

1.0 INTRODUCTION

1.1 OVERVIEW

The Minnesota Department of Natural Resources (MDNR), U.S. Army Corps of Engineers (USACE), and U.S. Forest Service (USFS) have prepared a joint state-federal Supplemental Draft Environmental Impact Statement (SDEIS) for the proposed NorthMet Project and Land Exchange (see Figure 1-1).

The SDEIS complements the Draft Environmental Impact Statement (DEIS) that was published in October 2009 by addressing significant new circumstances and information relevant to the proposed project and its impacts. See Chapter 2 for more information on the development of the SDEIS.

PolyMet Mining, Inc. (PolyMet) is proposing to develop the NorthMet copper-nickel-platinum group elements (PGE) mine and associated processing facilities in northeastern Minnesota. A land exchange is also proposed with the United States Forest Service (USFS) to eliminate a conflict between PolyMet's desire to surface mine and the United States' surface rights, including USFS administration of National Forest System (NFS) land. Because the Land Exchange is closely related to the NorthMet Project, it is considered a connected action, and, as such, is included in the analysis of environmental effects.

Under state and federal regulations, multiple actions or projects that are connected actions must be considered in total in preparing an EIS. For the SDEIS, the NorthMet Project Proposed Action and the Land Exchange Proposed Action constitute the Proposed Connected Actions, which comprise two major components (see Figure 1-1):

- The NorthMet Project Proposed Action consisting of:
 - Mine Site: A new surface mine, which would include development of mine pits, permanent and temporary waste rock stockpiles, an overburden storage and laydown area, a Wastewater Treatment Facility (WWTF), water collection and conveyance pipelines, a Central Pumping Station (CPS), and a Rail Transfer Hopper.
 - Transportation and Utility Corridor: Expansion of an existing right-of-way (ROW) to connect the Mine Site and the Plant Site to the transportation and utility infrastructure and upgrades to Dunka Road. New ROW and infrastructure would be constructed to include railroad spurs, water pipelines, and transmission lines.
 - Plant Site: Existing facilities remaining from the former LTV Steel Mining Company (LTVSMC), which closed in 2001, would be refurbished and reused. Two new facilities would be constructed, one for beneficiation and one for hydrometallurgical processing. Associated with these would be the expansion of the existing LTVSMC Tailings Basin to accommodate NorthMet Project tailings, construction of a Hydrometallurgical Residue Facility, water collection and conveyance pipelines, and construction of a new Wastewater Treatment Plant (WWTP).

- The Land Exchange Proposed Action consisting of:
 - USFS conveyance of Superior National Forest lands encompassing the proposed NorthMet Mine Site and the lands surrounding the Mine Site to PolyMet.
 - USFS acquisition of up to five tracts of private land that lie within the Superior National Forest proclamation boundary that are currently owned or would be acquired by PolyMet. The final proposed configuration of land would be determined after the market value of the parcels is determined by appraisals and would be presented in the Record of Decision.

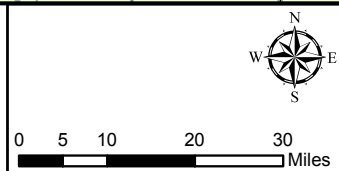
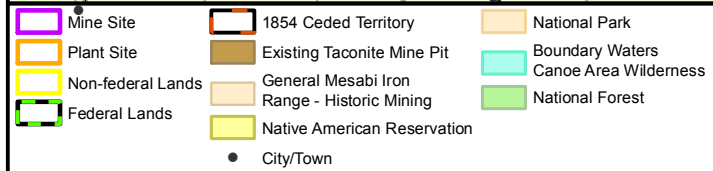
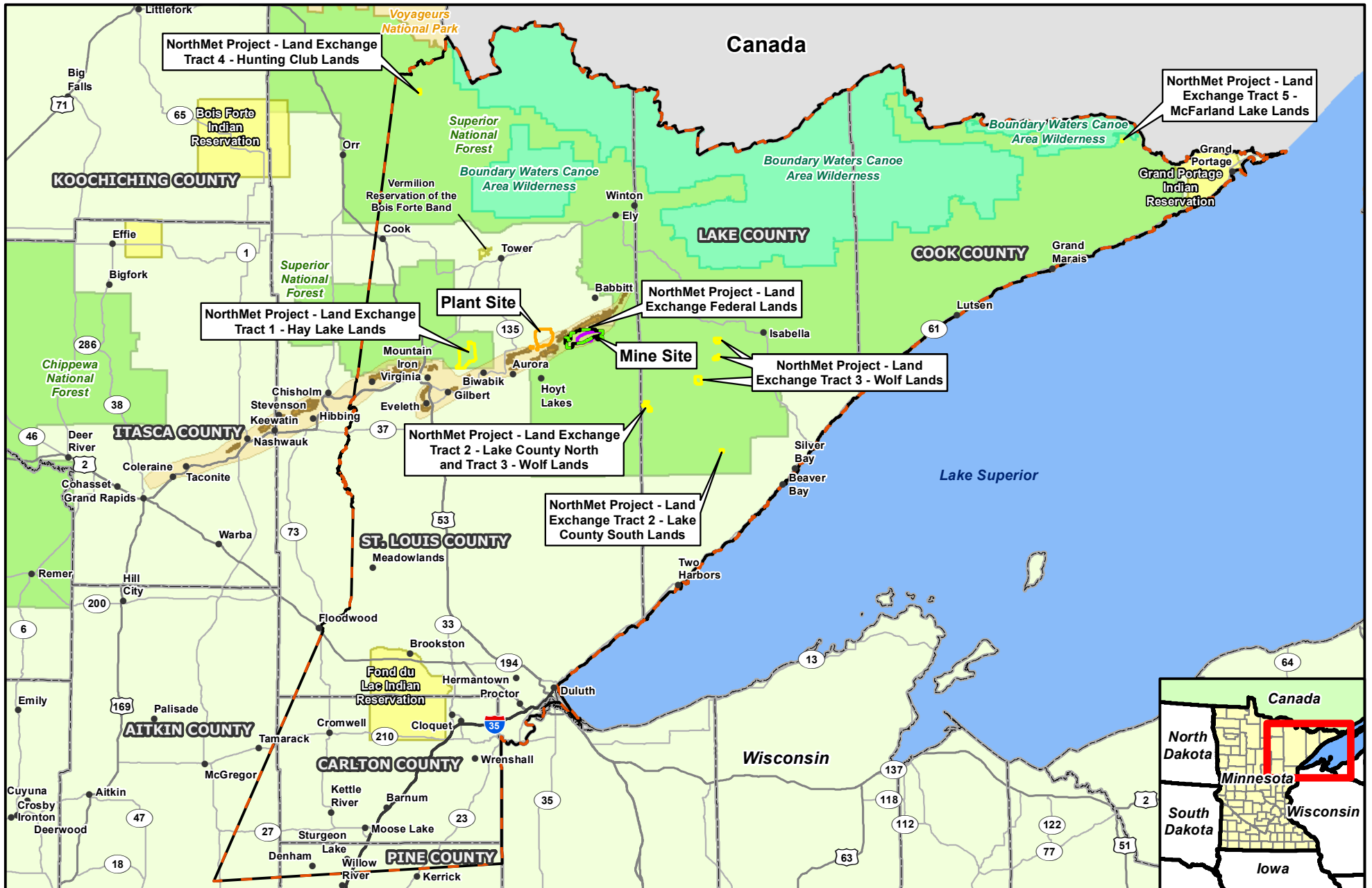


Figure 1-1
NorthMet Project and Land Exchange Area
 NorthMet Mining Project and Land Exchange SDEIS
 Minnesota

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1.1.1 NorthMet Project

The NorthMet Project area, including the Mine Site, Plant Site, and connecting infrastructure, would be located in St. Louis County, Minnesota, and situated at the eastern end of the Mesabi Iron Range (see Figure 1-2). The Mine Site is an area of the Superior National Forest that has not previously been mined. It is located approximately 6 miles south of the City of Babbitt and directly south of the Northshore Mining Company's Northshore Mine, which is an active taconite/iron mine.

The Plant Site would be approximately 6 miles north of the City of Hoyt Lakes at the former LTVSMC processing plant. This facility would be refurbished and would include a new Beneficiation Plant and Hydrometallurgical Plant.

When operational, surface mining and processing of copper-nickel-PGE ore would take place over an approximately 20-year mine life and have the following outputs:

- approximately 73,068 tons per day (tpd) of rock, including up to 32,000 tpd of ore from a surface mine with three pits (i.e., East Pit, Central Pit, and West Pit);
- approximately 15 million tons of waste rock annually;
- approximately 11.3 million tons of tailings from the Beneficiation Plant annually;
- residues from the Hydrometallurgical Plant, up to 313,000 tons annually (dependent upon factors such as feedstock, markets, etc.); and
- 113,000 tons of copper concentrate, 18,000 tons of mixed nickel/cobalt hydroxide, and 500 tons of PGE precipitate annually (based on an average mining rate).

Generally, facilities in the NorthMet Project area would be concurrently reclaimed, leaving a smaller portion of the NorthMet Project area to be reclaimed. At the end of mining, PolyMet would first remove all infrastructure and facilities not approved for potential future use, followed by reclamation of disturbed lands. Post-reclamation activities would include monitoring and maintenance of reclamation and water quality until the various facility features were deemed environmentally acceptable, in a self-sustaining and stable condition.

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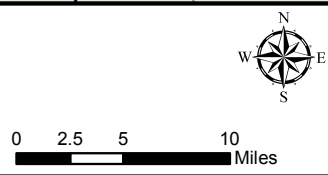
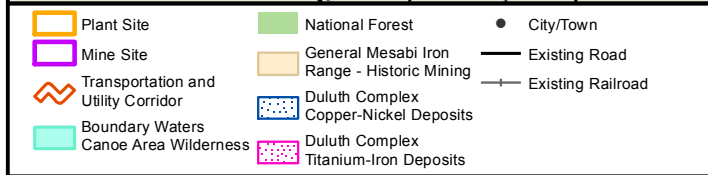
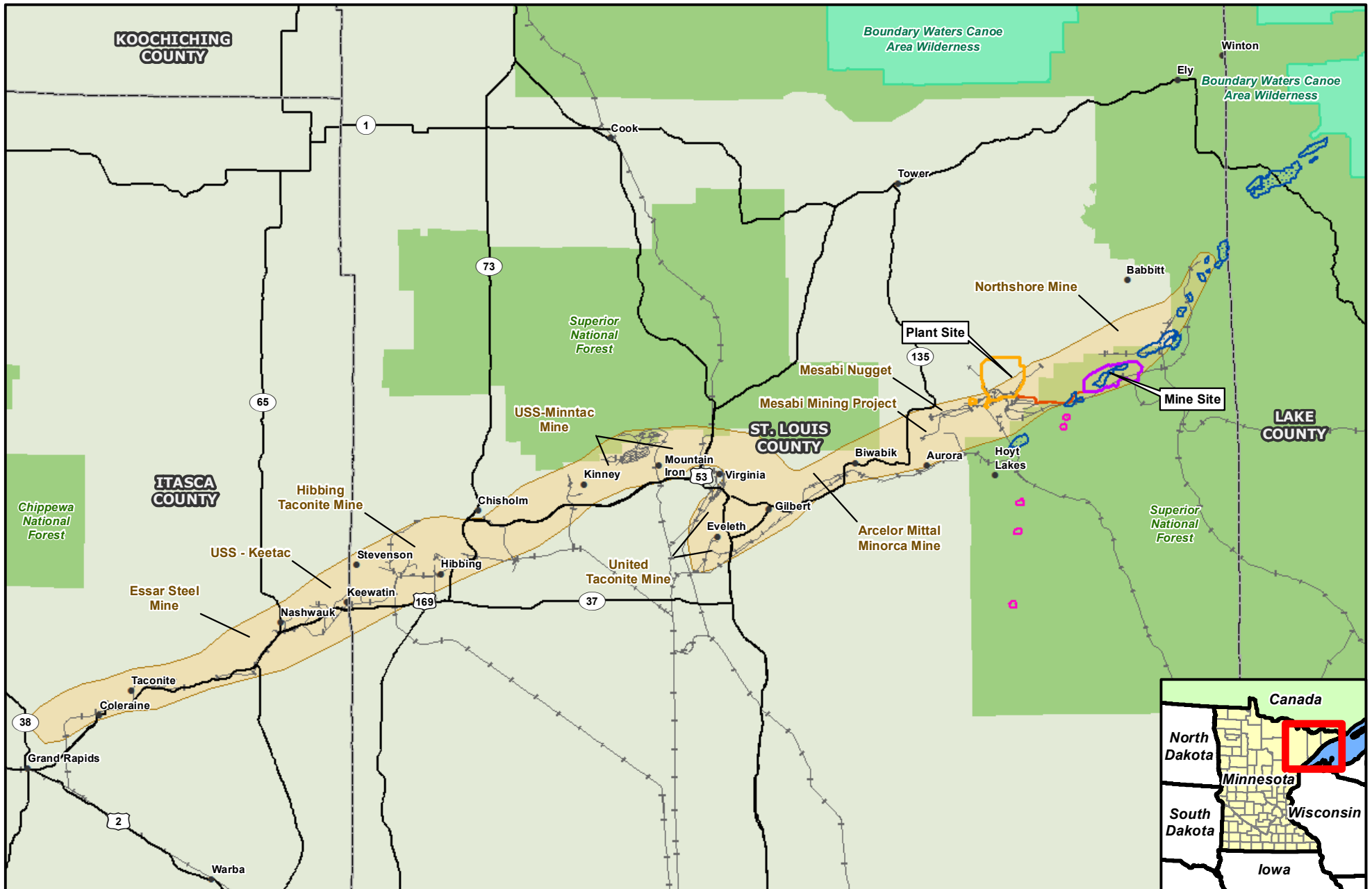


Figure 1-2
Mesabi Iron Range Region
 NorthMet Mining Project and Land Exchange SDEIS
 Minnesota

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1.1.2 Land Exchange

The Land Exchange Proposed Action is considered a “connected action” to the NorthMet Project Proposed Action (40 Code of Federal Regulations [CFR] part 1508.25). It is included in the analysis of environmental effects as part of the Proposed Connected Actions. The proposed NorthMet Mine Site would affect federal lands for which PolyMet leases the private subsurface mineral rights. The area affected by the Mine Site was acquired by the United States, for National Forest purposes, under the authority of the Weeks Act of 1911 (16 United States Code [USC] § 515) and is managed by the USFS.

The Land Exchange Proposed Action would involve the transfer of 6,650.2 acres (General Land Office [GLO]) of federal lands from public to private ownership, and up to 6,722.5 acres (GLO) of land from private to public ownership, depending on the results of the environmental analysis and real estate appraisals. See Section 3.3.2 for a detailed description of the Land Exchange Proposed Action.

GLO acres represent the acreages associated with the legal descriptions of the parcels based on original surveys performed by the GLO surveyors between 1858 and 1907. As such, GLO acreages are being used as part of the project description and would also be used to define the real estate transaction if the Land Exchange Proposed Action were approved. The analyses of effects presented in Chapters 5 and 6 are based upon Geographic Information System (GIS) data. GIS values indicate the size of the Land Exchange Proposed Action parcels as computed geometrically using mapping software, which may be different than the GLO legal acreage. Unless noted as GLO acres, all values shown in the document are GIS values.

The Land Exchange Proposed Action would allow use of parts of the federal lands for the NorthMet Project Proposed Action mining activities. PolyMet has indicated that management of the exchanged federal lands outside of the proposed mining development could include some upland timber management to enhance wildlife habitat; however, there are no current proposed disturbances to this area. There are no activities proposed on the non-federal lands as part of the Land Exchange Proposed Action.

1.2 EIS ROLES AND RESPONSIBILITIES

1.2.1 Co-lead Agencies

Since both USACE and USFS have federal actions pertaining to the NorthMet Project and Land Exchange, these agencies have elected to become Co-lead federal Agencies for the implementation of the National Environmental Policy Act (NEPA) and the preparation of the SDEIS. The USACE is responsible for determining if a project is in the public’s interest and complies with the Section 404 (33 USC § 1344) guidelines before issuing a Department of the Army permit pursuant to the Clean Water Act (CWA). The NorthMet Project Proposed Action also requires preparation of a mandatory State Environmental Impact Statement (EIS) under the Minnesota Environmental Policy Act (MEPA) and *Minnesota Rules*, part 4410.4400(8)(C), which designate the MDNR as the Responsible Governmental Unit (RGU) or lead state agency.

MDNR, USACE, and USFS are Co-lead Agencies for the joint state-federal EIS and, therefore, are responsible for the content of the SDEIS and Final Environmental Impact Statement (FEIS) and have final authority over the language used in the documents.

1.2.2 Cooperating Agencies

Under Section 309 of the Clean Air Act (CAA) (42 USC § 7609), the Administrator of the United States Environmental Protection Agency (USEPA) is directed to review and comment publicly on the environmental impacts of federal activities, including actions for which EISs are prepared.

The USEPA submitted comments on the DEIS on February 18, 2010 and assigned the DEIS a rating of EU-3 (Environmentally Unsatisfactory – Inadequate Information). Following the DEIS, USEPA agreed to become a Cooperating Agency pursuant to NEPA for development of the SDEIS in order to participate in resolving issues identified in USEPA’s comment letter on the NorthMet Project's initial DEIS.

Along with the USEPA, the Bois Forte Band of Chippewa (Bois Forte), Grand Portage Band of Lake Superior Chippewa (Grand Portage), and Fond du Lac Band of Lake Superior Chippewa (Fond du Lac) (collectively, “the Bands”) have been invited by the Co-lead Agencies to participate as Cooperating Agencies. The Mine Site, Plant Site, federal lands, and non-federal lands as part of the Land Exchange Proposed Action are all located within the 1854 Ceded Territory where the Bands reserve usufructuary rights (i.e., for hunting, fishing, and gathering). A Memorandum of Understanding (MOU) was signed on February 23, 2005 (with a revision on March 15, 2005) between the USACE, MDNR, Bois Forte, Fond du Lac, and PolyMet. The MOU discussed the roles and procedures in which the signatories would interact as Co-lead and Cooperating agencies. The MOU was again revised on May 19, 2008, to include Grand Portage. Following the addition of the USFS as a Co-lead Agency and the decision to prepare an SDEIS, this MOU was terminated and a Coordination and Communication Plan (CCP) was developed. The CCP was produced jointly by the MDNR, USACE, USFS, and Bands to guide interactions during preparation of the SDEIS. The Great Lakes Indian Fish & Wildlife Commission (GLIFWC) and the 1854 Treaty Authority have assisted the Bands in their roles as Cooperating Agencies. The federal Co-lead Agencies are conducting a parallel process with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 USC § 470 et seq.), along with NEPA.

The USEPA and the Bands participated as Cooperating Agencies based on regulatory authority and/or subject matter expertise. The Cooperating Agencies have not participated in the production or endorsement of any components of the SDEIS or the NorthMet Project Proposed Action.

1.2.3 Other Agencies

While not Co-lead or Cooperating Agencies, other federal and state agencies have important roles on the project. The Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Health (MDH) are assisting the MDNR pursuant to *Minnesota Rules*, part 4410.2200. The United States Fish and Wildlife Service (USFWS) will review the Biological Assessment and provide a Biological Opinion.

1.3 PURPOSE AND NEED

1.3.1 Applicant's Purpose and Need Statement

The applicant's stated purpose of the NorthMet Project is to exercise PolyMet's mineral lease to continuously mine, via open pit methods, the known ore deposits (NorthMet Deposit) containing copper, nickel, cobalt, and PGEs to produce base and precious metal precipitates and flotation concentrates by uninterrupted utilization of the former LTVSMC processing plant.

The purpose of the proposed Land Exchange is to consolidate the surface and mineral ownership of the lands involved at the Mine Site. PolyMet has a lease to mine the minerals on its NorthMet Deposit, which is surrounded by active and abandoned taconite mines near Hoyt Lakes. The surface of these lands is owned by the United States.

The need for the NorthMet Project is driven by domestic and global demand of these products. Demand continues to rise for these metals due to the expansion of the green economy and rising demand from developing countries like India, China, and Brazil. Based on the closure of LTVSMC and other job losses in northeastern Minnesota, there is also a need for jobs and economic development in the area.

1.3.2 Co-lead Agencies' Purpose and Need Statements

1.3.2.1 NorthMet Project and Land Exchange Purpose and Need Statement

The Purpose and Need for the Proposed Connected Actions is:

- For PolyMet to utilize its leased mineral rights and recover commercial quantities and quality of semi-refined metal concentrates, hydroxides, and precipitates from the NorthMet ore body in northern Minnesota, and to process the recovered ore by reutilizing the former LTVSMC processing plant.
- To extract metals in a safe, environmentally responsible, energy-efficient, and economically feasible manner subject to mitigation measures designed to avoid or minimize environmental effects to the extent practicable.
- To extract and process metals in a technically and economically feasible manner, such that there would be sufficient income to cover: operating cost (which includes but is not limited to the cost of mining, processing, transportation, and waste management), capital cost (needed to build and sustain facilities), an adequate return to investors, reclamation, and closure costs and taxes.
- To eliminate the conflict between PolyMet's desire to surface mine and the USFS ownership and management of NFS lands, by exchanging federal lands for non-federal lands that have equal or greater value.

1.3.2.2 United States Forest Service

The purpose for the USFS is to meet desired conditions in the Superior National Forest Land and Resource Management Plan (Forest Plan), including ensuring the proposed land exchange Proposed Action eliminates existing conflict and ensuring mineral resources are produced in an environmentally sound manner contributing to economic growth.

In regards to desired conditions for land exchange and mineral development, the Superior National Forest's Forest Plan includes the following direction:

“D-LA-1 – The amount and spatial arrangement of National Forest System land within the proclamation boundary of the Forest are sufficient to protect resource values and interests, improve management effectiveness, eliminate conflicts, and reduce the costs of administering landlines and managing resources.” (Forest Plan, Land Adjustment, pg. 2-51)

“D-MN-2 – Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and national defense.” (Forest Plan, Minerals, pg. 2-9)

PolyMet intends to exercise private mineral rights that were reserved when lands were conveyed to the United States and has proposed the development of a surface mine. This land was purchased by the USFS, for National Forest purposes, under the authority of the Weeks Act. The USFS has taken the position that the mineral rights that were reserved do not include the right to surface mine as proposed by PolyMet.

In addition, allowing private surface mining would be inconsistent with USFS legal mandates for acquiring and managing these lands. The USFS needs to resolve this fundamental conflict.

1.3.2.3 United States Army Corps of Engineers

The Purpose and Need of the Proposed Action is to produce base and precious metals precipitates and flotation concentrates from ore mined at the NorthMet Deposit by uninterrupted operation of the former LTVSMC processing plant. The processed resources would help meet domestic and global demand by sale of these products to domestic and world markets.

1.3.2.4 Minnesota Department of Natural Resources

The Purpose and Need of the Proposed Action is to produce base and precious metals precipitates and flotation concentrates from ore mined at the NorthMet Deposit by uninterrupted operation of the former LTVSMC processing plant. The processed resources would help meet domestic and global demand by sale of these products to domestic and world markets.

1.4 REGULATORY FRAMEWORK

1.4.1 National Environmental Policy Act

1.4.1.1 Overview

NEPA requires that federal agencies consider the potential environmental consequences of proposed actions in their decision-making process. The law's intent is to protect, restore, or enhance the environment through well-informed federal decisions. The CEQ was established under NEPA for the purpose of implementing and overseeing federal policies as they relate to this process.

In 1978, the CEQ issued regulations for implementing NEPA (40 CFR parts 1500-1508). Section 102(2)(c) of NEPA, 42 USC § 4332(2)(C), mandates that federal agencies shall include a “detailed statement” in “proposals for legislation and other major Federal actions significantly

affecting the quality of the human environment” that addresses, among other things, the environmental effects of the proposed action. Such projects include: any actions under the jurisdiction of the federal government or subject to federal permits; actions requiring partial or complete federal funding; actions on federal lands or affecting federal facilities; continuing federal actions with effects on land or facilities; and new or revised federal rules, regulations, plans, or procedures. Any major federal action significantly affecting the human environment requires the preparation of an EIS and a Record of Decision (ROD). The USACE permit decision, including its evaluation under the 404(b)(1) guidelines and the Public Interest Review, will be documented in the USACE ROD, which will be issued following issuance of the FEIS. The USACE will use the FEIS to support the ROD documenting for its decision on the CWA Section 404 Permit application. The USFS will implement NEPA per 36 CFR part 220, and would use the FEIS to support the ROD documenting its decision on the Land Exchange Proposed Action.

The USACE, during its review of PolyMet’s permit application, determined that the NorthMet Project Proposed Action would require the preparation of an EIS in accordance with the requirements of NEPA and the CEQ regulations. To comply with other relevant environmental statutes described below, in addition to NEPA, the decision-making process for the Proposed Connected Actions involves a thorough examination of all pertinent environmental issues per 40 CFR 1505.

1.4.1.2 Alternatives

NEPA requires that a "range of alternatives" must be discussed in the environmental documents prepared for a proposed action (40 CFR 1502.14). This includes all practicable alternatives, which must be rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them. The emphasis is on what is “practicable” rather than on whether a proponent or applicant prefers or is itself capable of carrying out a particular alternative. NEPA also requires consideration of the No Action Alternative, in which the proposed project would not proceed.

1.4.2 Minnesota Environmental Policy Act

1.4.2.1 Overview

In addition to the federal NEPA process, *Minnesota Statutes*, Chapter 116D requires environmental review. The MEPA environmental review process is an information collection and disclosure tool for state agencies. It informs the subsequent permitting and approval processes and describes mitigation measures that may be available. The MEPA process operates according to rules adopted by the Minnesota Environmental Quality Board (MEQB). However, the actual reviews are usually conducted by a local governmental unit or a state agency. The organization responsible for conducting the review is referred to as the RGU. The MEQB staff advises the RGU and state agencies on the proper procedures for environmental review and monitors the effectiveness of the process in general. By rule, the MDNR is the designated RGU for the NorthMet Project. Pursuant to MEPA, the RGU will determine the adequacy of the FEIS. If the FEIS is determined to be adequate, then final decisions can be made by the appropriate governmental units on state permits.

Minnesota Rules, part 4410.4400, subpart 8 dictates that an EIS shall be prepared because the NorthMet Project exceeds the threshold listed for construction of a new metallic mineral mining and processing facility. Under MEPA, the SDEIS must be consistent with *Minnesota Rules*, part 4410.0200 to part 4410.7800 and the scoping determination. The adequacy of the FEIS is governed by *Minnesota Rules*, part 4410.2800.

1.4.2.2 Alternatives

MEQB statutes and rules (*Minnesota Statutes*, chapter 116D, sections 04 and 045; and *Minnesota Rules*, part 4410, subpart 0200 through 7500) require that an EIS include at least one alternative in each of the following categories (in addition to the No Action Alternative):

- 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 DEIS.

If no alternative is included for any given category, an explanation must be provided in the EIS. An alternative may be excluded if it fails to meet the underlying need for or purpose of the project, is unlikely to have any significant environmental benefit compared to the project as proposed, or another alternative would likely have similar environmental benefits but substantially less adverse economic, employment, or sociological effects.

1.4.3 Land Exchange Requirements

Most of the public lands involved in the NorthMet Project Proposed Action were acquired by the United States under the authority of the Weeks Act of 1911. Other authorities that would govern the Land Exchange Proposed Action between PolyMet and the United States include the Federal Land Policy and Management Act of 1976 (43 USC §§ 1716-1717) (FLPMA) and the Federal Land Exchange Facilitation Act of 1988. Regulations promulgated to implement FLPMA are found in 36 CFR 254, Subpart A (36 CFR 254).

Land exchanges are discretionary, voluntary real estate transactions between federal and non-federal parties. Regulations provide that the Forest Supervisor “may complete an exchange only after a determination is made that the public interest will be well served” (36 CFR 254.3(b)). Factors that must be considered include: the opportunity to achieve better management of federal lands and resources, to meet the needs of state and local residents and their economies, and to secure important objectives, including but not limited to: protection of fish and wildlife habitats, cultural resources, watersheds, and wilderness and aesthetic values; enhancement of recreation opportunities and public access; consolidation of lands and/or interests in lands, such as mineral and timber interests, for more logical and efficient management and development; consolidation of split estates; expansion of communities; accommodation of existing or planned land use authorizations; promotion of multiple-use values; implementations of applicable Forest Land and Resource Management Plans; and fulfillment of public needs. See 36 CFR 254.3(b) and 254.4(c)(4).

Under the FLPMA, a land exchange involves the transfer of equal valued land. If land values are not equal, every effort is made to equalize values by adding or deleting land. Cash equalization may then be paid by either party up to 25 percent of the value of the federal land. See 36 CFR 254.12.

The Land Exchange Proposed Action must comply with two Executive Orders (EOs) that are related to wetlands and floodplains. EO 11990 was signed by President Jimmy Carter on May 24, 1977, “*in order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modifications of wetlands....*” This order applies to land exchanges such that, as much as practicable, the exchange does not result in the loss of wetland resources. EO 11988 was also signed by President Jimmy Carter on May 24, 1977 “*in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative....*” This order applies to land exchanges such that, as much as practicable, the exchange does not result in an increase in the flood damage potential.

USFS policy (Forest Service Handbook 5409.13 § 33.43c) provides that the following list of three conditions satisfy the requirements of EOs 11990 and 11988:

1. The value of the wetlands or floodplains for properties received and conveyed is equal (balancing test) and the land exchange is in the public interest.
2. Reservations or restrictions are retained on the unbalanced portion of the wetlands and floodplains on the federal lands when the land exchange is in the public interest but does not meet the balancing test.
3. The federal property is removed from the exchange proposal when the conditions described in the preceding paragraphs 1 or 2 cannot be met.

The USFS is also required, by EOs 11988 and 11990, to reference in a conveyance those uses that are restricted under identified federal, state, or local wetland and floodplain regulations. In Minnesota, the CWA (USACE/USEPA/MPCA), Protected Waters Permit Program (MDNR), and the Wetland Conservation Act (WCA), Board of Water and Soil Resources regulate certain activities in wetlands. Under WCA provisions, wetlands must not be impacted as part of a project for which a Permit to Mine is required, except as approved by the commissioner (*Minnesota Rules*, part 8420.0930). Floodplain management ordinances are administered at the local (county) level.

The Land Exchange Proposed Action would be designed to be consistent with the goals and objectives of the Forest Plan (USFS 2007c) including G-LA-2 and G-LA-3 (Forest Plan, pages 2-51 and 2-52, see SDEIS Section 3.3.1.1). The non-federal lands for Land Exchange Proposed Action would need to be incorporated within the adjacent federal ownership and managed in accordance with the Forest Plan direction for the particular management area.

As part of the USFS decision to be made, the Responsible Official has the responsibility to determine if the proposed exchange serves the public interest and supports the direction and guidance in the forest land management plan. The public interest determination must show that the resource values and the public objectives of the non-federal lands equal or exceed the resource values and the public objectives of the federal lands and that the intended use of the conveyed federal land would not substantially conflict with established management objectives

on adjacent federal lands, including Indian trust lands. The findings and supporting rationale shall be made part of the decision (Forest Service Handbook 5409.13, section 34.1).

1.4.4 Other Permits and Requirements

In accordance with *Minnesota Rules*, part 4410.3900, which seeks to reduce duplication to the fullest extent between the Minnesota Statutes and NEPA, a joint state-federal EIS has been prepared to comply with both NEPA and MEPA regulations. In addition, PolyMet must obtain the required federal, state, and local permits and approvals summarized in Table 1.4-1 below.

Table 1.4-1 Government Permits and Approvals for the Proposed Connected Actions

Agency	Permit/Action	Reason Permit or Action is (or may be) Needed
Federal		
USACE	Department of the Army Permit	For affected waters within the jurisdiction of the USACE under the CWA, 40 CFR Part 230: Section 404(b)(1)
	Section 106 NHPA Compliance (Minnesota Historic Preservation Office)	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 36 CFR Part 800
USFWS	Section 7 Endangered Species Act (ESA) Compliance	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 50 CFR 402
USFS	Land Exchange	To resolve the conflict between surface and mineral estates
	Section 106 NHPA Compliance (Minnesota Historic Preservation Office)	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 36 CFR Part 800
State		
MDNR	Permit to Mine	Required for all nonferrous metallic mining operations, <i>Minnesota Rules</i> , chapter 6132
	Endangered Species Taking Permit (if required)	If there are state-listed species that may be taken by the NorthMet Project Proposed Action, <i>Minnesota Rules</i> , parts 6212.1800-6212.2300 and 6134
	Water Appropriations Permit for plant make-up water	For withdrawal of water from Colby Lake for plant make-up water; for mine dewatering; for stream augmentation; <i>Minnesota Rules</i> , part 6115
	Dam Safety Permit	For the Tailings Basin, Hydrometallurgical Residue Facility, and potentially the water retention dikes at the Mine Site (e.g., water treatment plant pond dikes), <i>Minnesota Rules</i> , parts 6115.0300-6115.0520

Agency	Permit/Action	Reason Permit or Action is (or may be) Needed
	Permit for Work in Public Waters	For possible modifications and diversions of local streams in constructing the West Pit outfall; <i>Minnesota Rules, part 6115</i>
	Wetland Replacement Plan approval under WCA	For affected wetlands within the scope of the WCA or that constitute “public wetlands”
	Burning Permit (if required)	If vegetative material would need to be burned on site during times with no snow cover
MPCA	Section 401 Water Quality Certification/Waiver	Required in conjunction with the DA Permit (Section 404 Permit)
	National Pollutant Discharge Elimination System and State Disposal System (NPDES/SDS) Permits	For construction and industrial activity that would disturb 1 acre or more of land, and the management, treatment and/or discharge of process wastewater to surface water or groundwater
	Solid Waste Permit	For construction debris
	Air Emissions Permit (Part 70 Permit)	For emissions of regulated air pollutants
	Waste Tire Storage Permit	For storage of waste tires generated from NorthMet Project-related vehicles (if required)
	General Storage Tank Permit	For multiple NorthMet Project Proposed Action aboveground storage tanks
MDH	Radioactive Material Registration	For measuring instruments
	Permit for Non-Community Public Water Supply System and a Wellhead Protection Plan (if proposed)	Existing Plant Site potable water treatment plant to be refurbished
	Permit for Public On-site Sewage Disposal System	For sewage waste generated during construction and operation that would be disposed of on site
Local		
City of Hoyt Lakes	Zoning Permit	To acknowledge NorthMet Project Proposed Action is an allowable use within the zoned district
City of Babbitt	Building Permit	New construction would occur on portions of the NorthMet Project area within the incorporated limits of the City of Babbitt
St. Louis County	Zoning Permit	To acknowledge NorthMet Project Proposed Action is an allowable use within the zoned district

1.4.5 Financial Assurance

Financial assurance is required by state law. *Minnesota Rules* part 6132.1200 requires that before a Permit to Mine can be granted, financial assurance instruments covering the estimated cost of reclamation should the mine be required to close for any reason at any time must be submitted

and approved by the MDNR. Financial assurance is discussed in further detail in Sections 2.5 and 3.2.2.4.

1.5 PURPOSE OF THE SDEIS

The purpose of this SDEIS, which supplements the DEIS, is to provide an analysis of effects resulting from the NorthMet Project and propose mitigation measures, but also to incorporate the Land Exchange, and to consider USEPA concerns and public comments, evolving state and federal guidance, and PolyMet's project refinements identified since the DEIS. The SDEIS discusses key themes, which include air, wetlands, geotechnical stability, socioeconomics, water resources, cultural resources, and alternatives. Additionally, the SDEIS will be used to solicit public comment and help the Co-lead Agencies develop the FEIS.

This SDEIS assesses the current NorthMet Project Proposed Action and alternatives. Should there be a significant change in the scope or duration of the NorthMet Project Proposed Action, the environmental review process would be revisited.

1.6 ORGANIZATION OF THE SDEIS

This SDEIS follows the CEQ's recommended organization (40 CFR part 1502.10) and MEPA content requirements (*Minnesota Rules*, part 4410.2300).

Chapter 1.0 (Introduction) provides an overview and descriptions of the purpose of and need for the NorthMet Project Proposed Action and the Land Exchange Proposed Action, regulatory framework, agency roles and responsibilities, and the organization of the SDEIS.

Chapter 2.0 (EIS Development) describes the DEIS development process for the NorthMet Project Proposed Action and the SDEIS development process for the NorthMet Project Proposed Action and Land Exchange Proposed Action. Discussion includes scoping, identification of issues, development of the NorthMet Project Proposed Action and Land Exchange Proposed Action and alternatives, public and agency participation, consultation and coordination undertaken to prepare the SDEIS, incorporation of the Land Exchange, reevaluation of DEIS alternatives, and impact analysis process.

Chapter 3.0 (Proposed Action and Project Alternatives) describes the NorthMet Project Proposed Action and Land Exchange Proposed Action and alternatives including the No Action Alternative and Alternatives Considered but Eliminated from detailed consideration.

Chapter 4.0 (Affected Environment) summarizes the existing conditions of the NorthMet Project Proposed Action and the surrounding environment and the Land Exchange parcels including the land and its physical, biological, cultural, socioeconomic, and recreational resources.

Chapter 5.0 (Environmental Consequences) presents the direct and indirect environmental consequences of the NorthMet Project Proposed Action and associated alternatives and the direct and indirect environmental consequences of the Land Exchange Proposed Action and associated alternatives.

Chapter 6.0 (Cumulative Effects) describes the cumulative effects on the surrounding environment and uniquely affected communities with regard to the NorthMet Project Proposed Action and the alternatives for the Land Exchange.

Chapter 7.0 (Comparison of Alternatives and Other Considerations) contains a comparison of the Proposed Connected Actions and alternatives, and also addresses other NEPA considerations.

Chapter 8.0 (Major Differences of Opinion) describes the Tribal Cooperating Agencies' major differences of opinion with aspects of this SDEIS.

1.7 CONSTITUENTS OF INTEREST

Key constituents of interest are discussed in various chapters of the SDEIS. Below is a list of the major constituents referenced within this SDEIS. A number of additional constituents were also analyzed; however, this list represents those that are of most significance to the SDEIS.

- Carbon monoxide (CO): May cause fatigue, chest pain, headaches, confusion, nausea, and dizziness.
- Greenhouse gases (GHGs): Increased GHGs in the atmosphere can change climate conditions.
- Hazardous Air Pollutants (HAPs): Group of toxic constituents known or suspected to cause significant health effects, such as cancer.
- Mercury, mercury compounds (Hg): Elemental metal, high-level exposure may harm the brain, gastrointestinal tract, nervous system, and kidneys.
- Metals/Metalloids (arsenic, cobalt, copper, nickel, antimony): Depending on constituent and exposure, can affect the skin, heart, kidneys, liver, and/or gastrointestinal tract.
- Methylmercury: Organic mercury, bioaccumulates in fish and animals, can be transmitted to humans that consume contaminated fish and game, may harm the fetal nervous system and brain.
- Nitrogen dioxide (NO₂): May cause respiratory effects.
- Nitrogen oxides (NO_x): May form nitric acid and create acid rain, which can alter water and soil pH. May also affect regional visibility conditions (haze).
- Particulate matter (PM): Particles smaller than 10 micrometers (PM₁₀) may enter the lungs or bloodstream, particles smaller than 2.5 micrometers (PM_{2.5}) affect regional visibility conditions (haze).
- Sulfate (SO₄): Can contribute to methylation of mercury, may affect wild rice.
- Sulfur dioxide (SO₂): Acute exposure may cause respiratory effects such as bronchoconstriction or increased asthma symptoms. May also affect regional visibility conditions (haze).

Table 1.7-1 below describes the SDEIS chapters in which the above constituents and related topics are discussed.

Table 1.7-1 **Constituents of Interest Discussed in the SDEIS**

Constituent	Topic	SDEIS Section
Carbon monoxide (CO)	Air emissions effects	5.2.7.1.3
Greenhouse gases (GHGs)	Air emissions effects	5.2.7.2.4, 5.2.7.4.1
	Climate change – cumulative effects	6.2.3.8.10
Hazardous Air Pollutants (HAPs)	Air emissions effects	5.2.7.1.3
Mercury, mercury compounds (Hg)	Air emissions effects	5.2.7.2.5
	Mercury balance, TMDL	5.2.7.2.5
	Aquatic species/bioaccumulation effects	5.2.2.3.4
	Wild rice/water effects	5.2.2.1.2, 5.2.2.3.4
Metals/Metalloids (arsenic, cobalt, copper, nickel, antimony)	Air emissions effects	5.2.7.2.3
	Surface water and groundwater effects	5.2.2.3.2, 5.2.2.3.3
Methylmercury	Aquatic species/bioaccumulation effects	5.2.2.3.4
Nitrogen dioxide (NO ₂)	Air emissions effects	5.2.7.2.3, 6.2.3.8.5
Nitrogen oxides (NO _x)	Air emissions effects	5.2.7.1.3, 5.2.7.2.3, 6.2.3.8.5
Particulate matter (PM)	Air emissions effects	5.2.7.1.3, 5.2.7.2.1, 6.2.3.8.4
	Class I and Class II areas – regional haze effects	5.2.7.1.4, 5.2.7.2.1, 5.2.7.2.2, 6.2.3.8.9
Sulfate (SO ₄)	Air emissions/deposition effects	6.2.3.8.5
	Surface and ground water effects	5.2.2.1.1, 5.2.2.3.1, 5.2.2.3.2, 5.2.2.3.3
	Effects to wild rice	5.2.2.1.2, 5.2.2.3.2, 5.2.2.3.3, 5.2.2.3.4
	Aquatic species effects	5.2.6.2.1, 6.2.3.7.2
	Mercury methylation effects	5.2.2.3.4
Sulfur dioxide (SO ₂)	Air emissions effects	5.2.7.2.1

TMDL = Total Maximum Daily Load