of shallow and deep groundwater resources in the Tamarack Resource Area
- 1050 • Potential effects to groundwater resources, including both quality and quantity and interactions
- 1051 between deep and shallow groundwater
- 1052 • Potential impacts due to mine dewatering activities, including but not limited to surface waters
- 1053 and/or wetlands, peatlands, subsidence, domestic wells and groundwater quality and quantity
- 1054 • Potential extent of depressurization of bedrock due to underground mining that could impact
- 1055 groundwater flow and availability
- 1056 • Potential extent of a cone of depression due to drawdown of groundwater from dewatering
- 1057 • The timeframe and expected rate to initiate and complete the flooding of the underground mine
- 1058 workings in reclamation and closure
- 1059 • Identification of where project-related changes to groundwater quality or quantity could result in
- 1060 potential impacts to surface water features
- 1061 • Assessment of potential impacts to groundwater recharge over the life of the Project into closure
- 1062 • Assessment of potential impacts to local domestic wells over the life of mine into closure
- 1063 • Assessment of the potential for waters exhibiting high dissolved solids to be encountered,
- 1064 including the potential for high-chloride load inflows to the underground mine works, and
- 1065 potential implications for water treatment technologies
- 1066 • Assessment of the potential for construction dewatering to adversely impact groundwater
- 1067 resources by temporarily lowering the water table, which could reduce base flow in nearby
- 1068 waterbodies (e.g., streams, wetlands)
- 1069 • Assessment of the potential for non-geologic waste such as nitrates (from blasting), and oil and
- 1070 grease, to impact groundwater quality
- 1071 • Assessment of the potential for the flooded underground mine workings in closure (when water
- 1072 level recovery is complete) to impact groundwater quality, including the backfilled stopes, other
- 1073 flooded areas of the underground mine works, and the potential for contaminant migration
- 1074 • Identification of potential risks to public and private drinking water sources over the life of the
- 1075 Project into closure
- 1076 • Identification of measures to reduce potentially significant impacts to groundwater resources

1077 **3.3.2.2. Proposed EIS Treatment**

1078 The EIS will provide a detailed analysis of the topic that will update and expand upon information
1079 contained in the Scoping EAW.

1080 The EIS will require a water balance that provides estimated volumes for construction-related
1081 dewatering, requirements for both potable and non-potable water and contact water generation. This
1082 would be informed by a numerical groundwater model approved by the RGU that could support
1083 quantitative assessment of aquifer sustainability. Volume estimates will be refined over the course of the
1084 EIS.

1085 If a new well in the quaternary deposits is determined necessary, the EIS will include an estimated
 1086 withdrawal rate for the EIS water balance. Potential recycling of treated contact water will be
 1087 considered.

1088 The EIS will evaluate changes to groundwater hydrology due to the Project. Talon has measured
 1089 hydraulic conductivity and is monitoring groundwater levels and quality within and near the Project Area
 1090 to characterize baseline groundwater conditions. The EIS will present baseline data, which will be
 1091 reported separate from the impact analysis.

1092 The depth to water map will be updated with site-specific data for the EIS data submittal.

1093 The EIS will include the following analyses:

- 1094 • Groundwater and geochemical modeling to evaluate the potential for changes in water quality to
 1095 migrate within the subsurface environment. The proposed modeling methods will include solute
 1096 transport and/or mass-transport frameworks, and transport variables for chemical constituents
 1097 within these frameworks will be informed by baseline data, materials characterization program
 1098 data and a separate (uncoupled) geochemical model. These modeling frameworks will be used to
 1099 simulate the flow of groundwater and assess the transport of chemical constituents in the
 1100 subsurface.
- 1101 • Groundwater flow modeling to predict future quality and quantity conditions under the Project
 1102 through reclamation and postclosure
- 1103 • Analysis of the potential for residential well interference from the Project's groundwater
 1104 appropriations
- 1105 • Groundwater quality modeling, including an assessment of environmental impacts associated
 1106 with use of explosives
- 1107 • An assessment of changes in groundwater quality and quantity resulting from construction and
 1108 operation of the underground mine works, including but not limited to changes to aquifers, deep
 1109 and shallow groundwater flow and potential changes to wetlands or surface waters

1110 The EIS will require a quantitative model approved by the RGU, subject to validation/calibration and
 1111 QA/QC with inputs and assumptions clearly stated, to predict water quality in the underground mine
 1112 through construction, operations, reclamation, closure and postclosure. The EIS will assess water quality
 1113 impacts and potential mitigation as of the first flush following flooding of the underground openings.

1114 In addition, modeling and analysis of construction and operation activities, including but not limited to
 1115 drill-and-blast methods, and resulting impacts on dewatering, bedrock faults and fissures, and long-term
 1116 hydrology and pollution transport will be completed in the EIS. The modeling will include faults,
 1117 fractures, fissures and other mine conditions on which the preliminary inflow of 180-350 gpm was
 1118 calculated.

1119 The EIS will also address sealing ventilation raises from groundwater seepage.

1120 Mitigation measures for adverse impacts will be described.

1121 **3.3.2.3. Data Needs**

1122 Publicly available data and/or additional data needs that can be used to assist in developing the EIS
1123 include:

- 1124 • Minnesota Well Index
- 1125 • USGS Groundwater Data for Minnesota
- 1126 • Minnesota Hydrogeology Atlas
- 1127 • Aitkin County Geologic Atlas
- 1128 • Groundwater Provinces Map
- 1129 • DNR Water Year Data Summaries
- 1130 • DNR Cooperative Groundwater Monitoring Data
- 1131 • Proposer-collected data from monitoring well network
- 1132 • Proposer-collected data from exploration boreholes
- 1133 • Proposer-collected data from sonic boreholes
- 1134 • Proposer-collected geophysical data
- 1135 • Proposer-collected aquifer testing data
- 1136 • Domestic well data

1137 **3.3.3. Wastewater**

1138 **3.3.3.1. Discussion Topics**

1139 The Project would produce two types of wastewater: contact water and sewage waste. Sewage waste
1140 can be further subdivided into toilet waste and gray water.

1141 The EIS will include a major discussion of the topic including:

- 1142 • Management of contact water, gray water and toilet waste
- 1143 • Quality of water discharge from the Contact Water Treatment Plant
- 1144 • Identification of potential local sanitary treatment facility(ies) to accept Project-generated toilet
1145 waste, including any pre-treatment requirements and potential effects on municipal wastewater
1146 infrastructure
- 1147 • Management of dewatering water generated during construction of the Decline Ramp
- 1148 • Characterization in terms of water quantity and quality of influent to the Contact Water
1149 Treatment Plant during construction, operations, reclamation, closure and postclosure, including
1150 whether volume or water quality varies over time as mining progresses to different rock types, or
1151 different materials (e.g., CRF) are introduced to the mine
- 1152 • Identification of treatment system components with modeling/characterization of effluent
1153 quantity and quality
- 1154 • Characterization of waste streams and chemical additives associated with the Contact Water
1155 Treatment Plant

1156 **3.3.3.2. Proposed EIS Treatment**

1157 The EIS will provide a detailed analysis of the topic that will update and expand upon information
1158 contained in the Scoping EAW.

1159 **Contact Water**

1160 The EIS will assess the quantity and quality of contact water generated at the Talon site during all Project
1161 phases, including average and maximum rates over time. Potential water quality effects associated with
1162 geochemical processes during mine construction, operation, reclamation, closure, and post-closure will
1163 be evaluated. The evaluation will consider situations in which water may contact ore and waste rock. The
1164 EIS will assess peak flows to the Contact Water Treatment Plant from dewatering or other inputs.

1165 The EIS will include additional information regarding specific parameters that would be treated by the
1166 Contact Water Treatment Plant and will evaluate the effectiveness of proposed treatment technologies
1167 to ensure treated water would meet applicable water quality standards and potential toxicity testing
1168 requirements.

1169 The EIS will assess the potential effects of Contact Water Treatment Plant discharges on hydrology (e.g.,
1170 flows; geomorphology), wetlands, shallow and deep groundwater systems, and aquatic biota of receiving
1171 waters. Potential impacts to wild rice and methylmercury production from sulfate discharges to receiving
1172 waters will be assessed in the EIS. Treatment efficiency will be modeled to ensure the treatment system
1173 would meet applicable water quality effluent limits and maintain in-stream water quality standards.
1174 Treatment efficiency modeling will account for variability throughout the life of the Project to ensure
1175 environmental effects on water quality, wild rice, wildlife, human health and tribal resources are not
1176 significant.

1177 The EIS will include a quantitative assessment of climate projections in the water resources modeling.
1178 The EIS will provide additional information on the potential influence of current climate trends and
1179 anticipated climate change on potential Project effects on water resources.

1180 Mitigation measures for adverse impacts will be described.

1181 **Sewage Waste**

1182 The EIS will evaluate the capability of potential treatment facilities to manage the added water and
1183 waste loadings, including required pretreatment measures and potential effects on municipal
1184 wastewater infrastructure.

1185 The gray water inflow estimate will be refined and updated for the EIS to reflect updated workforce
1186 estimates potentially contributing to gray water production.

1187 Mitigation measures for adverse impacts will be described.

1188 **3.3.3.3. Data Needs**

1189 Publicly available data and/or additional data needs for wastewater that can be used to assist in
1190 developing the EIS include:

1191 **Contact Water**

- 1192 • Waste stream estimates (e.g., RO reject; filter backwash solids; sludge)
- 1193 • Estimated inflow/influent volumes (e.g., construction; underground mine)
- 1194 • Laboratory dissolution tests to describe the effect of rock composition, in particular, acid-
- 1195 producing and acid-consuming mineral content, on acid generation and dissolved solids release
- 1196 into contact water
- 1197 • Estimated pollutant concentrations and projected water quality after treatment by the Contact
- 1198 Water Treatment Plant
- 1199 • Results from pilot studies that evaluate treatment effectiveness and generate performance data
- 1200 of proposed water treatment technologies to ensure applicable water quality standards can be
- 1201 met from the treatment plant discharge
- 1202 • Results of evaluation of treatment effectiveness of proposed water treatment technologies
- 1203 relying on operational data from comparable systems, including performance data from
- 1204 analogous facilities and other relevant case studies as applied to predicted influent characteristics

1205 **Sewage Waste**

- 1206 • Proposer waste generation estimates

1207 **3.3.4. Air (Scoping EAW Item 17)**

1208 **3.3.4.1. Discussion Topics**

1209 The EIS will include both a project-specific analysis and a cumulative effects analysis with detailed

1210 consideration of the following issues:

- 1211 • Compilation of measured ambient air quality conditions
- 1212 • Descriptions of air emissions from potential sources
- 1213 • Potential air pollution associated with construction, above- and below-ground operations, truck
- 1214 traffic, and transportation of ore by rail within Minnesota, and if determined necessary to the
- 1215 processing facilities in North Dakota and Michigan
- 1216 • Potential air emissions mitigation strategies and technologies
- 1217 • Potential impacts on areas designated as Class I and Class II under the federal Clean Air Act
- 1218 • Human health risks

1219 The preliminary air pollutants from stationary sources that will be analyzed in the EIS are criteria air

1220 pollutants, hazardous air pollutants (HAPs) and GHGs. Some of the specific pollutants that will be

1221 evaluated in the EIS include:

- 1222 • Particulate matter (PM), particulate matter less than 10 microns (PM₁₀), particulate matter less
- 1223 than 2.5 microns (PM_{2.5})
- 1224 • Total Suspended Particulates (TSP)
- 1225 • Sulfur dioxide (SO₂)
- 1226 • Nitrogen oxides (NO_x)

- 1227 • Carbon monoxide (CO)
- 1228 • Volatile Organic Compounds (VOC)
- 1229 • Air Toxics, including but not limited to:
 - 1230 ○ Total HAPs and single HAP
 - 1231 ○ Hydrogen sulfide (H₂S)
 - 1232 ○ Ammonium (NH₄)
 - 1233 ○ Hydrogen cyanide (HCN)
 - 1234 ○ Mercury compounds (Hg)
 - 1235 ○ Polycyclic Aromatic Hydrocarbons (PAH)
 - 1236 ○ Various metals/compounds
- 1237 • Elongate mineral particles
- 1238 • Carbon dioxide equivalent (CO₂e)

1239 The list of emission sources and potential pollutants will be updated for the EIS as additional facility
 1240 design is completed. The EIS will calculate emissions for the Project's emission sources and air pollutants.
 1241 Specific air monitoring methods and compliance standards, including particulate control and mitigation
 1242 measures, will be developed and finalized as part of the EIS.

1243 **3.3.4.2. Proposed EIS Treatment**

1244 The EIS will provide a detailed analysis of the topic that will update and expand upon information
 1245 contained in the Scoping EAW.

1246 The EIS will include an air quality resources study and a technical design evaluation of Project-generated
 1247 air emissions, including but not limited to emissions from construction, operations, blasting, ventilation,
 1248 crushing, storage and loading of ore, waste rock and other waste materials, and rail, equipment and
 1249 vehicles. This will include modeling and assessment of potential health risks. Air dispersion modeling will
 1250 be conducted in accordance with MPCA Air Dispersion Modeling Practices and USEPA Guideline on Air
 1251 Quality Models. Modeling will evaluate criteria pollutants (except ozone) against National and Minnesota
 1252 Ambient Air Quality Standards (NAAQS; MAAQS) using significant impact analysis (SIA) and cumulative
 1253 impact analysis (CIA). Modeling will follow the Federal Land Managers Air Quality Related Values
 1254 guidance.

1255 The EIS will include a review of applicable state and federal statutes, regulations and guidance regarding
 1256 air emissions.

- 1257 • Though an applicability determination has not yet been made, the EIS will treat the Project as if
- 1258 Prevention of Significant Deterioration (PSD) requirements apply. Accordingly, the EIS will provide
- 1259 a major discussion of air impacts, including a description of proposed air emission sources and
- 1260 potential control technologies, Best Available Control Technology (BACT) like analyses for
- 1261 particulates (PM, PM₁₀, and PM_{2.5}), and impacts to Class I and Class II areas. The EIS will identify
- 1262 designated Class I areas located within 300 km of the Project.

1263 The EIS will also contain the following ambient air quality analyses:

1264 • Class II NAAQS/MAAQS analysis for all criteria pollutants and will include nearby sources
 1265 • Class II increment analyses for PM₁₀, PM_{2.5}, NO₂, and SO₂ and will include nearby sources
 1266 • Class I increment analyses PM₁₀, PM_{2.5}, NO₂, and SO₂ and will include nearby sources
 1267 • An assessment of project impacts on Class I Air Quality Related Values (AQRVs), including visibility
 1268 impacts that account for project emissions of PM₁₀, SO₂, and NO_x

1269 Fugitive dust and odor sources will be evaluated in the EIS. The EIS will assess the Ore Transfer Building's
 1270 effectiveness to continuously operate as a total enclosure with all emissions captured and routed to
 1271 control equipment, while also considering building design and operational conditions such as railcars and
 1272 vehicles traveling in and out of the building. BMP frameworks, including dust control planning and
 1273 operational controls, will be identified for general operations, with BMPs also identified to maintain the
 1274 Ore Transfer Building as a total enclosure.

1275 The cumulative nature of the Project's emissions will be discussed in the EIS. Cumulative impact analyses
 1276 (i.e., NAAQS/MAAQS analyses), as described in the MPCA Air Dispersion Modeling Practices manual and
 1277 USEPA Guideline on Air Quality Models, include analysis of nearby emission sources and ambient
 1278 background concentrations and can be considered cumulative. Dispersion modeling, CIAs utilizing
 1279 AERMOD, will be conducted for all criteria pollutants regardless of whether predicted project-only
 1280 concentration impacts exceed Significant Impact Level (SIL) thresholds. If any of the CIAs predict impacts
 1281 above any of the NAAQS/MAAQS thresholds, Source Contribution Analyses (SCA) as described in the
 1282 MPCA Air Dispersion Modeling Practices manual and USEPA Guideline on Air Quality Models will be
 1283 conducted. If all Source Contribution Analyses predict contributions less than a SIL at the time and
 1284 location of predicted NAAQS modeled exceedances, then modeling is complete. If above the SIL at any
 1285 time and location of predicted NAAQS modeled exceedances, then detailed discussion describing the
 1286 facility's contributions will be included in the EIS. The EIS will require Class I and II increment analyses.
 1287 Visibility Impact Analyses are project-specific but extensive data on the cumulative effects of emission
 1288 sources on visibility are available; AQRV analyses will follow national guidelines set by the Federal Land
 1289 Managers.

1290 The EIS will determine the applicability of: National Emission Standards for Hazardous Air Pollutants
 1291 (NESHAPs) for relevant pollutants, Minnesota's Rule for New and Expanding Mercury Emission Air
 1292 Sources, and New Source Performance Standard (NSPS) and other Minnesota Performance Standards
 1293 (Minn. R. Ch. 7011), to the Project.

1294 The EIS will include an air emissions health risk assessment where air emissions are identified using the
 1295 Risk Assessment Screening Worksheet (RASS) for the MPCA Air Emissions Risk Analysis (AERA). The AERA
 1296 will assess the potential risks to human health at a conservative screening level. The chemicals of
 1297 potential interest will be based on likely facility emissions; air dispersion modeling will be conducted
 1298 using AERMOD to estimate risk based on current AERA Guide Requirements. The maximum modeled air
 1299 concentrations will be input into the RASS, and inhalation and multi-path risks will be calculated.
 1300 Potential tailpipe emissions of toxic air pollutants from diesel sources will be considered in the AERA. It
 1301 will also include an investigation of elongate mineral particles.

1302 The EIS will address potential human health risks from the fish pathway using the MPCA Mercury Risk
1303 Estimation Method. This analysis will assess potential impacts to fish in nearby lakes and the potential
1304 risks to recreational and subsistence fishers that catch local fish.

1305 Mitigation measures for adverse impacts will be described.

1306 **3.3.4.3. Data Needs**

1307 Publicly available data and/or additional data needs that can be used to assist in developing the EIS
1308 include:

- 1309 • Meteorological data
- 1310 • Ambient 1-hr, 3-hr, 8-hr, 24-hr, and annual concentrations for criteria pollutants as applicable
- 1311 • Wind rose for the Project site
- 1312 • Proposer's emissions inventory
- 1313 • Mobile source data
- 1314 • Estimated elongate mineral particle fiber counts for airborne media
- 1315 • Preliminary drilling and blasting plan
- 1316 • Fugitive sources and estimated emissions
- 1317 • Dust control system specifications
- 1318 • Additional needs may include terrain data, building dimensions, and possibly emissions and
1319 source characterization from any necessary nearby emission sources

1320 **3.3.5. Elongate Mineral Particles**

1321 **3.3.5.1. Discussion Topics**

1322 The proposed Project has the potential to release elongate mineral particles (EMPs) to the air, surface
1323 soil/settled dust or water through drilling, blasting, crushing and handling.

1324 The EIS will include a major discussion of the topic, including:

- 1325 • Identification and description (elemental composition, crystal structure, growth habit) of EMPs
1326 present within the Tamarack Resource Area
- 1327 • Descriptions of potential pathways of EMP release to the air and water
- 1328 • Human health risks, both direct and indirect

1329 **3.3.5.2. Proposed EIS Treatment**

1330 The EIS will provide information about the presence of EMPs in the Tamarack Resource Area. Mined
1331 material (i.e., ore; waste rock) will be collected and analyzed for the presence of EMPs using established
1332 methods, including electron microscopy. Representative samples of crushed ore material, contact water
1333 (e.g., dust control; fines) and air will be collected and used as indicators of potential release to the
1334 environment via air emissions or discharges from the Contact Water Treatment Plant, respectively.

1335 The EIS will use data from the Elongate Mineral Particles Study to evaluate potential impacts from EMPs
1336 on air and water, and potential risks to human health.

1337 Mitigation measures for adverse impacts will be described.

1338 **3.3.5.3. Data Needs**

1339 Publicly available data and/or additional data needs for EMPs that can be used to assist in developing the
1340 EIS include:

- 1341 • Results from tests performed as part of the Elongate Mineral Particles Study developed in
1342 coordination with MPCA and Minnesota Department of Health (MDH), as approved by the RGU
- 1343 • Background levels of EMPs at the Project site
- 1344 • Estimated elongate mineral particle fiber counts
- 1345 • USEPA Drinking Water Standard
- 1346 • Data needs, research, evaluation and standards by State Agencies and consultant as needed to
1347 assess potential impacts

1348 **3.4. SOCIOECONOMIC EFFECTS**

1349 Consideration of the Project's potential economic, employment, and sociological impacts is required in
1350 an EIS.

1351 Mitigation measures for adverse impacts will be described.

1352 **3.4.1. Economic Effects**

1353 The EIS will evaluate the economic effects of employment and earnings of the Project alone, and along
1354 with the cumulative effect of other projects in the area, using established economic forecasting models.
1355 A quantitative assessment of employment and economic effects will be performed; results for Aitkin
1356 County and Carlton County, and nearby Indian Reservations, including Mille Lacs and Fond du Lac, will be
1357 reported.

1358 The EIS will evaluate changes in public sector revenues, expenditures or the underlying fiscal condition of
1359 local governments.

1360 The EIS will evaluate changes in economic activity for non-mining industries in the region, particularly
1361 the recreation and tourism industries.

1362 Impact analyses will be completed through input-output mathematical modeling to estimate
1363 employment impact, output impact and value-added measures in terms of total (direct, indirect and
1364 induced) impacts for the construction period, operations period and closure period. Analyses will also
1365 assess impacts on State, local and Tribal taxes and royalties.

1366 Economic effects will be assessed by combining the baseline economic activity and projections of
1367 average annual employment (year by year) and estimated construction cost (year by year). The analysis

will report findings for a typical year in four discrete periods: baseline year; construction period; operating period; and closure period. Findings will be reported as employment, output impact (model year dollars), value added impact (model year dollars) and tax impact (model year dollars). Specific input-output software may be used to adjust dollar figures based on internal/proprietary deflators, and additional adjustments could be made to present-value all figures to a single year.

3.4.1.1. Baseline Conditions

Economic activity reported in the most recent tax year available for Aitkin County, Carlton County and Mille Lacs and Fond du Lac Reservations will establish the baseline condition. Additional data may be considered if warranted.

3.4.1.2. Data Needs

Background information on the employment and economy of Aitkin County, Carlton County and Mille Lacs and Fond du Lac Indian Reservations will be summarized in terms of:

- Historical population trends by county and major population centers
- Historical employment trends by county
- Historical tax revenue trends by county
- Summary of historical economic activity (i.e., major industries; major sources of employment) by county
- Summary of population, employment, tax revenue and economic activity in 2025 (the baseline year)
- Bureau of Labor Statistics Quarterly Census of Employment and Wages (recent and up to the most current data)
- United States Census American Community Survey files (1-yr and 5-yr) (recent and up to the most current data)
- If determined relevant, information about known events that could explain unexpected shifts or disruptions to trends, which could constitute an underlying trend that could confound projection of a future trend with the Project

3.4.2. Demographic Effects

The EIS will estimate the probable effect of the Project change in local population(s) (e.g., in-migration; out-migration) of local communities during construction, operations, reclamation, closure and postclosure. This will be done by projecting the existing population and demographic trends in the communities in the absence of the Project and adding estimated migration to the area caused by changes in employment demand. Employment demand will be converted to overall demographic effect by consideration of household size, based on demographic data appropriate to the employment classes being considered. The results will be an estimate of population changes in nearby communities with rough estimates of changes in key community demographics (e.g., school census). The assessment will also consider evaluating migration of residents from the area caused by the Project.

1404 The EIS will identify changes in demand for temporary or permanent housing over the entire life of the
1405 Project.

1406 The EIS will identify potential displacement and changes in land use that may affect residences or
1407 businesses due to the Project.

1408 **3.4.2.1. Baseline Condition**

1409 The existing population and demographic trends of local communities (to be specified) will constitute
1410 the baseline condition. This will include household size appropriate to the employment classes under
1411 consideration.

1412 **3.4.2.2. Data Needs**

1413 Publicly available data and/or additional data needs that can be used to assist in developing the EIS
1414 include:

- 1415 • Background information on the social structure of Aitkin County, Carlton County and the Mille
1416 Lacs and Fond du Lac Reservations will be summarized by the latest available year, including the
1417 following population characteristics: structure by age, sex, family size, ethnicity, income and type
1418 of employment (including unemployed).
- 1419 • Location of employees and their households may be based on housing patterns of existing and
1420 past projects, if available, or a simplified method of apportionment such as a “gravity” model that
1421 assumes employees will disperse in direct proportion to the population of the community and in
1422 inverse proportion to the square of the commuting distance to the community.
- 1423 • US Census American Community Survey files (1-year and 5-year files)
- 1424 • Minnesota State Demographic Center

1425 **3.4.3. Infrastructure and Community Services**

1426 The EIS will estimate project-related changes to infrastructure and community services if implemented. It
1427 will also estimate changes in long-term demands on public services and infrastructure that reduce
1428 capacities in these systems, either triggering the need for capital expansion or resulting in discernable
1429 reduction in the level of service provided. This will be limited to communities that show significant
1430 predicted changes in demographics.

1431 For communities where changes are likely to be significant, local officials will be consulted to determine
1432 the adequacy of existing infrastructure and possible improvements that might be required for
1433 infrastructure and community services. Because such local infrastructure improvements are not defined
1434 and still speculative and are likely to be widely dispersed and subject to their own permitting and/or
1435 environmental review, no environmental assessment of secondary impacts will be made.

1436 Resulting changes in governmental budgets and procedures will be discussed and evaluated, and a
1437 qualitative discussion of community organization will be provided, including:

- 1438 • Analysis of change in community structure, including size of government organization (cities,
1439 townships, counties); participation in voluntary associations (description of groups and linkage to
1440 national organizations, if any); and inequities (economic, social, cultural) among community
1441 groups
- 1442 • Analysis of projected changes in availability of housing and community services including
1443 municipal water supply, police protection, health care, elderly care, schools, libraries, retail
1444 centers, recreational facilities, gathering places and technology access

1445 **3.4.3.1. Baseline Data**

1446 This will include information for the latest available data year on size of government organizations (cities,
1447 townships, counties); participation in voluntary associations (description of groups and linkage to
1448 national organizations, if any); and inequities (economic, social or cultural) among community groups.
1449 This will also include a summary of existing infrastructure, including already planned improvements, new
1450 facilities or increased maintenance.

1451 **3.4.3.2. Data Needs**

1452 Publicly available data and/or additional data needs that can be used to assist in developing the EIS
1453 include:

- 1454 • Required data will be collected with the assistance of local planning and resource agencies, which
1455 could include:
- 1456 ○ University of Minnesota – Duluth
 - 1457 ○ Arrowhead Regional Development Commission
 - 1458 ○ Aitkin County Environmental Services
 - 1459 ○ Carlton County Zoning and Environmental Services Department
 - 1460 ○ Minnesota Department of Employment and Economic Development (DEED)
- 1461 • Data collected from the cities, townships, Aitkin County, Carlton County and the State of
1462 Minnesota
- 1463 • Fond du Lac and Mille Lacs Band Human Resources Departments' employment data, if available
- 1464 • Minnesota Department of Administration
- 1465 • Minnesota Public Utilities Commission
- 1466 • Community Services
- 1467 • Relevant available literature

1468 **3.4.4. Tribal Resources**

1469 The Project is located on the traditional, ancestral and contemporary lands of the Ojibwe (Anishinaabe) and the Mdewakanton Dakota peoples, and potentially others from the past.
1470 Additionally, the wetland complex in the Project Area may have been used as burial sites, raising the
1471 possibility of inadvertent discoveries. Big Sandy Lake is identified as a resource of Tribal significance
1472 requiring consideration in the EIS. Other potential cultural resources and traditional uses associated with
1473 the landscape may also be present and require evaluation as part of the EIS process.
1474

1475 **3.4.4.1. Discussion Topics**

1476 The EIS will assess potential impacts to resources important to American Indians. These resources reflect
1477 American Indian traditions interwoven into ecosystems where they live that reflect American Indian
1478 values and relationships to the environment, traditional ecological knowledge, and sites and resources
1479 that hold tribal significance. This discussion will likely overlap with the EIS assessment of potential
1480 impacts to Traditional Cultural Properties and/or Traditional Cultural Landscapes.

1481 The EIS will rely in part on information developed to assess impacts to tribal resources compiled in the
1482 Final Environmental Impact Statement (FEIS) for Enbridge Energy's Line 3 Project (December 9, 2019)
1483 (Line 3 FEIS). The Line 3 FEIS defined tribal resources as referring "to the collective rights and resources
1484 associated with a tribe's sovereignty or formal treaty rights, or their interest in and use of these
1485 resources. These resources have natural, spiritual, and cultural values associated with them;" see Line 3
1486 FEIS at 9-19. Relevant information from the Line 3 Final EIS includes but is not limited to: Tribal
1487 sovereignty, historical and legal framework, federal and Minnesota Indian Law and Policy, Indian country
1488 and Indian lands, treaties and reserved rights, ceded lands in Minnesota, reservation lands and
1489 government lands.

1490 The EIS will rely on information gained through coordination and input from Tribes to identify cultural
1491 resources and traditional uses in the Project Area. This can include burial locations, cemeteries and
1492 sacred places, as well as areas where traditional practices are carried out, cultural resources are
1493 harvested, or cultural properties are located. Other types of Tribal resources can include bodies of water,
1494 wild rice lakes and rivers, wildlife, and medicinal plants.

1495 The EIS will include a detailed discussion of topics including:

- 1496 • Tribal sovereignty, historical and legal framework, federal and Minnesota Indian Law and Policy,
1497 Indian country and Indian lands, treaties and reserved rights, ceded lands in Minnesota,
1498 reservation lands and government lands
- 1499 • Information gathered from tribal consultation, coordination and engagement
- 1500 • Information gathered regarding cultural resources, cultural corridors and traditional uses
- 1501 • Spiritual connection to the land
- 1502 • Hunting, water, fishing, wild rice
- 1503 • Potential impacts for all phases of the Project, including construction, operations, reclamation,
1504 closure and postclosure
- 1505 • Unique tribal impacts identified through coordination and input from Tribes

1506 **3.4.4.2. Proposed EIS Treatment**

1507 The EIS will evaluate potential impacts to Tribal resources to identify whether the Project has the
1508 potential to reduce a resource, or access to a resource, of importance to Tribal identity, traditional uses,
1509 or subsistence activities (e.g., hunting, fishing, wild rice).

1510 Proposed analyses for the EIS include:

- 1511 • Independent review of Proposer’s historic properties, archeological and cultural resources
- 1512 documentation
- 1513 • Additional Phase I archaeological surveys (if warranted)
- 1514 • Phase II archaeological surveys (if warranted)
- 1515 • Compilation of oral information on the cultural, spiritual and historical culture of relevant Tribes
- 1516 • Inventory of traditionally important cultural and spiritual sites relevant to the Project vicinity
- 1517 • Inventory of fish harvest, wild rice harvest, hunting and gathering for Tribal and non-Tribal
- 1518 communities
- 1519 • Inventory of cultural practices and resources

1520 Publicly available data and/or additional data needs for tribal resources that can be used to assist in
 1521 developing the EIS include:

- 1522 • SHPO and OSA inventory files
- 1523 • NRHP records
- 1524 • Historic maps (i.e., Trygg Composite Maps; General Land Office survey maps and notes)
- 1525 • THPOs’ notes and libraries
- 1526 • Regional historical and archaeological overviews and previous archaeological survey reports
- 1527 • Minnesota Indian Affairs Council (MIAC) for paper records of burial sites not yet reflected in
- 1528 existing databases
- 1529 • Tribal directed interviews of traditional spiritual leaders, traditional tribal elders, tribal oral
- 1530 historians and educators, or other individuals
- 1531 • Where available, baseline Tribal and non-Tribal harvest data, including current volumes of wild
- 1532 rice, fish, game and medicinal plants harvested and locations where those harvests occur
- 1533 • The Effects of Wild Rice Water Quality Rule Changes on Tribal Health, Fond du Lac Band of Lake
- 1534 Superior Chippewa (2018)
- 1535 • Final Environmental Impact Statement – Line 3 Project; Minnesota Department of Commerce
- 1536 (December 9, 2019)

1537 Mitigation measures for adverse impacts will be described.

1538 **3.4.5. Environmental Justice**

1539 The EIS will identify whether disproportionately high and adverse impacts on minority and low-income
 1540 populations with respect to human health and the environment could result from the Project. This will
 1541 be a qualitative assessment of potential environmental justice areas that could be impacted by the
 1542 Project. Minnesota Statutes 116.065 defines environmental justice areas as census tracts:

- 1543 • In which at least 40 percent of the population is people of color.
- 1544 • In which at least 35 percent of households have income at or below 200 percent of the federal
- 1545 poverty level.
- 1546 • In which at least 40 percent of the population has limited proficiency in English.

- 1547 • That are located within Indian Country, which is defined as a federally recognized reservation and
1548 other indigenous lands.

1549 Potential impacts to environmental justice areas will be identified under the following framework:

- 1550 • Are there new potential environmental justice issues associated with the environmental stressors
1551 generated by the Project, including interaction effects with existing baseline factors, for
1552 population groups of interest potentially impacted by the Project?
1553 • Are any environmental justice issues under the Project exacerbated, mitigated or unchanged
1554 compared to the baseline condition?

1555 This information will be available to decision makers to understand whether disproportionate burdens
1556 are possible on vulnerable communities, and if yes, then to assess whether there may be benefit from
1557 increased community engagement and/or subsequent evaluation for disproportionate adverse effects
1558 from pollution.

1559 **3.4.5.1. Baseline Condition**

1560 The baseline condition will be existing environmental justice areas in the Project vicinity where
1561 populations of interest could be subjected to project-related environmental stressors. Environmental
1562 stressors are the range of chemical, physical, or biological agents, contaminants, or pollutants where
1563 exposure may generate adverse human health impacts.

1564 **3.4.5.2. Data Needs**

1565 Publicly available data and/or additional data needs that can be used to assist in developing the EIS
1566 include:

- 1567 • MPCA Environmental Justice Mapping Tool will be used to identify environmental justice areas in
1568 the Project vicinity. If available, the underlying basis for designation of an environmental justice
1569 area will be provided.

1570 **3.4.6. Human Health**

1571 The EIS will include a summary of health-related impacts identified in the EIS. The EIS will also include
1572 limited assessment of potential population-scale health impacts due to the Project.

1573 **3.4.6.1. Summary of Human Health Impacts**

1574 The EIS human health section will include a summary compilation of potential health impacts from the
1575 proposed Project detailed in various sections of the EIS. In addition, this summary will identify the
1576 section of the EIS where the impact(s) is addressed in detail in the Draft and Final EIS. The impacts
1577 summarized in this section would be expected to result from human exposure to airborne and
1578 waterborne agents from the proposed Project (e.g., air toxics; EMPs; effluent discharges).

1579 **3.4.6.2. Population-Scale Health Impacts**

The EIS will contain a limited assessment of potential effects on the health of potentially impacted populations and the distribution of impacts within the same population. This analysis will be conducted within the EIS and will focus on the main determinants of health that are most likely to be associated with the Project. DNR as RGU does not propose conducting a Health Impact Assessment (HIA), which is another means of identifying and assessing population-scale health impacts.

Determinants of Health

The range of personal, social, economic and environmental factors that influence health status are known as determinants of health. There are numerous determinants of health. An extensive list of health determinants was developed by the International Council on Mining and Metals (ICMM). The list is wide-ranging and considers potential impacts for mining and metals projects globally. Some of these impacts may not apply to the proposed Project.

Box 1: Determinants of health and well-being

Environment

- public & environmental health services
- civic design
- natural hazards
- waste management
- green space
- natural resources
- land use & planning
- air quality
- water quality
- soil quality
- noise
- smell

Economic conditions

- research & technological development
- job creation
- distribution of incomes
- availability and quality of training
- availability and quality of employment
- business activity

Availability and access

- voluntary & charity groups
- childcare
- community facilities
- leisure facilities
- housing
- education & training
- arts & culture
- public transport
- shops & financial services
- health & social care services

Social influences

- social contact
- social support
- community participation
- diversity
- social capital and inclusion
- peer pressure
- fear of crime & anti-social behaviour
- crime & anti-social behaviour
- fear of discrimination
- discrimination

Personal circumstances

- family relationships
- housing tenure
- housing conditions
- employment status
- working conditions
- income
- education
- personal transport

Lifestyle

- sexual behaviour
- smoking
- alcohol
- medication
- illegal substances
- diet
- leisure

Biological factors

- ethnicity
- disability
- personality
- age, gender, genes

This list of 59 determinants of health was qualitatively screened against the following criteria:

- Probability of Impact (high, medium, low)
- Severity of Impact (high, medium, low)
- Known Level of Public Concern (high, medium, low)
- Regulations Apply to Mitigate Impacts (yes, no, uncertain)

Screening of the 59 determinants of health applicable to the mining sector required consideration of:

- population and demographics due to construction and operations of the mine
- employment due to construction and operations
- proximity to larger cities within 60 miles of Tamarack, MN (e.g., Duluth, Grand Rapids, Brainerd)
- proximity to the Iron Range Mining District

- 1602 • rural economies of nearby cities (i.e., Tamarack, McGregor, Aitkin)

1603 The screening process identified eight (8) determinants of health likely to be most applicable that are
1604 proposed for further evaluation in the EIS. These were selected because they ranked medium or high for
1605 likelihood or severity of impact, or high for known level of public concern. The proposed list for
1606 assessment in the EIS is:

- 1607 • Water Quality – chemical/contaminant exposure
1608 • Green Space/Natural Resources – mental health impacts due to changes in aesthetics, recreation,
1609 perception of environmental quality, possible impact on Native American traditions/events
1610 • Air Quality – inhalation exposure risk from elongate mineral particles
1611 • Air Quality – other dust issues, toxic compounds, asthma
1612 • Soil Quality – leaching and other releases (e.g., rail cars)
1613 • Noise
1614 • Waste Management – waste rock, overburden, long-term management
1615 • Working Conditions – accident impacts on workers and community

1616 **EIS Assessment**

1617 The EIS will assess the Project’s potential impact on the health of affected populations for the eight (8)
1618 mining-related determinants of health as screened for the Project. This will be a qualitative assessment
1619 reported as: positive effect; negative effect; neutral effect. The distribution of potential impacts will be
1620 described across relevant populations. For the balance of the other 51 determinants of health associated
1621 with mining and metals projects, the EIS will briefly describe how each determinant of health could
1622 relate to the Project so this information is available to decision makers.

1623 Based on the findings of the population-scale impact assessment, the EIS will identify additional
1624 recommended measures beyond those already subject to Proposer commitments, incorporated in the
1625 Project design, or likely to be required through permits and approvals. This information will be available
1626 to decision makers to understand whether disproportionate burdens are possible on potentially
1627 impacted populations. If yes, decision makers may then assess whether there would be benefit from
1628 increased community engagement and/or subsequent evaluation for disproportionate adverse effects to
1629 community health.

1630 **Baseline Condition**

1631 Existing data for potentially affected populations will be the baseline condition for the EIS assessment.
1632 This will be applied for each of the eight determinants of health resulting from the screening process.

1633 **Data Needs**

1634 Potential sources of publicly-available data may include:

- 1635 • Anonymous aggregated Electronic Health Records
1636 • American Community Survey

- 1637 • American Association of Retired Persons (AARP) Livability Index
- 1638 • Center for Disease Control (CDC) Community Health Status Indicators (CHSI)
- 1639 • County Health Rankings and Roadmaps
- 1640 • U.S. Census Bureau
- 1641 • Minnesota Center for Health Statistics
- 1642 • MNHealthScores
- 1643 • Minnesota Public Health Data Access
- 1644 • Indian Health Services data
- 1645 • Tribal health clinic and Tribal school data
- 1646 • Existing Conditions
 - 1647 ○ Affected population summary
 - 1648 ○ Baseline data for screened determinants of health

1649 **3.4.7. Ecosystem Services**

1650 Ecosystem services at the Project site and impacted by the Project will not be identified, nor will the EIS
 1651 provide a quantitative (e.g., monetized) accounting for potential impacts.

1652 **3.4.8. Reclamation and Financial Assurance**

1653 The EIS will evaluate the proposal with consideration for compliance with DNR rules for mineland
 1654 reclamation. Minnesota Rules for nonferrous metallic metal mining (Minn. R. Ch. 6132) describe the
 1655 DNR's regulatory requirements for nonferrous mines, "...the mining be conducted in a manner that will
 1656 reduce impacts to the extent practicable, mitigate unavoidable impacts, and ensure that the mining area
 1657 is left in a condition that protects natural resources and minimizes to the extent practicable the need for
 1658 maintenance." The three criteria that will be used in this evaluation will be: 1) protection of natural
 1659 resources; 2) minimization of long-term maintenance; and 3) eventual land use objectives.

1660 The EIS will require a discussion of reclamation costs and how it could inform facility design, construction
 1661 and closure. As part of the Permit to Mine, financial assurance estimates will be developed on an annual
 1662 basis for reclamation of mining activities that have occurred and are anticipated to occur during the
 1663 upcoming year. This will include costs of reclamation in case of premature shut down of mining
 1664 operations. The Permit to Mine evaluations will include an assessment of reasonable closure
 1665 maintenance costs to meet applicable rules and requirements in closure and postclosure. Although
 1666 mineland reclamation rules allow for financial assurance for corrective actions, financial assurance
 1667 estimates associated with corrective action will not be included in the EIS. However, the EIS will describe
 1668 the corrective action procedure and how financial assurance will be addressed in case a corrective action
 1669 is needed.

1670 The EIS will discuss financial assurance requirements under the Permit to Mine, financial assurance
 1671 instruments, and conditions for release from financial assurance.

4.0 IDENTIFICATION OF PHASED OR CONNECTED ACTIONS

There are no phased or connected actions associated with this project.

5.0 EIS SCHEDULE (TENTATIVE)

Date ¹	Event
July 2026	Scoping EAW Comment Period (including public meeting)
February 2027	Final Scoping Decision Document
March 2027	EIS Preparation Noticed Published
April 2028	Draft EIS issued for public review (includes public meeting)
January 2029	Final EIS Issued
March 2029	EIS Adequacy Determined

6.0 SPECIAL STUDIES OR RESEARCH

Many reports and studies will be developed to support the assessment of environmental impacts from the Project. Talon will provide the following reports to the RGU for review and incorporation into the EIS except for the Tribal Resources Study, which will be a collaborative effort by DNR, Tribes, and Talon. The content of these will be independently reviewed and confirmed by state agencies and/or the consultant prior to being incorporated into the EIS.

6.1. MINE PLAN

A preliminary mine plan will be submitted by the Proposer for use in the EIS. The Permit to Mine application will follow completion of the EIS and will incorporate the mine plan and supporting information as refined through the environmental review process. The preliminary mine plan will describe the underground mine geometry, infrastructure design, ventilation and materials handling, and will show plans for phasing mine development. It will fully address mining methods, drilling and blasting, backfill operations, waste management and safety systems. The surface facilities will be fully described, including the rail-based infrastructure.

6.2. ORE AND WASTE ROCK MOVEMENT PLAN

A conceptual plan detailing ore and waste rock movement and handling will be available for the EIS. This will be part of the application for the Permit to Mine.

¹ The DSDD Tentative Schedule is preliminary and may change as a result of new information, further deliberation or other factors.

6.3. DRILLING AND BLASTING PLAN

A conceptual plan detailing drilling and blasting activities will be available for the EIS. The plan will be a preliminary implementation-level document addressing underground drilling and blasting procedures, materials, controls and monitoring. This will be part of the application for the Permit to Mine.

6.4. WATER RESOURCES STUDIES

A report describing water resources, which are defined as surface water, wetlands as hydrologic features, groundwater, and engineered water management elements, affected by the Project will be available for use by the consultant in the EIS. Talon proposes to provide this information in the form of technical reports, datasets, figures and model documentation compiled into three categories of documentation: 1) baseline reports; 2) modeling reports; and 3) water resource reports. Baseline reports will provide data collected to date, including methods, results and statistical analysis. Modeling reports will include the methodology of the modeling exercise, model predictions and sensitivities. Water resources reports will include the potential environmental impacts of the Project. Water resources and associated reports will be produced for each hydrological setting, including groundwater, surface water and wetlands.

Analyses will be conducted under a work plan reviewed and approved by the RGU. Conceptual models will be developed to describe interactions among surface water, wetlands, groundwater and engineered water management systems. Quantitative models for water quantity and quality, subject to validation/calibration and QA/QC with inputs and assumptions clearly stated, will be presented. Quantitative analyses will include groundwater modeling to evaluate inflows, drawdowns and groundwater-surface water interactions. Groundwater modeling will include: 1) the potential three-dimensional extent of depressurization of bedrock over the life of mine into the deep and shallow bedrock and 2) the potential extent of a cone of depression in the Quaternary deposits, both originating from various dewatering activities. Modeling results will be depicted as groundwater potentiometric maps and cross-sections where appropriate. Surface water modeling will be conducted to assess flow routing and water quality. Water, geochemical and mass balance modeling will be conducted for surface and groundwater to account for inflows, outflows, reuse and discharges across project phases. Analytical approaches will incorporate evaluation of uncertainty, sensitivity and alternative scenarios, including consideration of variability of hydrologic parameters and potential future climate conditions.

This information will be approved by the RGU before use in the EIS.

6.5. CLIMATE STUDY

A report describing the climate inputs, which is the broad set of climatic variables relevant to planning, design, and impact assessment of the proposed Project, will be available for use by the consultant in the EIS. Talon proposes to supply this information with a climate report that examines temperature, precipitation, humidity, evapotranspiration, wind speed and direction, and indicators of extremes, first identifying current conditions followed by projections of future conditions for the same or comparable variables. Every item will include a brief source note naming the dataset and version, the period and area

represented and any simple calculation used to prepare the values. Charts and tables will be used when visual and/or tabular presentations can effectively convey the information. No recommendations or design responses are proposed.

Analyses will be conducted under a work plan approved by the RGU. Current conditions in the report will be based on observed climate variables drawn from established public meteorological datasets representative of conditions near the Project. Examples include the Minnesota Climate Trends Tool, national meteorological archives maintained by federal agencies, and other statewide repositories that curate observed variables and derived indices. For future conditions, values will be derived from downscaled climate products using the same set of variables across seasonal and annual windows. Examples of public tools include Minnesota Climate and Mapping Tool (ClimAT), the Climate Mapping for Resilience and Adaptation (CMRA) tool, and collections that summarize projections through national portals (for temperature, precipitation, and similar variables). Where available, the report will also include standard indices derived from these products such as heat and cold degree days, indicators of extreme precipitation or heat, and widely used drought indices. Time windows will align with project planning horizons for selection of ranges that match construction, operations and closure. Current conditions may be summarized or displayed in simple, readable forms. For projections, values may be summarized as ranges or central estimates taken directly from selected products.

This information will be approved by the RGU before use in the EIS.

6.6. LAND USE STUDY

A report describing land use, which includes zoning, comprehensive planning, public lands, rights-of-way, transportation, utilities, recreation, reservation and trust lands, ceded territory boundaries, Tribal use and adjacent community uses in the Project vicinity, will be available for use by the consultant in the EIS. Talon proposes supplying this information in a land use report that details the relationship between project elements and the surrounding jurisdictional framework. Information would be presented in narrative form, supported by maps and summary tables if useful. The first section would describe existing conditions, including ownership, zoning and land use plans across the area of interest. The second section would describe changes associated with construction and operation and would summarize conversion acreages by class and project element. No recommendations or design interpretations are proposed.

Current land uses and jurisdictional designations would be described, which would be followed by a summary of changes associated with project construction and operation. Efforts will be taken to reconcile comparable land use classes across jurisdictions. Where public lands are present, the analysis would note the governing authority and any stated purpose relevant to land use decision making. Compatibility would be described by comparing project elements to applicable zoning, comprehensive plan policies, and land management plans and authorities, followed by identifying whether the use is permitted, conditional, or not listed including applying overlay districts where applicable. Similar approaches would be employed for transportation, recreation and trails intersecting the area of interest. Changes in land use would be quantified by overlaying project elements on the baseline land use to

1767 compute acreages by class, which would be accompanied by a narrative explaining where conversions
1768 occur and jurisdictional processes are triggered. Results will be descriptive without advancing
1769 conclusions about approvals.

1770 This information will be approved by the RGU before use in the EIS.

1771 **6.7. BIOLOGICAL RESOURCES STUDY**

1772 A report describing biological resources, which includes terrestrial wildlife, vegetation and plant
1773 communities, aquatic biological resources, freshwater mussels, aquatic biota mercury concentrations
1774 and wild rice, constituting existing biological conditions in the vicinity of the Project, will be available for
1775 use by the consultant in the EIS. Talon proposes to supply this information in a baseline report detailing
1776 the biological data framework that would be available to evaluate potential project effects, alternatives
1777 and resource considerations during the EIS process. The report would serve as the primary summary of
1778 existing biological conditions, including survey purposes, methods, locations and timing across multiple
1779 categories. Raw and supporting data, such as field datasheets, geospatial files, laboratory analytical
1780 results, photographs and associated metadata would be provided.

1781 A combination of desktop and/or site level investigations, including surveys, will supply the data for the
1782 EIS. Specific categories of data include terrestrial wildlife, bat resources, terrestrial vegetation and plant
1783 communities, aquatic biological resources, freshwater mussels, aquatic biota mercury and wild rice. A
1784 tiered approach is proposed that will integrate desktop screening, field investigations and targeted
1785 baseline studies that employ methodologies tailored to each resource type aligned with applicable
1786 standards. Multi-year data collection may be appropriate and used in the EIS. Providing impact
1787 determinations, significance determinations or permitting conclusions are not proposed.

1788 This information will be approved by the RGU before use in the EIS.

1789 **6.8. CONTAMINATION, HAZARDOUS MATERIALS, WASTES STUDY**

1790 A report describing waste management, hazardous materials and existing contamination under the
1791 proposed Project will be available for use by the consultant in the EIS. Talon proposes to supply this
1792 information in a report to support an integrated understanding of material handling, storage, and
1793 disposal across construction, operations, and closure phases. The report would describe waste and
1794 materials using a descriptive, system-based approach that would explain how materials are generated,
1795 handled, stored and transferred within the Project and how this aligns with applicable regulatory
1796 frameworks. Information would mostly be narrative; however, figures and/or tables will be presented
1797 illustrating locations, material categories or general handling pathways. Across all categories, the report
1798 would describe the role of contingency planning, spill prevention planning and response action planning
1799 as part of an integrated materials management framework.

1800 Information from multiple sources would be compiled to describe waste, hazardous materials and
1801 contamination conditions associated with the Project site. Sources of information could include publicly
1802 available regulatory databases, state and local records, mapping tools or other resources that identify

features such as closed or active waste facilities, remediation sites, storage tanks, wastewater infrastructure and similar regulated activities. Project-related waste and hazardous materials information would be organized by material type (hazardous materials, hazardous waste or non-hazardous waste) and project phase. This will include residuals generated by water or wastewater treatment processes. Waste streams and regulatory classifications under applicable federal state statutes and rules will be identified; average volumes and predicted chemical parameters, including uncertainties, will be provided. Geochemical characterization results will be available for the EIS. Talon does not propose to imply completion, regulatory determinations or significance determinations in the report.

This information will be approved by the RGU before use in the EIS.

6.9. VISUAL STUDY

A report describing visual resources, which are defined as daytime visual conditions, viewsheds, visual simulations and night-sky considerations, will be available for use by the consultant in the EIS. Talon proposes to supply this information in a report to support discussion of visual conditions and potential changes to those conditions under the proposed Project. The report will identify how the Project may be perceived from surrounding locations and how proposed features may contrast with existing visual conditions. Visual resources information would be prepared to describe existing visual settings, identify locations where project features may be visible and illustrate representative views of proposed facilities under anticipated project conditions. Information will typically include a narrative description of existing visual conditions, maps illustrating the general extent of potential visibility, identification of key observation points, representative visual simulations with explanatory captions and a qualitative discussion of night-sky content.

Baseline data may include regional land cover and land use information relevant to visual context; topographic data suitable for viewshed analysis, typically derived from publicly available digital elevation models created from LiDAR; existing photographs documenting current visual conditions from representative locations; and night-sky content information describing existing ambient lighting conditions. Project-related inputs may include conceptual site layouts, building envelopes, structure heights and other physical attributes necessary to represent proposed surface features in visual models. Where lighting is relevant, generalized lighting characteristics may be used to inform simulations. Analytical methods may include viewshed analysis using conservative terrain-based assumptions, select key observation points, photographic documentation and development of spatially accurate visual simulations using three-dimensional modeling software. Night-sky conditions could be a mix of narrative and visual representations of lighting design concepts intended to minimize offsite light spill. Talon does not propose to provide conclusions regarding impact magnitude or significance.

This information will be approved by the RGU before use in the EIS.

6.10. NOISE AND VIBRATION STUDY

A report describing the noise and vibration impacts of the proposed Project will be available for use by the consultant in the EIS. Talon proposes to supply this information in a report to describe the types of

information, data sources and analytical approaches associated with evaluating noise and vibration impacts. Noise and vibration will be addressed as related but analytically distinct topics, each with separate technical considerations. Noise analysis will be structured around ambient conditions derived from field-based monitoring, where sound propagation from construction- and operation-related sources will be evaluated using established engineering methods for outdoor sound that account for distance, terrain and shielding effects. Noise levels at representative receptor locations are then compared to Minnesota Noise Area Classification standards. Vibration analysis focuses on ground-borne vibration associated with underground blasting, which is a controlled activity conducted at depth below the surface. Vibration propagation will be evaluated using empirical prediction methods that relate charge weight, distance and site attenuation characteristics. Predicted vibrations will be compared against regulatory thresholds, where the attenuating influence of depth, bedrock and overburden is recognized as part of this analytical context.

Existing conditions for noise and vibration will be described using regional and site-specific context to characterize ambient sound levels typical of a rural setting. The characterization will be informed by field-based noise monitoring conducted at representative locations selected to reflect nearby residences and other potential receptors. Standard statistical descriptors, including L_{10} , L_{50} , L_{90} , and L_{eq} are used to document how sound levels vary over daytime and nighttime periods. Data inputs will also include information describing construction and operational activities that may generate noise and vibration. Conceptual data related to underground blasting practices will include general explosive types, blast geometries and physical mechanisms governing vibration propagation through bedrock and overburden. Talon does not propose to imply outcomes, mitigation decisions or regulatory determinations in the report.

This information will be approved by the RGU before use in the EIS.

6.11. HISTORIC PROPERTIES STUDY

A report describing historic properties, which include historic structures, historic architectural resources, archaeological sites and Traditional Cultural Properties, will be available for use by the consultant in the EIS. Talon proposes to supply this information in a report providing the historical context of the Project Area and the nature of cultural resources that may be impacted by the Project. Reporting will include summaries of background research, descriptions of survey methods and coverage, identification of resources where applicable and discussion of general pathways for avoidance, minimization or mitigation that may be considered if historic properties are identified. While mostly narrative, the report may use figures and tables to depict survey areas, resource locations as appropriate and relationships to project components. Sensitive locational information would be handled subject to applicable confidentiality requirements.

Historic properties documentation will be based on background research, agency records, consultation input and field investigations. Background research will include a Phase 1a cultural resources literature review to identify previously recorded archaeological sites, architectural resources, historic maps, archival sources, aerial imagery and prior cultural resources studies to establish regional context and

identify areas with potential for cultural resources. The report will rely on established methods for each type of historic property and include the findings of a Phase I Archaeological Survey conducted in 2025. Description of eligibility concepts, such as potential consideration for listing in the NRHP, may be included in the EIS at a descriptive level based on professional standards. Talon does not propose to presuppose determinations or outcomes.

This information will be approved by RGU before use in the EIS.

6.12. TRIBAL RESOURCES STUDY

A report describing tribal resources, which are the resources that reflect American Indian traditions interwoven into ecosystems where they live that reflect American Indian values and relationships to the environment, traditional ecological knowledge, and sites and resources that hold tribal significance, will be available for use by the consultant in the EIS. DNR, Tribes, and Talon propose to supply this information in a report that evaluates the Project and its potential impacts considering tribal values for natural and cultural resources to identify whether the Project results in reduction or loss of a resource, or reduction or loss in access to a resource, of importance to Tribal identity, traditional uses, subsistence activities (e.g., hunting, fishing, wild rice), or other relevant considerations. This will include independent review of the Proposer's historic properties documentation, which could result in additional site-level investigations (i.e., Phase I and/or Phase II archaeological surveys) to support the EIS analysis. Through both Tribal consultation and coordination, the EIS will identify cultural resources, cultural corridors and traditional uses in the Project vicinity and potential impacts.

The EIS will summarize cultural resources in the context of federally recognized tribes who retain the power of self-governance over their lands and members in terms of tribal sovereignty, historical and legal framework, federal and Minnesota Indian Law and Policy, Indian Country and Indian Lands, treaties and reserved rights, ceded lands in Minnesota, reservation lands, and government lands relying on data from the Line 3 Final EIS. The EIS will address unique tribal impacts and spiritual connection to the land, including Big Sandy Lake. Project-related impacts to Big Sandy Lake, including noise, visual (e.g., light, intrusion), water quality and ceremonial access, will be considered. Project-related impacts to wild rice will be considered in its context as a tribal resource along with other sites where traditional and spiritual practices take place, including hunting and fishing habitats, hunting trails, areas for harvesting plant foods and medicinal plants, and sugarbush.

Tribal resources documentation will include site level investigations that meet the Secretary of Interior's Standards for Identification and Evaluation and the Minnesota Office of State Archaeologist State Archaeologist's Manual for Archaeological Projects in Minnesota (Anfinson 2011). Criteria dictating what constitutes an area considered to have moderate to high potential to contain intact archaeological resources will meet SHPO specifications and include input from THPOs. Tribal monitors designated through the applicable Tribal coordination will be provided with the opportunity to be present during additional site-level investigations. The EIS will include consultation with potentially affected tribes, and if appropriate, the RGU will request information concerning sacred places and treaty areas. The EIS can include coordination with tribal staff, including the THPOs, to include information concerning cultural

resources. If the RGU determines that oral interviews are appropriate to support the EIS analysis, then interviews may be conducted with traditional spiritual leaders, traditional tribal elders, tribal oral historians and educators, or other individuals who can provide information on the traditions and values relevant to the study area. Primary purposes of the interviews are to supplement any site surveys and to understand and document the tribal connection to the site and defined surrounding area in terms of the Tribe's history, culture, perspectives and importance of the site and surrounding region. Any interviews will be conducted in a scientifically rigorous manner under information, documentation and sharing protocols mutually agreed to by applicable parties. Known cultural resources that are eligible for, listed in, or currently nominated but unevaluated for listing in the Minnesota State Historic Sites Network and the Minnesota State Register of Historic Places will be included in the EIS. In addition, the EIS will assess impacts to historic properties that are eligible for, listed in, or currently unevaluated for listing in the NRHP.

This information will be approved by the RGU before use in the EIS.

6.13. AIR RESOURCES STUDY

A report describing air quality and air emissions due to the Project, which includes stationary sources, mobile sources, fugitive dust, and odors, will be available for use by the consultant in the EIS. The report will also contain results of the air dispersion analysis and health risk assessment. Talon proposes to supply this information in a report to provide emission source characterization, modeling approaches, regulatory applicability and reporting conventions for air resources that may be impacted by the Project. The report would include clear identification of emission sources and pollutants evaluated, description of assumptions, data sources, and modeling protocols, modeling outputs relative to regulatory benchmarks (without interpretive conclusions), and documentation of mitigation measures and management practices identified for air quality protection. The report will be narrative with accompanying figures, tables and appendices employing consistent terminology, units and pollutant classifications across all submittals. The EIS will report the following analyses: emission inventory and potential to emit; air dispersion modeling; BACT-like analysis for PM, PM₁₀, and PM_{2.5}; Class I and Class II area evaluation; AERA; and fugitive dust and odors.

Analyses will be conducted under a work plan approved by the RGU. The EIS will require sufficient data to characterize potential air emissions and ambient air quality. Major Project elements that would be considered as stationary emission sources include underground mine exhaust, ore transfer and material handling systems, emergency power generation units and building heating equipment. Mobile sources include onsite vehicles and other equipment. Pollutants evaluated include criteria air pollutants, hazardous air pollutants, chemicals of potential interest, polycyclic aromatic hydrocarbons and other compounds identified through regulatory screening. Emissions inputs would be based on equipment specifications, operating assumptions, published emission factors and control efficiencies consistent with facility design. Talon does not propose to provide conclusions or outcomes in the report.

This information will be approved by the RGU before use in the EIS.

1953 **6.14. GREENHOUSE GASES STUDY**

1954 A report describing GHGs, which includes project-related emissions and carbon footprint, will be
1955 available for use by the consultant in the EIS. Talon proposes to supply this information in a report to
1956 provide principal GHG emission source categories quantified as CO₂e, and where appropriate as
1957 individual gases, calculated using established global warming potentials over a defined time horizon that
1958 may be impacted by the Project. The EIS will organize information by project phase (construction,
1959 operations, and where applicable, closure) and emission scope (direct emissions from project-controlled
1960 sources, indirect emissions from purchased electricity and additional indirect emissions where included).
1961 The report will be narrative descriptions of assumptions, activity data inputs and emission factor
1962 references (in calculations) accompanied by tables, graphics, annualized summaries and identification of
1963 key limitations and uncertainties that affect the inventory (e.g., dependence on design-level
1964 assumptions, equipment usage profiles and selection of emission factor references). This report will not
1965 address climate baselines, climate projections or climate resilience topics other than where context is
1966 useful against broader state and national inventories and goals.

1967 Analyses will be conducted under a work plan approved by the RGU. Emission sources will be organized
1968 to distinguish between direct emissions from project-controlled activities and indirect emissions
1969 associated with purchased energy and certain offsite activities for both the construction and operations
1970 period. Combustion emissions source categories include on-road mobile equipment, non-road mobile
1971 equipment and stationary equipment (e.g., heaters and emergency generators). Other sources include
1972 fugitive emissions associated with blasting, indirect emissions from purchased electricity and indirect
1973 emissions from offsite waste management and transportation activities. Underlying data commonly
1974 employed includes fuel use estimates (by type), equipment usage assumptions, electricity consumption
1975 estimates, land area conversion estimates (by land cover type) and transport activity measures (e.g., ton-
1976 miles) where applicable. Published emission factors will be utilized to the degree possible. Talon does
1977 not propose to provide results, interpret significance nor conduct subsequent analysis.

1978 This information will be approved by the RGU before use in the EIS.

1979 **6.15. TRANSPORTATION STUDY**

1980 A report describing roadway and rail information, which includes transportation infrastructure, traffic
1981 generation and rail transportation, will be available for use by the consultant in the EIS. Talon proposes
1982 to supply this information in a report detailing transportation impacts during project construction and
1983 operation. Traffic analyses will focus on operations near the Project relying on intersection-level
1984 assessments using standard traffic engineering methods to document projected traffic volumes on the
1985 existing roadway network. The EIS will account for existing traffic conditions, seasonal variations, project-
1986 generated traffic during construction and operation, concentrated traffic during workforce shift changes
1987 and access geometry. Rail transportation analysis would be descriptive (i.e., not modeling) and outline
1988 ore movement from the underground mine to the rail load-out facility, onsite rail operations and
1989 coordination with existing rail lines.

1990 The EIS will compile roadway network and baseline conditions using publicly available datasets, including
1991 average annual daily traffic counts and roadway classification for TH 210, Aitkin County CSAH 6 and CSAH
1992 31; similar data will be collected for select segments of TH 73 and TH 65 if determined necessary. These
1993 data will provide context for existing traffic volumes, roadway functions and regional connectivity in the
1994 vicinity of the Project. Factors considered will include anticipated residence location of workers during
1995 construction and operations, workforce size, shift schedules, construction activity patterns, overburden
1996 transport, delivery and service traffic and backfill plant materials transport (e.g., aggregate, cement);
1997 parking demand and site access locations would also be identified. Rail transportation would address
1998 onsite rail infrastructure, ore handling and loadout, anticipated rail shipment frequency and rail
1999 transport to processing facilities. The EIS will include a segment-by-segment train cycle analysis to inform
2000 unit train cycle variability, including potential surge capacity requirements. Talon does not propose to
2001 evaluate impacts, characterize significance, present study results or supply interpretation.

2002 This information will be approved by the RGU before use in the EIS.

2003 **6.16. ELONGATE MINERAL PARTICLES STUDY**

2004 A report describing EMPs, which includes anticipated applicable numeric regulatory standards, EMP
2005 material characterization, mechanisms for liberation, mineral fiber counts and an adaptive management
2006 plan, will be available for use by the consultant in the EIS. Talon proposes to supply this information in a
2007 report that discloses the selected standards, and their associated criteria that define and analyze the
2008 target particles based on size, shape and mineralogy. The study will consider representativeness of
2009 available sample data in context of the entire life of mine geology, and how those data are extended to
2010 anticipate presence in air and water. Environmental pathways will be identified, which likely include but
2011 may not be limited to: 1) an air pathway from ventilation of mine workings and Ore Transfer Building, as
2012 well as from ore transportation, and 2) a water pathway from contact water from mine workings and Ore
2013 Transfer Building, as well as from ore transportation. Measures available to control and/or mitigate
2014 particulates that can also address EMPs will be identified. An adaptive management plan and associated
2015 monitoring program will be presented to achieve the identified numeric criteria during operations. The
2016 study will be narrative with accompanying figures, images, tables, and appendices employing consistent
2017 terminology, units, and EMP classifications in the document.

2018 Analyses will be conducted under a work plan and oversight of the MPCA and MDH. The EIS will require
2019 sufficient data to characterize potential EMPs liberated by the Project and the adequacy of their control
2020 to the identified numeric criteria.

2021 This information will be approved by the RGU before use in the EIS.

2022 **6.17. RECLAMATION AND CLOSURE PLAN**

2023 A draft mine reclamation and closure plan will be developed. The plan will include details and schedules
2024 for site restoration, underground mine and surface facilities reclamation, structure demolition, site
2025 remediation and any need for ongoing maintenance and/or water treatment. The reclamation and
2026 closure plan will provide an estimate for all closure costs for inclusion in the EIS; actual financial

2027 assurance requirements will be independently developed in initial permitting, where exactly how many
2028 years of required costs will be determined based on the reclamation and closure plans. The reclamation
2029 and closure plan will be finalized as part of the Permit to Mine and updated annually to reflect changes
2030 in closure costs and consideration of progressive reclamation required during operation.

2031 **7.0 MITIGATION AND MONITORING**

2032 The EIS will include a section that identifies those measures that could reasonably eliminate or minimize
2033 adverse environmental effects of the proposed Project. Monitoring likely to be required in permits and
2034 approvals, or voluntarily undertaken by the Proposer, will be identified. Adaptive management and/or
2035 contingency mitigation measures identified within the EIS process will be listed in the EIS.

2036 The EIS will provide information and evaluation on potential environmental impacts resulting from the
2037 Project and scoped alternatives, as well as identify the possible need for additional mitigation measures.

2038 **8.0 PERMITS AND APPROVALS**

2039 The EIS will identify all permits and approvals required for the Project. While some permit application
2040 review may occur concurrently with EIS preparation, the EIS will not necessarily contain all information
2041 required for a decision on those permits. No permits have been designated to have all information
2042 developed concurrently with the preparation of the EIS nor will any require a record of decision pursuant
2043 to Minn. R. 4410.2100, subp. 6.

2044 The EIS is not a decision-making document but is to be used by governmental units as information and a
2045 guide for the permitting process (Minn. R. 4410.0300: Authority, Scope, Purpose, and Objectives). All
2046 Minnesota local and state government bodies identified in an EIS with permitting authority shall consider
2047 the report in making any decision to authorize the Project according to Minn. R. 4410.7055. Also, if an
2048 EIS is required for a governmental action (defined by Minn. R. 4410.0200, subp. 33), no permits or
2049 approvals may be granted nor can a project begin until environmental review is completed, including an
2050 EIS Determination of Adequacy by the DNR as RGU, according to Minn. R. 4410.3100.