Minnesota Center for Environmental Advocacy
Comments on the Draft EIS for the NorthMet Project

Submitted to the Minnesota Department of Natural Resources and
the U.S. Army Corps of Engineers

February 3, 2010
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1.0 INTRODUCTION

The Minnesota Center for Environmental Advocacy (“MCEA”) submits these comments on the draft Environmental Impact Statement (“DEIS”) for Polymet’s proposed NorthMet Project to mine low-grade disseminated sulfide mineral ore and process the extracted ore into bulk concentrate; copper concentrate; nickel concentrate; copper metal; and nickel, cobalt, and precious metal precipitates (hereinafter “Project”). MCEA is a Minnesota nonprofit environmental organization whose mission is to use law, science, and research to preserve and protect Minnesota’s natural resources, wildlife, and the health of its people. MCEA has statewide membership. The NorthMet Project involves environmental impacts in many of the areas of MCEA’s work, including water quality, natural resources, public health, and energy policy. Thank you for the opportunity to offer comments on the EIS for the Project.

2.0 SUPPORTING MATERIALS

MCEA’s comments reference and incorporate the attached reports of the following technical experts:

Dr. David Chambers, geophysicist; focus: mining engineering;

Dr. Paul Glaser, wetland geohydrologist; focus: hydrology and wetlands;

Dr. Donald Siegel, hydrogeologist; focus: hydrologic and selected geochemical aspects;

Dr. Daniel Engstrom, aquatic ecologist; focus: mercury and sulfate discharges.

Please consider these expert reports and associated attachments independent parts of the record herein. DNR and ACE must respond to the concerns and issues identified in both the following comments and in the attached expert reports. See 40 C.F.R. § 1503.4. In addition, MCEA is delivering with these comments a DVD of reference materials and additional supporting documents. Please ensure that these reference materials are also included in the
record and made part of MCEA’s submission. If the DNR or ACE require hard copies of the reference and supporting documents to ensure that they are made part of the record, please let us know and we will supply hard copies.

3.0 SUMMARY AND REGULATORY BACKGROUND

Both state and federal environmental review laws require an agency to take a “hard look” at environmental impacts of government actions and to do so in an analytical and thorough fashion. “NEPA emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision making to the end that ‘the agency will not act on incomplete information, only to regret its decision after it is too late to correct.’” Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1216 (9th Cir. 1998) (citing Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 371, 109 S.Ct. 1851, 1858 (1989)).

The purpose of a draft Environmental Impact Statement (“DEIS”) is to prepare a “detailed statement” that discusses the environmental impacts of, and reasonable alternatives to, all “major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(2)(C). A DEIS, “must not merely catalog environmental facts, but also explain fully its course of inquiry, analysis and reasoning.” Minnesota Public Interest Research Group v. Butz, 541 F.2d 1292, 1299 (8th Cir. (Minn.) 1976). The DEIS must “provide full and fair discussion of significant environmental impacts and shall inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.” 40 C.F.R. § 1502.1. Further, the level of significance of the environmental impact must dictate the attention paid to the issue in the EIS. 40 C.F.R. § 1502.2(b) (“Impacts shall be discussed in proportion to their significance”).
Overall, the NorthMet DEIS does not take the “hard look” required by law. Rather, much of the information provided is encyclopedic, describing ways in which the Project purports to fit within various regulatory regimes. In many areas the DEIS lacks real assessment of the environmental and health impacts resulting from the Project. Summary conclusions without any documentation supporting these conclusions are offered in place of rigorous evaluation that allows the public and regulators to weigh the true impacts of alternatives and the Project overall.

As discussed, below, MCEA has identified substantial inadequacies in the DEIS. As a result of these inadequacies, it is not sufficient for the Minnesota Department of Natural Resources (“DNR”) and Army Corps of Engineers (“ACE”) to merely prepare a Final EIS. The DNR and ACE must first submit a revised Draft EIS for public review and comment. MCEA urges the DNR and the ACE to require additional evaluation of environmental effects consistent with these comments prior to publishing a final EIS for the NorthMet Project.

4.0 RECLAMATION PLAN AND FINANCIAL ASSURANCE

The NorthMet DEIS fails to include a comprehensive reclamation plan or financial assurance information regarding the cost associated with closure of the Project. The failure of the NorthMet DEIS to include specific information regarding reclamation plans and the associated financial assurance which will be required to ensure that the reclamation will be completed is a fundamental inadequacy of the DEIS. By failing to include this information in the DEIS, the public is not able to assess the true environmental risks associated with the Project. The inclusion of information regarding financial assurance is critical to allow the public to fully understand and assess the effectiveness of reclamation and closure activities which serve to inform the public about the potential long-term environmental impacts of the mine and the
potential risk to the public in the event the public has to assume responsibility for the cost of the reclamation.

The EPA’s National Hardrock Mining Framework (hereinafter, “Hardrock Mining Framework”) indicates that:

“EPA should evaluate the adequacy of EISs for mining operations in predicting the long-term environmental impacts of mining operations. Assessment of financial assurance mechanisms that will be utilized to provide funding of required long term environmental management systems is critical to this analysis.” ¹

Including financial assurance information in an Environmental Impact Statement is becoming standard practice, especially for mining operations which are reasonably anticipated to require long-term water treatment. (See attached letters from EPA, Region 9, and Region 10, concerning mining operations in which the EPA sought financial assurance information as part of the environmental review process.)

In addition, a recent EPA Region 10 memorandum specifically addresses the issue of financial assurance information as related to NEPA. The memorandum states that:

“a key component to determining the environmental impacts of a mine is the effectiveness of closure and reclamation activities. The amount and viability of financial assurance are critical factors in determining the effectiveness of reclamation and closure activities and, therefore, the

³ Letter to Kimberly D. Nelson, District Ranger, Salmon-Cobalt Ranger District, from Christine Reichgott, Manager NEPA Review Unit (August 11, 2008).
significance of environmental impacts. This is particularly important when long-term water management and treatment will be needed.\(^4\)

The memorandum goes on to describe steps EPA Region 10 can take under NEPA to improve financial assurance at new and operating mines, notably indicating that financial assurance estimates for the preferred alternative should be included in the draft EISs authored by the EPA and that the EPA should adversely rate draft EISs that do not include adequate and complete financial assurance information, particularly where long-term water management is reasonably foreseeable.\(^5\)

In clear contradiction to these statements made by the EPA, the NorthMet DEIS claims that “[t]he amount of financial assurance associated with reclamation actions cannot be estimated until these actions are understood at a more detailed level of design”, asserting that “[t]his detail is more typically available during the permitting process.”\(^6\) As discussed above, the EPA regularly requires environmental impact statements to include detail regarding required reclamation actions and mitigation measures needed to provide information regarding financial assurance as part of the environmental review process. The assertion made in the NorthMet DEIS that the level of detail regarding reclamation and required mitigation measures needed for financial assurance is “more typically available during the permitting process” is simply not true.\(^7\) The EPA regularly requires this type of information in environmental impact statements,

\(^4\) Memorandum from Elin D. Miller, EPA Region 10 Regional Administrator to All Region 10 Office Directors, EPA Region 10 Mining Financial Assurance Strategy, 3 (Jan. 16, 2009).
\(^5\) Id. at 4-5.
\(^6\) NorthMet DEIS at 2-6.
\(^7\) See Ex. 1 (Report of David Chambers). Please note that the reclamation plan for the Pogo Gold Project in Alaska, contains a good example not only of a reclamation plan submitted as a part of the DEIS process, but also contains a good example of how to estimate closure and post closure costs.
especially for hardrock mining operations for which long-term water treatment will be required, as is the case for the NorthMet Project.

DNR and ACE have not provided a sufficient basis or explanation for being unable to estimate financial assurance requirements associated with reclamation. If the adequate “detailed level of design” is not available for financial assurance purposes, how is it available for determining the extent of significant environmental impacts of the project, whether during operation or following operation? The DEIS offers no reasonable distinction between the amount of design detail required for financial assurance and the amount of design detail to evaluate the project’s environmental impacts. If PolyMet has not yet offered a level of design detail to allow the agencies to evaluate end-of-life impacts, reclamation and financial assurance, then it also have not offered a level of design detail to allow the agencies to adequately evaluate the project’s significant environmental effects.

It is particularly troubling that the preliminary closure cost estimate summary which was included in the NorthMet DEIS fails to include projected costs for long-term water treatment. The NorthMet DEIS includes the following preliminary closure cost estimate summary, indicating that “[t]he costs provided were primarily intended only to provide an indication of the scale of the task and therefore were very rough estimates.”

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8 NorthMet DEIS at 3-48.
Notably, this preliminary closure cost contains no mention of the costs of long-term water treatment upon closure. The information included in the Closure Cost Estimate Summary misleads the public and creates the appearance that closure costs will be significantly less by leaving out the closure cost for what the EPA has identified as one of the most significant environmental issues associated with the NorthMet Project. The failure of this cost estimate to include costs associated with long-term water treatment leaves out what promises to be the most significant cost associated with the closure of the NorthMet Project.

In comments regarding the NorthMet Project – Preliminary Draft Environmental Impact Statement, dated August 25, 2009, the EPA specifically recommended that the NorthMet DEIS include information on financial assurance. The EPA indicated that inclusion of financial assurance information in the DEIS was recommended “because one key component to determining the environmental impacts of a mine is the effectiveness of reclamation and closure activities” and that “EPA has found the amount and viability of financial assurance are critical
factors in determining the effectiveness of closure and reclamation and therefore the significance of environmental impacts.”

The EPA further recognized the risks associated with hard rock mining and long-term water treatment when it identified the hardrock mining industry as its priority for developing financial assurance requirements under section 108(b) of the Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”), specifically noting the risks associated with long-term water treatment needs as a key concern.

Resources are available to the DNR and ACE to assist them in determining financial assurance requirements for the NorthMet Project as part of the environmental review process. By failing to include a comprehensive description and analysis of closure and reclamation activities and the associated amount and viability of financial assurance required for the NorthMet Project, the NorthMet DEIS fails to provide the public with essential information to determine the environmental impacts associated with the NorthMet Project. Without this critical information, the NorthMet DEIS fails to follow established practice as part of the environmental review process for hard rock mines or meet the requirements of NEPA.

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5.0 PROJECT ALTERNATIVES

NEPA’s implementing regulations recognize that the consideration of alternatives is “the heart of the environmental impact statement.” 40 CFR § 1502.14. Accordingly, the regulations and cases set high standards for an agency’s consideration of alternatives in a NEPA document and define the range of alternatives that must be considered. The agency must “[r]igorously explore and objectively evaluate all reasonable alternatives” to a proposed action. 40 CFR § 1502.14(a). This requirement has been strictly enforced. See Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 815 (9th Cir. 1987), rev’d on other grounds sub nom. Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989).

NEPA requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources.” 42 U.S.C. § 4332(E); 40 CFR § 1508.9(b). “An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.” Northwest Envtl. Defense Center v. Bonneville Power Admin., 117 F.3d 1520, 1538 (9th Cir. 1997).

As discussed below, the NorthMet DEIS failed to meet the requirements of NEPA by failing to identify a preferred alternative and failing to adequately evaluate reasonable alternatives to the NorthMet Project, including the No Action Alternative and the Underground Mine Alternative.

5.1 Preferred Alternative Needs To Be Clearly Identified

NEPA requires agencies to identify a preferred alternative or alternatives in the draft environmental impact statement. 40 CFR §1502.14(e). The NorthMet DEIS does not clearly identify the preferred alternative for the project. A brief indication is made that the mine site
alternative is preferred, however, this is not explained in detail.\textsuperscript{12} MCEA supports the mine site alternative as the preferred alternative to the extent that subaqueous disposal of the more highly reactive waste rock will minimize the potential for acid mine drainage and other water quality issues associated with storage of the waste rock in stockpiles on the surface. In addition, the DEIS does not identify a preference between the proposed action or the tailings basin alternative.

NEPA requires that preferred alternatives be identified in the DEIS. The failure of the NorthMet DEIS to indicate a clear preferred alternative for both the mine site and tailings facility is a fundamental inadequacy of the DEIS.

5.2 No Action Alternative

The NorthMet DEIS indicates that under the No Action Alternative, groundwater levels and quality would remain similar to existing conditions.\textsuperscript{13} However, the DEIS fails to provide accurate or reliable baseline data which can be used to determine what groundwater levels and quality would be under the no action alternative. Specifically, the DEIS fails to adequately characterize legacy leakage from the existing LTV tailings basin and associated contamination from the old LTV processing site and related Areas of Concern which have been identified as part of Minnesota’s Voluntary Investigation and Cleanup Program (“VIC”).

Accordingly, the conclusions reached in the DEIS regarding environmental conditions under the no action alternative are suspect. The DEIS indicates that accurate baseline conditions have not been determined, yet bases its assessment of natural conditions related to the No Action Alternative on “relatively high concentrations of aluminum, iron, and manganese currently found

\textsuperscript{12} DEIS at 4.1-164.
\textsuperscript{13} DEIS at 4.1-130.
downgradient of the Tailings Basin”.

The DEIS further assumes that under the No Action Alternative seepage of relatively high sulfate concentrations would continue to discharge into wetlands north of the Tailings Basin, notwithstanding the potential improvements in background environmental conditions if the contamination from tailings basin seepage were improved and the Areas of Concern cleaned up.

The lack of accurate baseline data and use of existing contamination as natural conditions is significant as there is the distinct possibility that existing contamination at the old LTV plant site and seepage from the tailings basin is contributing to these high concentrations of metals and sulfate concentrations. However, the NorthMet DEIS fails to provide information regarding contributions from the old LTV plant site and seepage from the tailings basin to the high metal and sulfate concentrations downgradient of the tailings basin. The failure of the NorthMet DEIS to ascertain the extent to which existing contamination is contributing to these high concentrations of contaminants violates NEPA’s mandate to take a hard look and establish baseline data on which the impact to the environment from the Project and different alternatives can be determined.

A number of Areas of Concern which are part of Minnesota’s Voluntary Investigation and Cleanup Program (“VIC”) are still outstanding at the old LTV plant site and tailings basin. In addition, ongoing violations of the NPDES permits have been identified through daily monitoring reports provided by Cliffs Eerie to the Minnesota Pollution Control Agency. Under a “no action” scenario, clean-up of Areas of Concern and NPDES permit enforcement would likely improve water quality conditions in and around the site. Therefore, the “baseline” conditions are

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14 DEIS at 4.1-132.
15 DEIS at 4.1-133.
which have been used in the NorthMet DEIS do not accurately reflect baseline conditions under
the no action alternative.

Federal regulations require the Minnesota Pollution Control Agency to ensure that
corrective actions are taken by the permit holder to address these ongoing NPDES violations.
The NorthMet DEIS indicates that these corrective actions could reduce sulfate loadings of
impacted waters yet still bases its assessment of baseline conditions used for the No Action
Alternative on the existing contamination.\textsuperscript{16}

The DEIS recognizes that potential improvements in environmental conditions could
result from the No Action Alternative. However, notwithstanding this recognition, the NorthMet
DEIS continues to reference “baseline conditions” which include contamination from the old
LTV site and violations of NPDES permits as its basis for the assessment of environmental
conditions under the No Action Alternative. The NorthMet DEIS must include information
regarding the extent of environmental improvements associated with remediation of the Areas of
Concern and reissuance of the NPDES permits in its assessment of environmental conditions
under the No Action Alternative. The NorthMet DEIS should provide this information to allow
the public to have an accurate understanding of the environmental benefits associated with the
No Action Alternative.

5.3 Underground Mine Alternative

The NorthMet DEIS did not adequately consider an underground mining alternative or
provide adequate justification for eliminating this alternative from consideration. An
underground mine could be a feasible and prudent alternative with a significant environmental

\textsuperscript{16} DEIS at 4.1-132.
benefit to the proposed open pit mine. While the NorthMet DEIS indicates that an underground mine would not meet the purpose and need of the Project, the DEIS provides no justification for this separate from economic considerations.\textsuperscript{17} The NorthMet DEIS fails to explain why an underground mine cannot meet the stated purpose of the mine, “to produce base and precious metal, precipitates, and flotation concentrates from ore mined at the NorthMet deposit by uninterrupted operation of the former LTVSMC processing plant site.”\textsuperscript{18}

Earlier drafts of the NorthMet DEIS recognized that underground mining technology could meet the purpose and need of the project, was technically feasible, was an available technology, and could possibly offer significant environmental or socioeconomic benefits when compared to the proposed project.\textsuperscript{19} Additionally, the Response to Public Scoping Comments recognizes that underground mining technology could offer environmental benefits to using the proposed open pit mining technology to mine the ore deposit.\textsuperscript{20} Likewise, the NorthMet Mine and Ore Processing Facilities Project Final Scoping Decision ("Final Scoping Decision") recognizes that environmental benefits may be associated with a smaller footprint from an underground mine.\textsuperscript{21}

Even as these earlier environmental review documents indicate the extent to which an underground mine could be an alternative feasible technology with significant environmental benefits to the proposed open pit mine, the NorthMet DEIS now indicates that underground mining technology will not meet the purpose and need of the Project separate from economic considerations. The NorthMet DEIS must support its conclusions that an underground mine does

\begin{footnotes}
\item[17] DEIS 3-64.
\item[18] DEIS S-2.
\item[19] See pDEIS, dated June 2008, Table 3-14, at 61.
\item[21] Final Scoping Decision, dated October 25, 2005, section 2.4.1, at 5.
\end{footnotes}
not meet the purpose and need of the project with adequate documentation and analysis to allow the public to evaluate this alternative and the agency’s conclusion that an underground mine will not meet the purpose and need of the Project.

While the underground mining alternative was ostensibly rejected due to the additional cost associated with it, the environmental impact of an underground mine involves a smaller environmental footprint than an open pit mine. Considering the anticipated amount of financial assurance which would be required to address the larger-scale environmental footprint of an open pit mine, the additional costs of an underground mine could be offset by the smaller environmental footprint of the mine and likely smaller financial assurance requirement for this type of mine. The NorthMet DEIS fails to rigorously explore and objectively evaluate an underground mine as a viable alternative or to justify its exclusion from consideration as an alternative as required by NEPA.22

5.4 Alternative Energy Source For Project

The NorthMet DEIS also fails to consider alternatives for electricity consumption which would significantly affect the project’s impact on the environment. Consideration of alternative energy sources should be a major component of the EIS given the enormous variation in environmental impacts between different sources. See, e.g., U.S. Department of Energy, Carbon Dioxide Emissions from the Generation of Electric Power in the United States (http://www.eia.doe.gov/cneaf/electricity/page/co2_report/co2report.html#electric). The environmental consequences of generating power for the Project, along with an evaluation of

alternative energy sources, must be evaluated in the EIS. See additional discussion of this issue, Infra, pp. 52-56.

6.0 IMPACT FROM NORTHMET PROJECT ON WATER RESOURCES

The NorthMet DEIS discusses direct, indirect and cumulative impacts on water resources and water quality which will be caused by the Project. These potential impacts from the Project on water resources are amongst the most critical long-term environmental concerns associated with the Project.

Due to the highly technical nature of these issues, MCEA retained three technical experts; Dr. Paul Glaser, a wetland geohydrologist who focused on hydrology and wetland impacts associated with the Project; Dr. Donald Siegel, a hydrogeologist who focused on hydrologic and selected geochemical aspects of the Project; and Dr. Daniel Engstrom, an aquatic ecologist who focused on the impact of increased sulfate levels on mercury methylation and mercury air emissions.23

The respective reviews of Dr. Glaser, Dr. Engstrom and Dr. Siegel identified consistent themes regarding inadequacies of the NorthMet DEIS, including:

1) the failure of the DEIS to provide supporting documentation on which the conclusions of the NorthMet DEIS were based;

2) the excessive dependence of the DEIS on unreliable modeling efforts to support conclusions reached in the DEIS; the failure of the DEIS to verify modeling results with on-the-ground conditions;

3) the failure of the DEIS to conduct field studies which could have easily been done to support conclusions reached regarding environmental impacts from the Project;

4) an overall failure of the DEIS to adequately or accurately assess existing environmental conditions; the failure of the NorthMet DEIS to identify adequate

23 See Exs. 2-4.
mitigation or monitoring mechanisms to ensure that potential environmental impacts from the Project on water resources are adequately minimized and identified; and

5) the need for adaptive management strategies to ensure that unanticipated environmental impacts from the Project on water resources are quickly identified and remediated.

Dr. Glaser, Dr. Siegel and Dr. Engstrom identify specific areas of concern and suggested steps which the agencies can take to ensure the professional integrity, including scientific integrity, of the discussions and analyses in the NorthMet DEIS as required by NEPA, 40 CFR § 1502.24. Due to the technical and very specific nature of the issues and recommendations raised by Dr. Glaser, Dr. Siegel, and Dr. Engstrom, MCEA does not attempt to duplicate the concerns raised by these experts in these comments and requests that the agencies refer to these reports, attached hereto, and respond directly to each of the issues and recommendations made by these experts.

In addition to the issues raised by MCEA’s experts, MCEA addresses some key areas of concern regarding the Project’s impacts on water resources, below.

6.1 Impact Of NorthMet Project From Increased Sulfate Levels On Methyl-mercury Concentrations In Surface And Groundwater Resources

“Sulfate release and its potential effects on mercury cycling are among the most serious concerns raised by the sulfide-metal mining proposed for northern Minnesota.”24 Yet, the analysis of the NorthMet DEIS is deficient in its evaluation of the risks of increased mercury methylation associated with increased sulfate levels from the Project and in its development of contingency plans for adaptive management should unforeseen problems.25 The DEIS must respond to the concerns identified by Dr. Engstrom and provide a fair and unbiased assessment

24 See Ex. 2 with attachments (Report of Dr. Daniel Engstrom).
25 See generally, Ex. 2 (discussing deficiencies in DEIS analysis of increased sulfate loading and associated increase in methylmercury as a result of Project).
of the risks associated with increased sulfate levels and associated mercury methylation in the DEIS.

The NorthMet DEIS discussion and analysis of the impact from increased sulfate loading and associated increases mercury methylation resulting from the NorthMet Project fails to meet the requirements established by NEPA. MCEA’s expert, Dr. Engstrom, specifically notes that the data on which the NorthMet DEIS relied to support its analysis of sulfate and mercury methylation does not meet basic scientific standards for this type of analysis. (Stating that, “the data set for the NorthMet site is far too sparsely populated with reliable numbers to allow for any statistically robust assessment of possible mine-drainage effects on methylmercury levels”) (noting that the sampling plan used for mercury monitoring of surface waters will not provide the information and data needed to properly analyze the impacts from increased sulfate levels on methylmercury production). While there is some uncertainty regarding the impacts from increased sulfate loading on methylmercury rates, the NorthMet DEIS also underrates current scientific understanding of mercury biogeochemistry and the environmental factors controlling methylation rates.26

As a result of the deficiencies identified by Dr. Engstrom, the NorthMet DEIS fails to provide a meaningful assessment of methylation risk which meets the standards of NEPA for professional and scientific integrity.27 The NorthMet DEIS must resolve the deficiencies identified by Dr. Engstrom and correct misstatements regarding the status of scientific

26 See Ex. 2 at 11 (Engstrom report referencing DEIS at 4.5-19).
27 See Id. at 4.
understanding of increased sulfate loading and the relationship of this to mercury methylation rates.\textsuperscript{28} 40 C.F.R. §§ 1502.22, 1502.24.

6.2 Lake Superior Water Quality

The NorthMet DEIS indicates that the West Pit overflow might not meet the Lake Superior mercury standard.\textsuperscript{29} The potential exceedance of the Lake Superior mercury standard by the West Pit overflow must be more fully discussed in the NorthMet DEIS, including a clear identification of mitigation methods which can be used to ensure that the West Pit overflow complies with the Lake Superior mercury standard. The NorthMet DEIS may not simply put off consideration of an identified and necessary mitigation measure until some point in the future. The NorthMet DEIS must clearly discuss potential issues in water quality associated with the West Pit overflow and measures which can be taken to prevent these water quality violations.

6.3 Increased Sulfate Levels On Wild Rice Resources

MCEA shares the concerns articulated by the tribal agencies regarding the impact from increased sulfate levels on wild rice stands.

6.4 Sole Source Aquifer

Assessments conducted by the Minnesota Pollution Control Agency in the late 1990’s suggest that the Biwabik Iron Formation could be a sole-source aquifer.\textsuperscript{30} These MPCA studies recognize the impact mining activity and mine pits can have on ground-water recharge and water quality of aquifers used for public water supplies. The MPCA specifically identified nonferrous minerals mining as a potential risk to groundwater and single source aquifer water quality.\textsuperscript{31}

\begin{thebibliography}{99}
\bibitem{Id} See Id. at 4-6.
\bibitem{DEIS} DEIS at S-9.
\bibitem{MPCA} See http://www.pca.state.mn.us/publications/reports/gwp-arrowhead.pdf.
\bibitem{Id} Id.
\end{thebibliography}
The DEIS must identify and discuss the potential that the Biwabik Iron Formation could be a sole-source aquifer and the impacts from the NorthMet Project on water quality in this aquifer and related impacts on public water supplies. In addition, the NorthMet DEIS should provide the public with information regarding special protections under federal law for sole source aquifers due to the significance of these water sources as sole or principal drinking water sources for an area.32

7.0 WETLANDS

7.1 The DEIS Inadequately Characterized The Wetlands Present On The Site

The DEIS inadequately characterizes wetlands in the Project area. As a result, the DEIS also inadequately characterizes the environmental impacts from the proposed Project. With the actual types and numbers of wetland acres cast into doubt and the connectivity of these wetlands to groundwater, the selection and discussion of wetland mitigation sites, total acre, and options is left without basis in scientific fact and reasoned basis, and must be redone after proper wetland typing is conducted.33

The DEIS’ wetland classification was, “based on a generalized, largely physiognomic scheme that was not effective for characterizing wetlands…. ”34 To the extent that vegetative species data was collected from the mine site wetlands, much of it indicated serious conflicts between that botanical data (in which one can generally have a fairly high degree of confidence) and the wetland classifications that the DEIS assigned to those wetlands.35,36

32 See section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et seq.)
33 See Ex. 3 (Expert report of Dr. Paul Glaser, section 2.4: Wetland Classification).
34 Id.
35 Id.
36 DEIS at 4.2-2 to 4.2-6, including footnotes 2-12.
It is not possible to rely upon wetland replacement ratios that are based on the reported wetland classifications, because in light of the very strong conflicting information about the wetlands, the classifications lack a rational scientific basis. Due to the aforementioned flaws in the wetland classification, the DEIS does not contain sufficient information to allow the reviewer to determine whether the suggested wetland banking projects identified in the DEIS, are proper sites capable of mitigating for all wetland losses.

The revised DEIS must include a more careful field assessment so that a revised wetland classification of the Project area is based on sound scientific data. The classification should be reviewed carefully to ensure that classifications do not conflict with species data. The mitigation plan must also be revised to include a re-worked analysis of wetland acres and types necessary to provide proper mitigation. MCEA suggests that careful consideration be given to restoration of the Alborn fen-bog complex.\(^{37}\)

### 8.0 WILDLIFE

#### 8.1 Introduction

The Project requires formal Section 7 consultation because, if built, it will have tangible negative effects on designated critical habitat for the Canada lynx, including permanent destruction of designated critical habitat; destruction of suitable denning habitat\(^{38}\); and habitat fragmentation that damages local and regional habitat connectivity. Formal consultation was not begun before publication of the DEIS, depriving the public of the opportunity to review and consider the information in the consultation materials.

\(^{37}\) See exhibit: Expert report of Dr. Paul Glaser, section 2.5: Wetland Mitigation Plan

\(^{38}\) See attached map: Maas, G. 2010. Lynx Den Site Suitability: Immediate vicinity of the Proposed Polymet Site. MCEA. 1 p. (8.5”x11”).
In its current condition, the DEIS inadequately addresses effects on wildlife, particularly Canada lynx. The DEIS requires substantial improvement in several important areas, including: more complete lynx location data; disclosure of low snowshoe hare numbers when the ENSR 2006 winter survey was conducted; failure to discuss the need for and proposed content of a habitat conservation plan, in the event a federal-private land exchange converts the mine site to private ownership; and failure to include all current and reasonably foreseeable future projects in the required catalogue and analysis of cumulative effects.

8.2 Formal Consultation Between The U.S. Army Corps And The U.S. Fish & Wildlife Service Is Required For This Project

This Project requires formal consultation under §7 of the Endangered Species Act (“ESA”), 16 U.S.C.A. §§1531 to 1544, by the U.S. Army Corps of Engineers (“Corps”) with the U.S. Fish & Wildlife Service (“Service”).

8.2.1 The ESA and its §7 consultation requirement

The ESA represents “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.” Tennessee Valley Authority v. Hill, 437 U.S. 153, 180 (1978). The stated purposes of the ESA, “…are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide for a program for the conservation of such endangered species and threatened species, and to tack such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth [in the act]…. ” 16 U.S.C.A. §1531(b). “The plain intent of Congress in enacting this statute was to halt and reverse the trend towards species extinction, whatever the cost.” Tennessee Valley Authority, 437 U.S. at 184. In enacting the ESA, Congress spoke “in the plainest of words, making it abundantly clear that the balance has been struck in affording
endangered species the highest of priorities, thereby adopting a policy which it described as ‘institutionalized caution.’” *Id.* at 194.

“One would be hard pressed to find a statutory provision whose terms were any plainer than those in [Section] 7 of the Endangered Species Act.” *Tennessee Valley Authority*, 437 U.S. at 173. “Its very words affirmatively command all federal agencies ‘to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence’ of an endangered species or ‘result in the destruction or modification of habitat of such species.’” *Id.*, (quoting 16 U.S.C. 1536) (emphasis in original). “This language admits of no exception.” *Id.*

Section 7 of the ESA provides that each federal agency must consult with the Service to insure that any proposed action is not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of the species’ critical habitat. 16 U.S.C. § 1536(a)(2). The ESA therefore mandates that “federal agencies take no action that will result in the ‘destruction or adverse modification’ of designated critical habitat.” *National Wildlife Federation v. National Marine Fisheries Service*, 524 F.3d 917, 933 (9th Cir. 2007) (*quoting* 16 U.S.C. 1536(a)(2)).

8.2.2  Formal consultation is required for this Project because it will have definite effects on Canada lynx and its habitat

The Project, whether as proposed or with the mine site and tailings basin alternatives, would have a number of negative effects on Canada lynx, any one of which triggers formal consultation. The Project would have these effects on its own, and cumulatively with past, present, and reasonably foreseeable future projects. The effects would include permanent destruction and adverse modification of suitable lynx denning habitat and designated critical habitat; reduced opportunity and safety for lynx dispersal through the Project site; and increased likelihood of lynx mortality for at least 20 years (the Project’s stated length operation).

8.2.2.1 Permanent habitat destruction and degradation

A portion of the destroyed habitat, mainly representing the area covered by stockpiles of overburden and low-grade ore, will be destroyed and unavailable to lynx for a period of time lasting at least several decades. Roughly a decade after the mine closes and reclamation has been completed, the stockpiles may by then have become partially revegetated. Still, that partially-restored habitat will never regain the same quality it possesses now. Thus, the stockpile areas will be temporarily destroyed and permanently adversely modified by the Project.³⁹ The remainder of the destroyed suitable lynx habitat and designated critical habitat, mainly

³⁹ See DEIS at: 4.2-5 to 4.2-6 (“All but one (wetland ID 27, Table 4.2-3) of the coniferous bog community [and shrub community and forested swamp community] wetlands identified at the Mine Site are rated as high quality in accordance with the Minnesota Routine Assessment Method for Evaluating Wetland Functions.” wetlands are rated as high quality”); 4.2-7 (all wetlands in the proposed new rail corridor are rated as high quality); 4.3-3 (“[Invasive] [s]pecies with a high percentage of occurrences in the surveys (e.g., common tansy) are likely to invade the Mine Site following disturbance and may displace native species and degrade ecosystem quality.”); 4.4-11, n.4 (“It is the tribal cooperating agencies’ note that this restoration of “lynx habitat” initially creates good bobcat habitat. Bobcats are superior competitors to lynx and thus may prevent lynx from returning to the site.”); 4.4-18 (“Reclamation and re-vegetation of the Mine Site would improve wildlife habitat relative to conditions during mine operations; however, the quality of habitat for SGCN species is likely to remain degraded for some decades after Closure relative to pre-mining operations due to conversion of high-quality habitat to lower-quality habitat.”); and Pers. Com., Moen, R. 1/30/2010 (Lynx generally will not walk up the steep slope of stockpiles or tailings basins, but upon encountering one will walk around it if possible.).
representing fenced areas, steep-sided and/or flooded mine pits, will be destroyed as lynx habitat, completely and permanently.  

8.2.2.2 Larger-scale fragmentation adversely affects surrounding Canada lynx habitat

Destruction and degradation of suitable lynx habitat (especially designated lynx critical habitat) causes habitat fragmentation. Habitat fragmentation has been called “the most serious threat to biological diversity,” and “the primary cause of the present extinction crisis.”

Fragmentation has other serious implications for lynx conservation, including: (1) reduction of area and patch size of late-successional forest and of optimal snowshoe hare habitat; (2) creation of openings that facilitate access by potentially competing carnivores like coyotes, which have

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40 See DEIS at: s-12 (“Vegetation: Elimination of the permanent Category 4 Waste Rock Stockpile and Lean Ore Surge Pile would reduce permanent vegetative cover impacts at the Mine Site by 33 acres. Wildlife: Elimination of the permanent Category 4 Waste Rock Stockpile and Lean Ore Surge Pile would reduce permanent wildlife habitat impacts at the Mine Site by 33 acres”); 4.4-3 (“Portions of the Mine Site lie within the revised boundaries of federally designated lynx critical habitat.”); 4.4-10 (“The Project area is currently within designated critical habitat for the Canada lynx (USFWS 2009).”); 4.4-12 (“The impacts to the Canada lynx described above would result in the localized direct loss and fragmentation of designated critical habitat”); 4.4-19 (“PolyMet would create approximately 278 acres of open water by eventually flooding the West Pit. […] The West Pit would be fenced as a deterrent to wildlife species […]”); 4.4-32 (“Vegetative restoration of the stockpiles and disturbed areas, as proposed during Closure, would mitigate some of the effects of habitat loss in this large habitat block in the long term. Not all the Mine Site would be available for habitat restoration due to fencing around the mine pits and the open water in the West Pit.”); and 4.4-26, n.9 (“The tribal cooperating agencies consider the loss of mature forest a significant impact, and note that the activities on the mine site will prevent more forest acreage from reaching this mature community state, representing a nearly permanent loss of habitat.”); 4.14-3, n.4 (“It is the Tribal cooperating agencies position that some mine features (e.g. pit lakes) would become permanent features of the landscape. Therefore post closure impacts should also be included in the analysis”).


43 Id.; and see DEIS at 4.4-11, n.4 (“It is the tribal cooperating agencies’ note that this restoration of “lynx habitat” initially creates good bobcat habitat. Bobcats are superior competitors to lynx and thus may prevent lynx from returning to the site.”); and see ENSR 2006 Canada Lynx Assessment Final Report at pp.2-3, 2-4, 3-2, 6-5.

NB: substantial controversy and disagreement exists between the lead agencies and the Tribal cooperating agencies, on a number of issues, including the question of how much habitat value for lynx there will be, decades in the future, on reclaimed and revegetated areas that are currently suitable and federally designated lynx critical habitat.
been found near the Project area and possibly bobcats; (3) increased densities of edges between early successional and other forest types; and (4) changes in the amounts and structural complexity of seral forest stands within landscapes. In addition:

Although landscape-level studies have not determined how fragmentation affects lynx ecology and population persistence (Koehler and Aubry 1994), rare species associated with wilderness, such as the lynx, generally are considered most susceptible to fragmentation (Bright 1993). Likewise, habitat specialists with large individual spatial needs, including the lynx (Quinn and Parker 1987; O’Donoghue et al. 1998), are likely to be impacted by habitat fragmentation (Andrén 1994). This is so because generalist predators tend to dominate the predator guild in fragmented landscapes (Oehler and Litvaitis 1996).

In short, habitat loss in one location also has significant effects that extend to immediately adjacent and local surrounding habitat areas.

In addition, the habitat loss and adverse modification resulting from the proposed Project would contribute to lynx critical habitat fragmentation on a regional scale. The Project would impair two of the rare remaining wildlife corridors through the 115 mile-long Mesabi Iron Range. Wildlife corridors 11 and 12 (Barr denotes them as 16 and 17) are two of just 13 (18) wildlife corridors that connect suitable habitat to the north of the Iron Range with suitable habitat to the south of the Iron Range. Absent the few remaining wildlife corridors, the Iron Range would block direct travel between the northwestern third and the southeastern third of designated lynx critical habitat.

44 ENSR. 2006 Canada Lynx Assessment, Final Report at 3-2, 6-5.
45 Id.
The land that is proposed to be the Project mine site is currently a large block of core habitat - good quality, relatively un-roaded, intact habitat. 47 A good portion of the proposed mine site is also suitable as lynx denning habitat. 48 The proposed mine site forms a large part of a “funnel” of naturally vegetated habitat leading to the two corridors. The fact that the funnel is wide makes it more likely that lynx would approach and use the corridors.

If and when the mine is established, the fenced mine pits and overburden stockpiles will eliminate some habitat permanently, narrowing the funnel leading to the corridors, and thereby making it less likely that lynx attempting to travel to the north or northwest would encounter the corridors. During the life of the mine and for some time thereafter, the activity at the tailings pile and tailings basins (not to mention the possibility of tailings basin expansions to the east), will diminish the funnel of habitat approaching the corridors from the north and west. The Project will leave large, wide-open, and for a long time unvegetated, expanses of tailings piles and settling ponds, steep rock stockpiles that are miles long. “[L]arge openings (greater than 100 m across) may create barriers to lynx movement and travel corridors are needed for cover for lynx.” 49 Habitat fragmentation by loss of corridors also tends to facilitate competition by generalist predators, 50 including bobcats.

Diminishment of the approaches to the corridors will diminish the value of the wildlife corridors themselves, and make it less likely that dispersing lynx can cross safely through less hospitable mined areas in the Range. The degradation of wildlife corridors and fragmentation of core lynx habitat areas conflicts with the Service’s Final Lynx Recovery Outline, which

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48 See Ex. 7 (Maas, G. 2010. Lynx Den Site Suitability: Immediate vicinity of the Proposed Polymet Site. Map.)
50 Id. at Chapter 4, p. 83.

Generally speaking, for individuals in a species that must move across the landscape to find suitable denning, feeding, sheltering, or rearing habitat, the inability of individuals to disperse as they previously could can cause an influx, or crowding effect. The consequences of habitat fragmentation and the edge effect include higher mortality rates, decreased recruitment, and increased stress on surviving individuals unable to disperse as needed and in the direction desired.\footnote{David S. Wilcove, et al., Habitat Fragmentation in the Temperate Zone (Chapter 11); and T.E. Lovejoy, et al., Edge and Other Effects of Isolation On Amazon Forest Fragments (Chapter 12); in Conservation Biology: The Science of Scarcity and Diversity. Michael E. Soulé, ed. Sinauer Associates, Inc. 1986.}

In sum, it cannot be argued that the Project will have “no effect” on Canada lynx, because the Project will permanently destroy designated critical habitat; permanently degrade other designated and otherwise suitable habitat; expose lynx to risks that come with habitat fragmentation and loss of connectivity; and increase the competition local lynx face from bobcats and coyotes attracted by the creation of large cleared areas. Formal consultation is triggered by these Project effects on lynx.

\section*{8.3 The DEIS Inadequately Addresses The Project’s Effects On Wildlife, Particularly Canada Lynx And Moose\footnote{N.B.: While these comments primarily discuss effects from the Project on lynx, these comments and concerns – particularly as to the ineffective and insufficient mitigation measures – apply also to other terrestrial organisms including certain mammals (moose and wolf), and herpetofauna.}}

The DEIS is inadequate in its treatment of several wildlife-related issues and effects from the proposed Project. First, the DEIS fails to consider or include important and available lynx...
location data and mortality data. The DEIS fails to disclose that the key winter survey relied upon as supporting the absence of lynx from the proposed mine site was conducted during a periodic low in the local lynx and snowshoe hare populations. The DEIS also fails to discuss the potential need for, and likely content of, a habitat conservation plan in the event a land exchange with the U.S. Forest Service occurs.

8.3.1 The DEIS omits important lynx location and mortality data

The DEIS does not include and fails to consider significant information showing that at least one lynx, known as “Lynx #11” or “L11,” is known to have moved through the Project area. L11 was located at least once just off the southwest edge of the mine site, between Wetlegs Creek and the Partridge River, roughly one mile south of the mine site and road, and a half-mile south of the rail line. The location data was produced between February 12, 2003 (when L11 was live-captured and fitted with a radiocollar by the researchers of the Canada Lynx Project\(^54\)) and November 13, 2006 (when L11 was trapped and killed in Ontario).\(^55\) The radio collar signal placed the lynx in T59N–R13W, approximately at the corner of sections 16, 17, 20, and 21.

Moreover, the DEIS fails to account for all the confirmed lynx tracks, sightings, mortalities, and scat locations discussed in the technical document upon which the DEIS relies. An area map\(^56\) is provided in a technical supporting document, ENSR’s 2006 Canada Lynx Assessment Final Report, and it does show locations of confirmed lynx scats collected in the

\(^{54}\) The Canada Lynx Project is a joint research project of the University of Minnesota Natural Resources Research Institute’s Center for Water and Environment, the Superior National Forest, and the U.S. Geological Survey’s Biological Resources Division.

\(^{55}\) “LYCA_Incidental_Take_Query”, a 2007 printout of the Lynx incident database.

\(^{56}\) ENSR 2006 Canada Lynx Assessment Final Report, “Figure 15: Lynx Scat Collection Sites.”
winter of 2006, but it does not show the locations of L11 and other confirmed lynx nearby, and in any case the map is not provided as it should be, in the DEIS itself.

The DEIS also provides incorrect, out-of-date figures for lynx mortality from lynx-vehicle collisions. The DEIS cites DelGuidice et al. 2007, which reported five confirmed road-killed lynx in Minnesota since 2000.\(^{57}\) Since 2007, at least one additional road-killed lynx has been found. In addition, it is critical to note that not all road-killed lynx are reported or located; there are almost certainly more road-kills of lynx happening than we find out about.\(^{58}\) Moreover, the DEIS is silent about the two confirmed lynx-train mortalities in the Arrowhead since 2002. Accordingly, there have been at least eight detected lynx mortalities due to lynx-vehicle collisions since 2000, rather than five, and it is likely that the true number is higher than eight.

Without knowing something about the numbers of undetected and unreported lynx mortalities, it is not possible to know what the real rate of human-caused lynx mortality actually is. Without understanding the total amount of human-caused lynx mortality, it is not clear how the DEIS can arrive at a conclusion about the Project’s implications for lynx recovery in Minnesota. The DEIS’s lack of complete location data, and accurate mortality data, leaves important conclusions and assumptions in the DEIS without solid basis in fact and science.

These failings in the DEIS must be addressed by incorporating and considering the significance of all existing lynx location information, including at a minimum the confirmed lynx scat sample location data now being collected by the U.S. Forest Service,\(^{59}\) and lynx location data collected by the Canada Lynx Project during its east-side lynx capture-collar-track study. Accurate and up-to-date lynx mortality numbers and locations must be included in the DEIS

\(^{57}\) DEIS at 4.4-2 (“Since 2000 the USFWS and USFS documented five road-killed lynx in Minnesota”).

\(^{58}\) R. Moen, pers. com., 1/30/2010.

\(^{59}\) Minnesota’s Canada lynx DNA sample locations 2002-2009, Draft.
revision. An estimation of undetected lynx mortalities, in absolute numbers or in relationship to confirmed mortalities, must be included in the DEIS revision, along with a direct discussion of the data, assumptions, reasoning, and supporting scientific analysis underpinning an expanded treatment of lynx mortality.

8.3.2 The DEIS assertion that lynx have not been found in Project area, and specifically at the mine site, is incorrect and based upon incomplete data

As already discussed, the DEIS omits available and reliable data showing that at least one lynx, L11, has occupied the Project Area. It may have been for a day, a week, or longer, depending upon the frequency with which locations were determined for L11. In addition, the DEIS fails to discuss when, i.e., at what point in the lynx-hare population cycle, the 2006 winter tracking survey was conducted. The winter 2006 survey of the Project area may have occurred at or near a low in the Canada lynx population cycle. Because lynx populations cycle, an accurate determination of lynx usage should not be based on surveys conducted during a population low, but rather when lynx populations are high, or possibly in the first winter post-peak. The matter of timing in the lynx population cycle should be addressed in the DEIS revision.

Moreover, in order to be capable of providing more definitive conclusions about lynx presence and use of the Project area, the DEIS should have included winter lynx tracking data from several consecutive years, but it did not. The DEIS states that it is based on the 2006 winter tracking survey, and other general wildlife summer surveys. Summer surveys are not of value in determining lynx presence or absence. The fact that summer surveys at the Project area

60 DEIS, Vol. II, Figure 1.1-2.
in 2000 and 2005 detected no lynx carries no probative value in answering whether lynx were present in the Project area at the time, because it is far rarer to sight an uncollared lynx in the summer than it is to encounter lynx tracks left in the snow. Any conclusions about lynx presence or absence based on summer habitat studies are suspect for lack of data. For that reason, any suggestion of reliance on summer wildlife surveys to conclude that lynx were not present in the Project area at the time, should be qualified accordingly or deleted in the DEIS revision.

8.3.3 The DEIS fails to address mitigation for the destruction and adverse modification of lynx critical habitat, and for the obstruction and diminishment of wildlife corridors 11 and 12 (Barr corridor ## 16 and 17)

The DEIS contains no recommended mitigations for the Project’s negative effects on lynx, other than post-closure mine site reclamation. The DEIS should have included mitigation measures that eliminate or minimize adverse effects on lynx. The mitigations for lynx suggested in this comment would also mitigate the Project’s effects on other wildlife known to move through the Project area including, among others, wolf, moose, and herpetofauna.

One category of negative effects on lynx is the destruction and adverse modification of lynx critical habitat that has been found, at the site level, to be suitable habitat for lynx. As noted above, the Project – as proposed or with mine site and tailings basin alternatives – would cause some lynx habitat to be permanently destroyed (steep-sided mine pits, flooded pits, and fenced areas); some to be permanently adversely modified (steep tailings and rock stockpiles, corridor habitat, fragmented non-corridor habitat, and revegetated areas that will never regain their full

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62 The DEIS does suggest an alternative or mitigative action [DEIS at 4.9-5] that would revegetate damaged and reclaimed areas with a diverse mix of native plant species. MCEA strongly supports this suggestion and urges that it be made a mandatory requirement.
habitat value); and some to be temporarily adversely modified for 30 to 40+ years (reclaimed areas that will not recover suitable lynx habitat conditions until 10-20 years post-closure).

8.3.3.1 Mitigating the destruction and adverse modification of lynx habitat

Post-closure reclamation will neither bring back the permanently-destroyed habitat, nor make up for the three- to four-decade-long, up-front loss of reclaimable habitat. Post-closure reclamation also cannot compensate for the degraded condition of reclaimed land compared to the original habitat condition, pre-mining. But other mitigation strategies and opportunities exist and should have been explored.

For example, in addition to post-closure reclamation at the Project area, the DEIS could and should have considered requiring PolyMet to begin immediate reclamation and revegetation on old mining areas that were never appropriately reclaimed and revegetated. Areas could be selected for reclamation and revegetation, so as to improve and expand existing wildlife corridors through the Mesabi Iron Range. Starting large-scale reclamation and revegetation in wildlife corridors beyond the Project area, concurrently with mining operations in the Project area, would likely improve (to some extent) habitat conditions for lynx in half the time required for post-closure reclamation.

Another example of mitigation that could have been considered is the purchase and retirement of conservation easements on lands adjacent to the north and south of wildlife corridors. Simple land management changes designed to benefit lynx and snowshoe hare could yield improvements in the value and function of wildlife corridors, simply by revegetating and creating larger blocks of core habitat connected to the corridors.

Mitigation measures should include, but not be limited to, actions that improve habitat post-closure, inside the Project area. If mitigation consists only of actions within the Project
area, then the mitigation will come too late in time to be as effective as is possible. The mine will operate for 20 years, after which another 10, 20, or more years will be needed before vegetation re-growth may yield lynx-friendly habitat on the less-productive mined landscape.

8.3.3.2 **Mitigating the loss of corridors and increased risk of lynx-vehicle collision mortalities**

A second category of negative effects on lynx is the increase in expected lynx mortality resulting from the Project. The 4,000 miles of daily vehicle traffic between the mine site and processing plant site will make wildlife corridors ## 11 and 12 more deadly to lynx. The Project area is an area that currently experiences very little traffic, particularly in the corridor between the processing plant site and the proposed mine site. Increased rail and road traffic in that corridor will increase expected lynx-vehicle collisions and mortalities.\(^6\)

To mitigate the on-site effects – increased chances of lynx-vehicle collisions and mortalities – the DEIS should have considered requiring the Project proponent to remodel the haul road and railroad line, so as to install bridges and wildlife underpasses in likely places, like stream valleys and vegetative funnels. In conjunction with the bridges and over/underpasses, wing-fencing (a.k.a. “drift” fencing) must be installed, inspected, and maintained so as to funnel wildlife to the safe crossing areas. Due to the funneling of wildlife to certain crossing areas, trapping on the property would have to be prohibited for as long as the road and/or rail corridor remain in use. When the Project is closed and reclaimed, the road and rail corridor should be obliterated and the fencing removed.

\[^6\] See, e.g., Biological Opinion for Mesabi Nugget, *passim.*
8.3.4 The DEIS fails to catalogue and analyze the full cumulative effects of the Project on Canada lynx and other mobile terrestrial wildlife

As noted elsewhere in this comment letter, the DEIS fails to include any discussion about three reasonably foreseeable, likely to be developed, sulfide-metal mines, among other projects. *Infra*, pp. 59-63. The DEIS cumulative effects review, consequently, fails to include these projects in its cumulative effects analysis.

The DEIS avoids analysis of the cumulative effect of these three additional sulfide-metal mining projects by concluding, without further explanation, that, “[e]xploratory drilling events were not considered indicative of reasonably foreseeable future actions requiring inclusion in this analysis.”64 And, as already explained elsewhere in this comment letter, there is much more than just “exploratory drilling events” going on to indicate that these mining projects are reasonably foreseeable.

These three sulfide-metal projects must be considered along with the Project, in analyzing the Project’s cumulative effects on wildlife. Specifically, the three sulfide-metal mining projects would widen the Mesabi Iron Range substantially in the vicinity of Polymet and Teck Cominco, and would lengthen the Mesabi Iron Range to the northeast by approximately 10 miles. The cumulative effects on lynx movement would include significantly more impairment in an area where there are a lot of lynx being detected. The 115-mile long Mesabi Iron Range would be lengthened by nearly 9%, and significantly more designated lynx critical habitat would be destroyed. More habitat would be adversely modified in a permanent way, and still additional habitat would experience adverse effects lasting many decades.

64 DEIS at 4.3-21.
Because there is much more to indicate these projects will be pursued to environmental review, permitting, and likely construction, the exclusion of these three sulfide-metal mine projects, among others, from cumulative effects analysis is a major failing, and it must be corrected during the DEIS’s revision.

9.0 AIR QUALITY

The NorthMet DEIS inadequately describes the wind direction and conditions at the Project site. The NorthMet DEIS, Volume II, provides a wind rose for Hibbing, Minnesota, implicitly suggesting that the Hibbing wind rose is relevant to determining wind conditions at the Project site. More detailed wind roses for two other locations - Ely and Virginia-Eveleth - are readily available but were omitted from the DEIS.

Ely and Virginia-Eveleth are nearer to, and bracket, the Project site. Their wind roses also differ from the wind rose for Hibbing. First, the Hibbing wind rose is an annualized wind rose, meaning that a single diagram depicts the entire year's averaged winds. The Ely and Virginia-Eveleth wind roses present monthly wind rose data. Second, the Hibbing wind rose provided in the DEIS indicates that winds from the northwest and from the southeast predominate; southwest winds are far less common in Hibbing. This is significant, because it is southwest winds that are far more likely to blow pollution into the Boundary Waters Canoe Area Wilderness (BWCAW). In comparison, it is evident from looking at the wind roses for Virginia-Eveleth and for Ely that during many months of the year, southwesterly winds are among the most common. June, July, August, and September, when southwesterly winds are most common in Ely and in Virginia-Eveleth, are also the months when visitors to Minnesota's Class I

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65 The DNR did an EAW for the bulk sampling that Teck Cominco has already conducted, for example.
66 See DEIS Vol. II, Figure 4.6-1.
67 See Ely wind roses; Virginia-Eveleth wind roses.
areas (the BWCAW and Voyageurs National Park) is at its highest. In other words, from the perspective of human enjoyment and perception, the Project may be sending more of its pollution more often into the BWCAW than the DEIS reflects. It is not clear, from reading the appropriate sections of the DEIS, whether predictions of haze and visibility impacts from the Project on the Class I areas, were based on the wind data from Hibbing.

The DEIS should have included site-specific wind data, and the absence of that data is a meaningful flaw and could easily have been avoided. The DEIS must include better wind rose data, preferably from the processing plant and mine sites within the Project area. The DEIS should explain exactly how the Hibbing wind rose data was used, and must re-do whatever work incorporated the Hibbing data, using the Ely and Virginia-Eveleth data if site-specific data is not collected.

9.1 Regional Haze And Visibility In Class 1 Areas

The Regional Haze Rule of 1999 (“Haze Rule”), 40 CFR §§51.300-308, requires Minnesota to develop a Regional Haze State Implementation Plan (“Haze SIP”) to reduce haze and meet the goal of natural visibility conditions by 2064 in Class I areas both within the state of Minnesota and in Class I areas outside the state of Minnesota which are affected by air pollutants emitted within Minnesota. Minnesota’s Haze SIP primarily focused on improving visibility impairment in three Class I areas: the Boundary Waters Canoe Area Wilderness (“BWCAW”); Voyageurs National Park (“VNP”); and Isle Royale National Park (“IR”). As required by the Haze Rule, the Minnesota Pollution Control Agency (“MPCA”) submitted a Haze SIP to the EPA for review on December 30, 2009.

The additional emissions from the NorthMet Project jeopardize Minnesota’s achievement of meaningful and significant progress toward reducing visibility impairment in the BWCAW
and reaching the goal of natural visibility conditions by 2064, which the Regional Haze Rule requires. Air emissions at the Mine Site were estimated for material handling sources associated with excavation, portable crushing and screening operations, blast hole drilling, unpaved roads, and vehicle exhaust.\textsuperscript{68} Air emissions at the Plant Site were estimated for point source emissions from the crushing plant; flotation operation autoclaves and other hydrometallurgical processes; process consumables handling sources; and combustion sources. In addition, fugitive emissions are expected to occur from raw materials handling, Plant Site roads, Tailings Basin, and Dunka Road sources.\textsuperscript{69} Modeling results of emissions caused by crushing and grinding ore, handling reagents and materials, flotation, and hydrometallurgical processing from the NorthMet project, indicate anticipated emissions of 30 tpy of SO\textsubscript{2}, 159 tpy of NO\textsubscript{X} and 1,175 tpy of PM\textsubscript{10}.\textsuperscript{70} Emissions from the NorthMet Project will cause or contribute to visibility impairment in Class I areas affected by these emissions, and will cause significant impairment of visibility for several days a year in the BWCAW. The Forest Service specifically noted that emissions from the NorthMet Project over the course of each year are anticipated to cause a 10% change in light extinction for one day and a 5% change in light extinction for 36 days as compared to natural background.\textsuperscript{71}

The significance of the Project’s contribution to visibility impairment in the BWCAW can be illustrated from the fact that the Haze SIP recognizes that a significant contribution to visibility impairment from an \textit{entire state} equals a contribution over five percent. The fact that the NorthMet Project, by itself, is anticipated to cause a 10% change in light extinction for one

\textsuperscript{68} See DEIS at 4.6-9.
\textsuperscript{69} See DEIS at 4.6-19.
\textsuperscript{70} See DEIS at 4.6-53 and 54.
\textsuperscript{71} See Forest Service Comments, dated April 2, 2008.
day and 5% change in light extinction for 36 days as compared to natural background conditions is significant when considering that a five percent contribution towards visibility impairment from an entire state is considered significant by the MPCA.

The NorthMet DEIS recognizes that 15% of anticipated visibility impairment in Minnesota’s Class I areas is projected to come from emissions from Northeast Minnesota in 2018. Recognizing the disproportionate impact from emissions in Northeastern Minnesota towards visibility impairment in Minnesota’s Class I areas, the Haze SIP includes a plan for reducing emissions from Northeastern Minnesota by 30% by 2018. However, as confirmed by MPCA staff during the MPCA Citizen’s Board Meeting on October 27, 2009 and in responses to comments, Minnesota is not predicted to meet the goal of a 30% reduction in emissions from Northeastern Minnesota sources (the 2018 goal of the Haze SIP) because of emissions from new facilities, including emissions from the NorthMet Project.

The NorthMet DEIS discusses several mitigation measures that could address visibility impacts associated with emissions from the NorthMet Project. Several of these mitigation measures were eliminated from consideration, however, and not included in the air quality modeling. The DEIS indicates that the use of low-NOx burners in the heaters, conversion to electric heating, and the use of waste heat for work space heating requirements, were among the mitigation measures not included in the air quality modeling results.

The DEIS should provide additional documentation to justify the elimination of these mitigation measures from consideration. Specifically, the DEIS indicates that the use of waste

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72 See DEIS, Vol. 1, at 4.6-55.
74 See DEIS at 4.6-37.
heat from the autoclaves to assist in the space heating requirements could ultimately achieve a 65% reduction in the overall NOx emissions. However, the DEIS eliminates this mitigation measure from consideration, “due to concerns over possible changes to the Project water balance,” without providing any information or supporting documentation regarding these concerns to allow the public to weigh the potential benefits to air quality in relation to the changes to water balance. Considering the significant reductions in NOx emissions which could be achieved through the use of waste heat from the autoclaves for interior work space heating requirements, the DEIS should provide additional documentation to support the elimination of this mitigation measure from consideration.

Further, the DEIS indicates, “that discussions are currently in progress with PolyMet, MPCA, and the FLMs to evaluate additional potential control measures that may be applicable to the Project,” that, “mitigation options exist that are being considered and could be evaluated in the Final EIS,” and that, “[t]he investigation is expected to be completed during the permitting process with MPCA and the FLMs.” Information regarding additional mitigation measures that could be used to improve visibility conditions in the BWCAW and other Class I areas should be provided, to allow the public an opportunity to review and comment on mitigation measures which could help Minnesota achieve the visibility goals of the Regional Haze Rule.

The NorthMet DEIS does not adequately explain how the goals of the Regional Haze Rule will be met, notwithstanding the additional emissions from the NorthMet Project. The NorthMet DEIS needs to include an analysis and explanation of how the goals of the Regional Haze Rule will be met if the Project is built.

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75 See DEIS at 4.6-37.
76 See DEIS at 4.6-37.
The proposed reductions in emissions included in the Haze SIP fail to meet the visibility goals of the Regional Haze Rule. Addition of new sources prior to a determination that visibility goals can be achieved, should not be permitted.

**Cumulative Impacts Analysis**

The NorthMet DEIS failed to include an analysis of the cumulative impacts of all reasonably foreseeable activities on visibility in Minnesota Class I areas. Specifically, for example, the NorthMet DEIS failed to include an analysis of cumulative impacts on visibility from hardrock mineral exploration in the Superior National Forest, and entirely omitted the three additional sulfide-metal mines that are currently in advanced stages of exploration and development, in the assessment of cumulative impacts on visibility. The cumulative impact from these activities should be included in the NorthMet DEIS.

**9.2 Mercury Emissions**

The DEIS inadequately addresses mercury air emissions from the autoclaves. First, the mercury projections used in the DEIS are based on specifications from the autoclave manufacturer and not based on field testing. Historical data indicate increased mercury levels associated with the use of autoclaves. Accordingly, in the absence of data from field tests of this type of autoclave process, significant uncertainty remains in regard to the actual mercury emissions from the autoclaves.\(^\text{77}\)

Second, the DEIS does not indicate what type of monitoring will be required for mercury emissions from the autoclaves. In light of uncertainties associated with mercury emissions from the autoclaves and historical data indicating increased mercury levels associated with the use of autoclaves and historical data indicating increased mercury levels associated with the use of

\(^{77}\) See Exs. 1-2 (Reports of Chambers and Engstrom).
autoclaves, and considering the significant environmental impacts associated with emissions of mercury, continuous emissions monitors ("CEMs") should be required for the autoclaves. CEMS would ensure an accurate and complete record of mercury emissions from the autoclaves, and ensure that the autoclaves are operating within the manufacturer’s specifications.

9.3 Amphibole Fibers

As noted on page 4.6-57 of the DEIS, inhalation of asbestos fibers is known to cause lung cancer and mesothelioma, among other health effects. Beyond this, there is not scientific consensus as to exactly what characteristics (e.g., aspect ratio, chemical composition, durability, etc.) would allow for definitive distinctions between hazardous and non-hazardous amphibole fibers. This is reflected in the varying definitions of regulated fibers applied by federal and state agencies.

While mining industry representatives may attempt to advance the view that only commercial-grade asbestos fibers are relevant to health risk assessment, the broader scientific community has long recognized that amphibole health risk is not confined exclusively to fibers with extremely high aspect ratios (AR). In the 1980s, the National Research Council’s Committee on Non-occupational Health Risks of Asbestiform Fibers observed that although “long, thinner fibers appear to be more pathogenic than shorter, thicker fibers...there is not a minimum size below which no effects would be expected.” More recently, Dodson et al. reviewed decades of fiber research and concluded:

We believe that it is difficult to exclude fibers of a particular dimension from a role in causing disease within the lung or extrapulmonary sites when one accepts that both the exposure and tissue burden have fibers of varying lengths and widths. In contrast the experimental models are limited by the simple fact that fibers of very limited length distributions were tested. A telling point remains that when the appropriate analytical techniques are utilized it becomes apparent that in most tissues the overwhelming majority of the asbestos fibers are less than 5 µm in length.

Based on the lack of scientific certainty as to what would constitute a “safe” amphibole fiber, and the established presence of amphibole mineral at the site of the proposed mine, it is critical that Minnesota state agencies are vigilant in their efforts to protect public health. As a key component of this effort to protect the general public, who may be exposed to these air emissions 24 hours per day, 365 days per year, MCEA supports the continued application of the MDH/MPCA definition of a “regulated fiber” as any amphibole particle with AR ≥ 3:1. As long as the precise relationship between fiber characteristics and pathogenicity remains unclear and hotly disputed, this screening threshold is a reasonable method of ensuring that communities are protected from the risk of diseases caused or exacerbated by fiber inhalation.

of both lung cancer incidence and lung cancer mortality than elsewhere in Minnesota.\(^{81}\) The fact that these deadly cancers already occur more frequently in northeastern Minnesota communities necessitates a high level of caution when a new source of potentially carcinogenic and asbestos-like particulate air emissions is under consideration.

In order to minimize the amount of hazardous fibers emitted to the air in surrounding communities, the proposed mining operation should implement Best Available Control Technology (BACT). If BACT is indeed unenforceable at this site as stated in the DEIS, MCEA supports a fiber emissions control scheme along the lines of that described on DEIS pages 4.6-61 through 4.6-63, i.e., one in which Polymet has agreed to install “the most stringent level of fine particulate matter control possible with current technology.”

MCEA conditionally supports the idea of an amphibole fiber air monitoring scheme such as that described briefly in narrative form on page 4.6-63. When a more detailed monitoring plan is provided, MCEA will comment further and determine whether full support is warranted. In the meantime, the narrative description raises at least two questions:

1) Will airborne fiber monitoring continue beyond the one-year operational period described in the DEIS?
2) How much higher would operational concentrations have to be, relative to baseline concentrations, to trigger enforcement action?

To protect public health, MCEA recommends enforcement of an ongoing airborne fiber monitoring program akin to the one already in place at the nearby Northshore Mining Co. operation.

### 9.4 Other Air Quality Issues

The plant site Air Emissions Risks Assessment (AERA) which begins on page 4.6-22 provides concentrations of various carcinogenic metals and volatile organic compounds (VOCs) that are expected to be released either at the plant site (Table 4.6-16) or from the proposed mine (Table 4.6-17). It is encouraging that aside from the farmer scenario described on page 4.6-27, the population excess cancer risk caused by the mining operation is not expected to exceed the current MDH threshold of $10^{-5}$. However, MCEA believes that it would be prudent for Minnesota government agencies to follow the lead of other states (e.g., MA, VT, NC, NY) and apply the more protective standard of $10^{-6}$ when protecting the general public from carcinogenic air pollutants.\(^{82}\)

A rigorously health-protective approach to carcinogenic air emissions control is especially important in areas where cancer rates are already elevated. Northeastern Minnesota has the highest overall cancer incidence rate of any of the state’s eight cancer surveillance regions.\(^{83}\) As noted above, Northeastern Minnesota also has higher rates of both lung cancer

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incidence and lung cancer mortality than elsewhere in Minnesota.\textsuperscript{84} This target organ is of particular relevance because many of the metals and VOCs expected to be emitted from the proposed mining operation have been found to cause lung cancer and/or other respiratory system cancers when inhaled. Metallic emissions listed in the DEIS, including chromium VI, cadmium, and inorganic arsenic, are known human carcinogens that cause lung cancer.\textsuperscript{85} Other chemicals listed in the DEIS, such as the VOCs naphthalene, acetaldehyde, and formaldehyde, are classified as known or probable human carcinogens, and are associated with cancers of the lung and/or respiratory system.\textsuperscript{86} Health risks of these and other carcinogenic emissions (e.g., PAHs) from this site should be assessed using the $10^{-6}$ risk threshold, in order to ensure that the proposed operations do not contribute to a regional excess of relevant cancer types.

10.0 SOCIOECONOMICS

The NorthMet DEIS fails to take a hard look at the potential socioeconomic consequences of the NorthMet Project by focusing exclusively on the beneficial effects of the Project “through a local increase in employment, tax revenues, and spending.”\textsuperscript{87} Because the NorthMet DEIS fails to recognize possible negative impacts on socioeconomics from the Project,


\textsuperscript{87} DEIS at S-10.
the DEIS does not identify any mitigation measures which would address potential negative socioeconomic impacts from the Project.\(^{88}\)

The failure of the NorthMet DEIS to analyze the potential negative socioeconomic impacts associated with the Project is a serious shortcoming of the DEIS. Historical trends clearly show that the mining industry in Northeastern Minnesota and elsewhere is predictably characterized by a boom and bust cycle with short-term increased employment followed by decreased employment and associated socioeconomic costs experienced by communities overly dependent on the mining industry for employment.\(^{89}\) In addition, the NorthMet DEIS fails to recognize the socioeconomic risks associated with the impact on other employment sectors as a result of the environmental degradation and destruction accompanying the Project. Specifically, the NorthMet project and the reasonably foreseeable development of additional sulfide mines in the region creates a significant risk to sustainable economies in Northeastern Minnesota which rely on wilderness, recreational and access to unspoiled public lands. In addition, the lifestyle and economies of tribal communities, from wild rice harvesting and reliance on other cultural and natural resources, are also threatened as a result of the NorthMet Project and reasonably foreseeable sulfide mining activity in the region.

Further, the NorthMet DEIS mentions nothing about the fact that the mine processing site appears to be or may be planned to be in a JOBZ zone, or the implications for this on Minnesota revenue and the social and economic effects of the project.\(^{90}\) According to information provided by the Minnesota Department of Employment and Economic Development (DEED), if the

\(^{88}\) DEIS at S-17.
\(^{90}\) EOR 2006 “Cumulative Effects Analysis on Wildlife Habitat and Travel Corridors in the Mesabi Iron Range and Arrowhead Regions of Minnesota,” at 18.
NorthMet Project is or becomes a JOBZ location then it will receive incentives likely to have an impact on the social and economic benefits assumed to be associated with the project, possibly including projected Minnesota tax revenue from the project. 91

In addition, the NorthMet DEIS fails to recognize the socioeconomic benefit associated with tourism from maintaining wildlife habitat and wildlife corridors which ensure that populations of endangered species are maintained or increased. For a specific example, reintroduction programs indicate that the return of the wolf will benefit the local economy by bringing in more tourist dollars. For instance, in northern Minnesota, the town of Ely (population 5,000) has seen nearly $3 million in new annual economic activity and as many as 66 new jobs result since the launching there, in 1993, of a wolf educational facility. 92 Wolf reintroduction has also improved the economy of Cooke City, the small town just outside Yellowstone Park's northeast gate. Id. Cooke City's traditionally slow season, the month of June, became a peak season because "it is a good month for sighting a wolf." These reports are consistent with other endangered species restoration efforts around the country. For example, in Nebraska, the annual migration of the sandhill crane and whooping crane brings 80,000 tourists and $15 million to the State's Platte River region each year. 93 Likewise, at Tennessee's Reelfoot Lake, bald eagle tours alone generate more than $2 million annually. Id. For the residents of these areas, the existence of endangered species provides more than just attractive scenery, it is a vital economic resource that must be protected. Id.

The NorthMet DEIS must include a fair and balanced evaluation of the socioeconomic benefits and risks associated with the NorthMet Project, including the reasonably foreseeable

91 Minnesota Department of Employment and Economic Development (DEED). JOBZ Overview.
92 See The Ecocenter as Tourist Attraction: Ely and the International Wolf Center.
impact from unemployment associated with the well established boom and bust cycle of the mining industry. In addition, the DEIS must also provide an analysis of the potential negative impacts from the Project on the tourist industry and sustainable economies in Northeastern Minnesota and include a discussion of mitigation measures which would be available to address the negative socioeconomic impacts from the Project.

11.0 GEOTECHNICAL STABILITY

The NorthMet DEIS fails to provide essential information or analysis regarding the stability of the tailings dam and waste rock piles. The stability, or potential lack thereof, of these areas has significant implications regarding the potential environmental impacts of the Project. As noted by Dr. Chambers, the type of dam construction used for both the existing taconite tailings and proposed flotation tailings impoundments is upstream-type construction, which is the most unstable of the dam construction types.\(^{94}\) The instability of the tailings dam is of particular concern in light of the fact that the waste with the most potential to impact water quality is the hydrometallurgical waste, which will be stored in lined cells built on top of existing taconite tailings in cell 2W. However, it appears that the potential stability of the tailings in cell 2W is not known.\(^{95}\) As noted by Dr. Chambers, the long-term integrity of both the flotation and hydrometallurgical tailings storage facilities is necessary to protect water quality. However, significant questions still remain to be addressed regarding the long-term vulnerability of the waste storage facilities to seismic events. Dr. Chambers also notes that similar concern for the waste rock piles also exist.

\(^{94}\) See Ex. 1 (Chambers Report).
\(^{95}\) Id. at 14-15.
The NorthMet DEIS indicates that “[f]urther design and analysis would occur during permitting to ensure that the proposed construction meets acceptable design standards.” In light of the potential significant environmental impacts associated with instability of the tailings facility and waste rock piles, the DNR and ACOE must provide an analysis of geotechnical stability of the tailings facility and waste rock piles as part of the environmental review. Delaying the stability analysis until permitting is not acceptable because it would prejudice one possible outcome, i.e., the possibility that safely depositing the hydrometallurgical waste on top of the existing tailings basin is not feasible. If, in fact, other tailings alternatives need to be considered because of stability problems, they must be disclosed and analyzed during environmental review. Moreover, the public needs to have an opportunity to understand the potential environmental implications of the proposed designs and weigh the environmental risks and any potential alternatives or mitigation measures to these designs which could minimize environmental impacts as part of the environmental review process. Geotechnical stability is an issue that must be addressed in the DEIS, and is a major flaw of the DEIS.

12.0 NORTHMET DEIS MUST INCLUDE DISCUSSION OF DIRECT AND INDIRECT IMPACTS AND CUMULATIVE EFFECTS FROM PROJECT

12.1 Purpose And Requirements Of DEIS

Regulations promulgated by the CEQ require that an EIS include a discussion of environmental impacts, including impacts that are direct, indirect and cumulative. 40 C.F.R. § 1508.25. The NorthMet DEIS discussion on this subject must include an analysis of “direct effects,” which are “caused by the action and occur at the same time and place,” as well as “indirect effects which . . . are later in time or farther removed in distance, but are still

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96 DEIS at 4.13-2.
reasonably foreseeable.” 40 C.F.R. § 1508.8. A DEIS must also consider the cumulative impacts of the proposed federal agency action together with past, present and reasonably foreseeable future actions, including all federal and non-federal activities. 40 C.F.R. § 1508.7. Furthermore, an EIS must “rigorously explore and objectively evaluate all reasonable alternatives” to the proposed project. 40 C.F.R. § 1502.14(a). To the extent that the analysis on some point may be limited by unavailability of information, the preparing agencies are still not excused from analysis. Mid States Coalition for Progress v. Surface Transp. Bd., 345 F.3d 520 (8th Cir. 2003). A DEIS must “fulfill and satisfy to the fullest extent possible the requirements established for final statements.” 40 C.F.R. § 1502.9(a). “If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portions.” Id. A proper cumulative impacts analysis will assess the proposed action in light of other activity that has affected or will affect the same environmental resources. The goal is to highlight any environmental degradation that might occur if the minor effects of multiple actions accumulate over time.

12.2 Carbon Storage And GHG Emissions

MCEA appreciates that the issues of greenhouse gas (GHG) emissions and climate change were incorporated into the DEIS after scoping, and notes that the DEIS may do a better job than many of its predecessors at identifying channels of GHG emissions resulting directly or indirectly from the Project and describing recent significant developments concerning climate change policy. Given the widely acknowledged scale of the threat posed by anthropogenic climate change and its direct link to GHG emissions, the preparing agencies have a duty under
the National Environmental Policy Act (NEPA) to address the Project’s GHG emissions more thoroughly than the DEIS currently does.\textsuperscript{97}

The DEIS fails to address several important issues that it should have. First, the DEIS fails to consider and examine an alternative that would power the Project’s processing plant with lower carbon alternatives. Second, the DEIS inaccurately and unreasonably accounts for carbon lost as a result of peatland destruction and degradation at and around the Project’s mine site, stockpiles, and tailings basins. Third, the DEIS fails to account for the reasonably foreseeable cumulative effects on carbon emissions resulting from peatland destruction and degradation at other projects occurring in northern Minnesota, including three sulfide-metal mine projects. Other sulfide-metal mining projects currently in planning and development were omitted or excluded from the DEIS cumulative effects analysis. Fourth, the DEIS fails to describe likely regional consequences of climate change – e.g., warmer average temperatures, higher total rainfall, higher rates of evaporation, more frequent droughts, and fewer but more extreme rain events – might affect the Project’s presumptions and conclusions.

\textbf{12.2.1 The DEIS fails to consider or analyze an alternative to power the plant site with a zero- or low-carbon-intensity power supply}

In 2007, the state legislature enacted law establishing an absolute GHG reduction objective for staged reductions of total emissions below statewide 2005 emissions levels: a 15\% reduction in statewide emissions by 2015; a 30\% reduction by 2025, and an 80\% reduction by 2050.\textsuperscript{98} The statewide mandates passed to advance the state toward its GHG goals included an

\textsuperscript{97} The channels, or sources, of GHG emissions recognized by the DEIS include: vehicular use of fossil fuels; onsite and offsite fossil fuel consumption to produce power to run the Project equipment; oxidation of carbon from peat and forest lands cleared of vegetation and excavated; and lost carbon sequestration potential due to the destruction of natural peatlands and forest habitats.

\textsuperscript{98} Minnesota Session Laws 2007 Chapter 136, Article 5, Sec. 2.
ethanol-gasoline mixing requirement and a 25% renewable energy standard (RES). Statewide energy consumption continues to grow, however, because the RES sets a relative goal, in that energy production can continue to increase so long as the percentage that is renewable reaches 25% of the total by the required date. Consequently, it is well agreed that the state’s mandates alone will not get the Minnesota to its GHG reduction goals. Accordingly, the DEIS for the Project cannot rely upon the operation of the RES to accomplish state policy on GHG emissions. Rather, reductions in total new energy demand must occur, and the new energy demand that does arise must be met with new low- or no-carbon supplies.

As stated in one of the technical supporting documents to the DEIS, “trends in future U.S. greenhouse gas emissions depend critically on future economic growth, population growth, and the success of alternative energy and energy efficiency measures.” 99 The same is true of Minnesota’s emissions; success in meeting statewide GHG emissions reduction goals depends in measurable part on the successful adoption of alternative energy. Nowhere is this truer than in proposals that would substantially increase total energy use and pose the threat of increased statewide emissions. Unfortunately, the DEIS predicts that among the cumulative effects of the Project there will be a, “cumulative increase in the emission of CO₂ and other … GHGs.” 100

The DEIS predicts that the total direct and indirect annual GHG emissions from the Project will be more than 744,000 metric tons of CO₂-equivalent (m.t.CO₂ e) emissions. 101 That volume of annual GHG emissions represents a measurable and very significant fraction of total statewide emissions. Specifically, according to data in the DEIS, the proposed Project would

100 DEIS at S-11.
cause statewide annual emissions to jump by 2/3 of 1% (+0.62%), which is an enormous impact for a single project to have.

Moreover, this increase would come just as Minnesota is seeking to achieve substantial reductions in total statewide emissions. Indeed, three years have passed since the GHG emissions reduction law was passed, and with just five years remaining until 2015, the Project would push statewide emissions in the wrong direction, frustrate the State’s important public policy and public health interests, and have a deleterious effect on the State’s involvement and compliance with the Midwestern Greenhouse Gas Reduction Accord.

Most (68.4%) of the Project’s GHG emissions predicted in the DEIS are attributed to off-site production of roughly 59.3 megawatts (MW) of electrical power. It would come from one of Minnesota Power’s coal-fired power plants.

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102 Greenhouse Gas Emission Inventory and Alternatives Report (Appendix A to Northmet Project Greenhouse Gas and Climate Change Evaluation Report), Barr Engineering. June 2009 (“AQ05”) at p. 2: “The potential maximum direct GHG emissions from the NorthMet Project, from mining through metal recovery at the process plant, are estimated to be approximately 235,648 metric tons per year. … Direct GHG emissions potentially associated with the project are less than 0.2% of estimated 2005 statewide emissions…. Potential indirect GHG emissions related to power production for the project are estimated at 509,000 metric tons per year. As shown in Table 3, the total potential project emissions (direct + indirect) are also a fraction of the estimated statewide, national, and global GHG emissions.”; and at p. 10 (Table 3).

103 Id. at 53. N.B.: this key GHG technical document inaccurately represents the significance of the Project’s total emissions on page 53, where it states, “[t]he GHG emissions from the NorthMet Project are approximately 0.2% of estimated statewide emissions,” when in fact the Project’s direct emissions alone are approximately .2% of statewide emissions, and the total Project emissions are three times higher, as shown in n. 6, above. This error should be corrected in the technical document, and the FEIS must state the correct figure in order to disclose the impact as required.

104 DEIS at 4.6-32, n.4.


106 DEIS at 4.6-31: (“For the NorthMet Project, indirect emissions would result from the electrical needs that would be met with offsite power supply. CO2 emissions from the power plants supplying the power are included for this project.”)

107 DEIS at 4.6-31, Table 4.6-18; and see Indirect Emission Calculations (Attachment B to Appendix A of “Northmet Project Greenhouse Gas and Climate Change Evaluation Report,” Barr Engineering, June 2009), at p.1 and Table B-1.
Despite the significance of climate change and the State’s GHG reduction timeline, and despite the Minnesota Pollution Control Agency’s urging, the DEIS fails to analyze a green power alternative under which the Project would run on low- or no-carbon electricity, thereby minimizing the Project’s biggest single source of emissions. The DEIS does discuss methods of increasing efficiency of vehicles and equipment on site, but none that address switching from coal to green power. Coal-fired electricity is the only form of generation that is mentioned. Consequently, the DEIS ignores an opportunity to use widely available, existing technology to reduce or eliminate the biggest source of GHG emissions, simply by changing the way the power used by the Project is produced. The DEIS does not discuss alternative types of power; it only explains it will purchase coal-derived electricity from Minnesota Power. The option of buying different types of electricity (green power) from Minnesota Power is never discussed. The option of building its own power source is summarily dismissed without justification. The option of purchasing from a different provider not fully explored.

The failure to analyze and discuss a wind energy option is unfortunate, because that the option exists. Minnesota Power has been expanding its presence in the wind power market, and has just purchased a 465-mile direct current (DC) powerline. As soon as 2011, that powerline will carry 75MW of windpower from the “Bison 1” turbines in windy North Dakota, to the

\[108\] MPCA Comments on Draft-02 of AQ05 – 4/7/09, at 2-3 (The MPCA urges that the DEIS consider: “the possibility that the owner/operator might procure power from a source other than Minnesota Power”; “[t]he range of possible alternative power sources that may be open to the project...”; and, “the possibility that green power purchases from Minnesota Power and Excel Energy might constitute a way to minimize emissions associated with the generation of purchased power.”).

\[109\] Id. at 4.6-32 – 4.6-33 (“PolyMet evaluated additional methods to reduce the Project’s greenhouse gas emissions, but found the additional methods infeasible (Barr 2009, NorthMet Project Greenhouse Gas and Climate Change Evaluation Report). The methods evaluated included electric drive mine haul trucks, electric locomotives, newer mill technology, flotation alternatives, and the use of waste heat from autoclaves for space heating.”).

\[110\] Greenhouse Gas Emission Inventory and Alternatives Report (Appendix A to Northmet Project Greenhouse Gas and Climate Change Evaluation Report), Barr Engineering. June 2009. at p. 28 (“This project is expected to require 59.3 MW of power, which will be supplied by Minnesota Power.”).
electrical grid in Duluth. Minnesota Power plans additional phases of wind energy development, in North Dakota, as well.

Moreover, even the assertion that the Project must use Minnesota Power is not entirely correct. The DEIS and the Barr report to which it refers argue that the Project would have to be powered by Minnesota Power, pointing to a state law on exclusive service territories for energy companies, Minn. Stat. § 216B.37, and to an exception, Minn. Stat. § 216B.42, Subd. 1, that apparently would not apply to the Project. The DEIS and the Barr report gloss over other options, including the one presented in Minn. Stat. §§ 216B.40, which allows use of a different power company if the usual company agrees in writing; and the self-generation exception, Minn. Stat. § 216B.1621. As to the first option, the DEIS documents simply assert, without further explanation that it is “not likely applicable to PolyMet.”111 As to the second, the company suggests that because it is a mining company, it lacks the technical and business savvy to operate a power plant – a proposition with which several mining companies in Minnesota, including Cleveland Cliffs (Silver Bay) and the old LTV Steel (Taconite Harbor) would certainly disagree. The DEIS asserts arbitrarily that self-generation, “is outside the scope of reasonable alternatives to reducing carbon emissions at this time.”112 The treatment that the DEIS gives to the available alternatives for power production and power selection by the Project does not satisfy the requirements of 40 C.F.R. §1502.16.113

111 Id. at 29.
112 Id. at 29 and 32.
113 Sec. 1502.16. Environmental consequences. This section forms the scientific and analytic basis for the comparisons under Sec. 1502.14. It shall consolidate the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of the statement and as much of section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion will include the environmental impacts of
12.2.2 The DEIS accounting for carbon losses from land use changes, especially the peat deposits destroyed and damaged by the Project, is inadequate, inaccurate, and unreasonable

The DEIS and supporting documents take pains to assume that the bulk of stable carbon currently stored in peatlands, but slated for excavation, will remain in solid form and not be released into the atmosphere through oxidation. Specifically, the DEIS estimates that the peat slated for excavation and stockpiling is equivalent to 1,780,000 tons of CO₂\(^2\)\(^2\) The DEIS estimates that only 23,000 metric tons of CO₂ equivalent per year (m.t.CO₂-e/yr) would be emitted from the oxidation of peat held in stockpiles over the 20-year life of the mine.

This conclusion should be better explained, and work that went into the calculations should be shown. The DEIS’s estimate may be contradicted by comments of the MPCA, which suggests that land use emissions should be evaluated as a pulse emission in the initial year, rather than distributed over some longer time period. MCEA notes that land use emissions must include not just the conversion of above-ground carbon into gas, but also the conversion of all below-ground carbon in upland and wetland soils that will likely occur sooner and more rapidly than would be the case if the peatlands were left undisturbed (i.e., under the no-build alternative).

Also, in addition to the carbon emissions from peat stockpiled over a 20-year period – which the DEIS and its supporting document (AQ05) discuss and attempt to quantify – will account for only a portion of the peat’s carbon emissions. An emissions spike will occur when

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the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. This section should not duplicate discussions in Sec. 1502.14. It shall include discussions of: … (e) Energy requirements and conservation potential of various alternatives and mitigation measures.

As peat is spread thinly over a large area during reclamation of the mine site and tailings basins, the ratio of surface area to volume will increase, and with it the peat’s exposure to the effects of heat, oxygenation, and dessication. These are the main factors that will drive the spike in reclamation-timed carbon emissions from once-stockpiled peat. This spike is a land use emission, and must be evaluated as the MPCA suggests: as a pulse emission in the initial year of the Project.

Rather than make a proper accounting of peat-carbon volatilized during and following reclamation, the DEIS and its supporting documents suggest, speciously, that all peat used as mulch in reclamation should be considered a mitigation or carbon offset. The fallacy of this suggestion should be apparent, since if the Project were not constructed and excavated, there would be no need to use on-site peat reclamation; there would be no “site” to reclaim, and thus essentially all of the carbon now stored in the peat would remain locked up.

The necessity of addressing these problems with the carbon emission calculations for the Project cannot be over-emphasized. To demonstrate the significance of peatland carbon’s fate, consider the effects on Project total emissions if all the excavated peat were to be volatilized: the Project’s estimated carbon footprint (as measured in m.t.CO2-e) would jump from 744,000 to more than three times that much, or 2,524,000. Instead of bumping statewide CO₂ emissions by 0.62%, the bump would be more than 2%.

Finally, the DEIS wrongly attributes GHG emissions mitigation to the wetlands restoration that it proposes. The MPCA stated clearly, in its comments on the DEIS and

\[\text{\textsuperscript{115} Id. at 39.}\]
\[\text{\textsuperscript{116} Id. at 48.}\]
\[\text{\textsuperscript{117} DEIS at 4.6-33: (“To mitigate greenhouse gas impacts associated with change in existing land cover (i.e., secondary impacts), PolyMet would implement a wetland mitigation plan (see Section 4.2 of this DEIS) for}\]
supporting documents, that, “[s]ince the recovery times of the [natural lands to be cleared and
excavated by the Project] are long in relation to the project lifetime, no offset from wetlands
mitigation during the lifetime of the project need be considered.”

The NorthMet DEIS should include mitigation options that can be imposed in the permit
with regard to GHG emissions. These mitigation measures need to show that the project can be
consistent with Minnesota’s GHG reduction goals.

12.2.3 The DEIS fails to consider how the likely regional effects of climate
change will change the DEIS assumptions and conclusions

The DEIS describes likely aspects of the form climate change will take, regionally –
warmer average temperatures, higher total rainfall, higher rates of evaporation, more frequent
droughts, and fewer but more extreme rain events, etc. – but there is no analysis of how these
changes would affect the assumptions in the DEIS and the long-term consequences of the
Project. For example, would the higher temperatures increase rates of redox reactions in waste
rock, hydrometallurgical tailings, the materials in the East Pit, and the highly reactive category 4
rock exposed in the pit walls? Would the more frequent periods of drought, reduction in ice
cover in winter, warmer temperatures, and higher rates of evaporation cause water levels in the
pits to drop substantially over a number of years or decades? If water levels do drop
substantially, might the fewer but more intense rain events cause water levels to rise and fall,
periodically exposing and re-submerging the more reactive categories 4, 3 and 2 material in the
pit? Nothing we could find in the DEIS addresses questions such as these, which apply the
acknowledged likely effects of climate change to the presumed functioning of the Project during

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118 MPCA Comments on Draft-02 of AQ05 – 4/7/09, at 1.
and following operations and reclamation. Please address these issues directly in before the
FEIS is released, and if they are already addressed, then please address them more fully.

12.3 The DEIS Failed To Consider The Cumulative Effects Of Hardrock Mineral
Exploration In The Superior National Forest And Future Sulfide-metal Mines

The DEIS generally lists the projects considered in its cumulative effects analyses. Their
purpose is to disclose which projects were considered and which were overlooked or excluded
from the various cumulative effects analyses. For example, there is a separate list of projects that
were considered as part of the cumulative effects analyses for wetlands impacts in the Embarrass
River\textsuperscript{119}; for visibility impacts in Class I areas (e.g., Voyageurs N.P., Boundary Waters Canoe
Area Wilderness, Isle Royale N.P.)\textsuperscript{120}; and for endangered, threatened, and special concern
(ETSC) species losses.\textsuperscript{121} And there are other such lists in the DEIS.

The NorthMet DEIS failed to include in its cumulative effects analyses the current and
anticipated mineral exploration in the Superior National Forest and the three other sulfide-metal
mines (other than PolyMet) that are very likely to go into production in the not-too-distant future
(presuming they could obtain the necessary permits).

State and federal regulations require the NorthMet DEIS to analyze the cumulative
potential effects of hardrock mineral exploration in the Superior National Forest, currently being
considered by the U.S. Forest Service “Federal Hardrock Minerals Prospecting Permits Project”.
This U.S. Forest Service project is currently in the scoping phase for an EIS to evaluate the
environmental impacts from “current and anticipated future proposals” for hardrock mineral

\textsuperscript{119} DEIS at 4.2-51.
\textsuperscript{120} DEIS at 4.6-50 to -51.
\textsuperscript{121} DEIS at 4.3-20 to -21.
exploration in the Superior National Forest. This Hardrock Minerals Prospecting Project will evaluate the environmental impacts from federal hardrock mineral exploration in the Superior National Forest for the following:

1) 32 current permit applications from Duluth Metals Corp., Lehmann Exploration Management Inc., Encampment Resources L.L.C., and Prime Meridian Resources Inc.;
2) future permit applications, current and future operating plans; and
3) future use and occupancy authorizations (Special Use Permits) on the SNF over the next 20 years.

An analysis of environmental impacts from these activities in an EIS by another federal agency is a clear indication that these types of activities fall within the parameters of a NEPA cumulative impacts analysis and should have been considered in the Polymet DEIS. Additionally, three other sulfide-mining companies – Duluth Metals, Franconia, and Teck Cominco – are developing hardrock mining proposals that are reasonably foreseeable and should be included in the cumulative impacts analyses. Nevertheless, the DEIS never mentions Franconia Minerals, or Teck Cominco. Duluth Metals is mentioned once, but not for purposes of analyzing Duluth Metals mine’s likely contribution to cumulative environmental effects.

The NorthMet DEIS does not explain why the Franconia, Teck Cominco, and Duluth Metals proposals are not included. Even if specific project details are not yet available,

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123 Id. at 1.
124 DEIS at 4.1-18, Table 4.1-10. Duluth Metals is mentioned once, in a table listing responsible parties for contaminated industrial sites or abandoned wells, which are considered “areas of concern” for water quality. The three sites for which Duluth Metals is the responsible party were created decades ago at the defunct Dunka mine site, which Duluth Metals now owns.
sufficient information shows that the projects are reasonably foreseeable. Plans do not have to be so far along as to “constitute actual proposals” to conclude that a project under current consideration is a “reasonably foreseeable future action.” See Tex. Comm. on Natural Res. V. Van Winkle, 197 F. Supp. 2d 586, 618 (N.D. Tex 2002) (remanding Corps EIS for failure to include reasonably foreseeable plans in cumulative effects analysis).

The NorthMet DEIS states that, “[e]xploratory drilling events were not considered indicative of reasonably foreseeable future actions requiring inclusion in this analysis.” In its cumulative effects analysis with regard to endangered species. If this is, generally, the reason that the Duluth Metals, Franconia, and Teck Cominco mining projects were omitted from cumulative effects review, then that should be clearly articulated. In any case, even if that is the unwritten rationale, their exclusion is not reasonable in light of the many other activities and other indications that make these projects reasonably foreseeable future actions.

The Duluth Metals, Franconia Minerals, and Teck Cominco projects have attracted and resulted in a great deal of activity beyond just exploratory drilling, and are expected to proceed to environmental review and permitting. Duluth Metals, for example, has received a preliminary assessment of more than 800 million tonnes of indicated and inferred resources. In addition, Duluth Metals has just received a massive infusion of more than $130 Million from Antofagasta, PLC, one of the world’s larger mining companies, in exchange for a 40% stake in the joint venture the two companies have just formed. Antofagasta also has an option for another 25% stake in the joint venture, which the company can exercise by paying another $97 Million.

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125 DEIS at 4.3-21.
Antofagasta is a big company, with a position on the FTSE-100, and it is very experienced in copper mining. It seems reasonable, in light of the $130 Million investment made by Antofagasta, that they expect Duluth Metals to begin producing substantial quantities of metal within a reasonable investment timeframe.

Franconia likewise filed for permission to sink a shaft through Birch Lake and conduct underground bulk sampling in July of 2005. On the basis of mineral sampling, Franconia has characterized large resources of high-quality ore on the lands that it owns, and has announced placement of over $4 Million in private financing to continue development of its mining projects, and intends to proceed to mining.

Teck Cominco has by far the largest ore bodies yet characterized under its lands, and though very quiet right now, it has already completed a “project” – metallurgical sampling (“bulk sampling”) – which had to go through environmental review. The DNR, in fact, prepared an Environmental Assessment Worksheet (“EAW”) for it. In addition, Teck Cominco is located immediately adjacent to the proposed Polymet mine site and is connected to the Project’s processing site by an existing rail line. The Project plant site has the capacity to process far more than the amount suggested in the DEIS, which says the plant would process 32,000 tons of ore

127 See Duluth Minerals announcement of joint venture with Antofagasta, PLC. (Announcement dated 1/14/2010 was posted to the Duluth Metals website. A copy is on the references disc, and it was also available as of 2/3/2010, at: http://www.duluthmetals.com/s/NewsReleases.asp?ReportID=380597&_Type=News-Release&_Title=Duluth-Metals-announces-Joint-Venture-with-Antofagasta-plc-Antofagasta-prov... )
128 DNR is in possession of Franconia’s submission, an announcement of which was made by Franconia on its web page, available as of 2/3/2010 at: http://www.franconiaminerals.com/s/NewsReleases.asp?ReportID=112751&_Type=News-Releases&_Title=Franconia-Files-for-Approvals-for-Shaft-Sinking-and-Underground-Bulk-Sampli...
129 See Franconia Map – Foreseeable Mining Projects.pdf
130 See Franconia news releases, “president’s statement, and other announcements.
131 8/14/2008 DNR Record of Decision, In the Matter of the Determination of the Need for an Environmental Impact Statement for the Teck Cominco American Incorporated Metallurgical Sampling Project City of Babbitt, Minnesota. Findings of Fact, Conclusions, and Order.
per day. It seems more than reasonably foreseeable that if the Project is permitted, and once it is up and running, then Teck Cominco’s ore would likely be very economically processed at the Project processing plant, making development of Teck Cominco that much more likely. The Project principals are actively touting the Project’s full capacity at three times the proposed (32,000 t.p.d.) amount.

In short, these mines are engaging in development activities, and are receiving investment interest and capital influxes that are described as allowing funds for project development, such that there are more than reasonably foreseeable future actions. The development activities of these mining projects amount to much more than simply “exploratory drilling events.” An environmental effect is “reasonably foreseeable” if it is “sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision. Mid States Coalition for Progress, 345 F.3d 520, 549. Because it is reasonably foreseeable that these three mines will be built, all of their likely effects must be included and discussed in the DEIS sections discussing cumulative effects analysis.

The DEIS has failed to include the Duluth Metals, Franconia Minerals, and Teck Cominco sulfide mining projects in the cumulative effects analysis for GHG emissions and climate change effects. These omissions must be corrected in the DEIS before an FEIS is released for public comment.

132 DEIS at 2-4.  
133 PolyMet Mining: Wall Street Analyst Forum Presentation Transcript -- Seeking Alpha - The Wall Street Analyst Forum. February 14, 2007 at 4 of 10 (“Back slides sets out for the initial production running at 32,000 tons a day. Remember the plant capacity is 100,000 tons a day. So you can do the math.”); see also Polymet Mining Corp. Management Discussion And Analysis. Form 51-102F1. For the year ended 31 January 2006, at 2 of 13; and see Polymet Mining Corp. Annual Report 2006, at 11. Chairman’s Letter.
12.4 NorthMet DEIS Must Address The Potential That An Underground Mine May Be Pursued After The Completion Of The Open Pit Mining Efforts

The NorthMet DEIS should recognize the potential that underground mining could be pursued after the mineral deposits accessible through an open pit mine are exhausted and analyze the impacts from an underground mining operation at the NorthMet mine site as reasonably foreseeable. Significant mineral resources exist below those which are proposed to be accessed by the open pit mine under consideration in the NorthMet DEIS. The Minnesota Regional Copper-Nickel Study ("Copper Nickel Study") specifically stated that "the copper-nickel mineralization in the resource zones is known to occur both near the surface and at great depths", recognizing that "the creation of both open pit and underground mines appear to be distinct possibilities in northeastern Minnesota."\(^{134}\)

As indicated in the map and table included, below, the Copper Nickel Study shows that the area in which Polymet is located ("Zone 5") is within a region identified by the Copper Nickel Study as an area in which the amount and grade of the ore available through underground mining operations is significantly higher than that which would be accessible through an open pit mine.\(^{135}\)

\(^{134}\) "The Minnesota Regional Copper-Nickel Study 1976-1979", Volume 1, Executive Summary, August 31, 1979, Minnesota Environmental Quality Board, at 17.

\(^{135}\) Id. at 7, 10.
As shown by these materials, and the attached map which includes an overlay of the map from the Copper Nickel Study on top of a map of the NorthMet mine site, the NorthMet mine site is clearly in the area identified by the Copper Nickel Study as having significant resources accessible only through an underground mine. Assuming that the NorthMet DEIS assertion is true that underground mining is not currently economically feasible, it is reasonable to assume that underground mining at the NorthMet mine site will become economically viable in light of historical trends of increasing metal prices and the cost saving which will be experienced after the initial investments needed for the infrastructure to process the ore for the open pit mine are in place. Accordingly, it is reasonably foreseeable that an underground mining operation at the

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See Exhibit 6 (Maas, G. 2008. “Mesabi Range Facilities and Projects Map” w. 1979 CuNi Data Added, MCEA. 1 p. (8.5”x11”).)
NorthMet mining site will be pursued and the cumulative impacts from this underground mining activity should be acknowledged and analyzed in the NorthMet DEIS.

13.0 MITIGATION AND MONITORING MEASURES

The discussion of mitigation measures included in the NorthMet DEIS fails to meet the standards required by federal regulations. The NorthMet DEIS simply identifies a number of mitigation measures which might help address some of the environmental impacts from the proposed action, but fails to indicate if any of the mitigation measures will be required or even which of the mitigation measures are preferred. NEPA requires more.

NEPA requires the NorthMet DEIS to discuss mitigation measures in sufficient detail to ensure that environmental consequences have been fairly evaluated. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 333 (1989). It is insufficient simply to list possibilities rather than include a reasoned discussion of the possibilities and the impact they would have. See Northwest Indian Cemetery Protective Ass'n. v. Peterson, 795 F.2d 688, 697 (9th Cir.1986), rev'd on other grounds, 485 U.S. 439, (1988).

“CEQ regulations require that the agency discuss possible mitigation measures in defining the scope of the EIS, 40 CFR § 1508.25(b) (1987), in discussing alternatives to the proposed action, § 1502.14(f), and consequences of that action, § 1502.16(h), and in explaining its ultimate decision, § 1505.2(c).” Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352 (1989). “[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the ‘action-forcing’ function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects.” Id.
The bulk of mitigation measures listed in the Polymet DEIS amount to little more than suggestions of potential measures that might have some mitigating value. MCEA has concerns regarding the lack of information and specificity of mitigation measures discussed throughout the NorthMet DEIS including, but not limited to:

- The failure of the NorthMet DEIS to provide information or specificity regarding the mitigation measure which could be used to ensure that the West Pit overflow will meet the Lake Superior mercury standards.

- The failure of the NorthMet DEIS to provide information or specificity about the effectiveness of nanofiltration units to remove sulfates and other solutes or discussion of alternatives that might reduce sulfate concentrations in discharges closer to background (natural) levels.

- The failure of the NorthMet DEIS to provide information or specificity regarding stormwater management facilities that may be needed to manage sediment associated with stormwater runoff. The NorthMet DEIS indicates that stormwater management facilities may be needed it does not propose any in the DEIS and simply recommends that such storm water management controls be designed and installed.

The concerns regarding the lack of specificity and information concerning mitigation measures discussed in the NorthMet DEIS listed above is a small sampling of mitigation measures inadequately addressed in the NorthMet DEIS. MCEA’s experts identify numerous other mitigation measures included in the NorthMet DEIS which fail to include the level of specificity or information needed to allow the public to adequately weigh the environmental risks and availability of mitigation measures to address these risks associated with the Project. The type of broad generalizations and vague references to mitigation measures found throughout the

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137 See Ex. 1 (Chambers Report).
138 DEIS at S-9.
139 DEIS at 4.1-167.
140 DEIS at 4.1-168.
141 See Exs. 1-4 (Expert Reports of Chambers, Engstrom, Glaser and Siegel).
NorthMet DEIS do not include the detail as to mitigation measures that would be undertaken, and their effectiveness as required by NEPA. Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1381 (9th Cir. 1998). Without specific information regarding the available mitigation measures to address these and other environmental concerns identified in the NorthMet DEIS, MCEA is unable to properly evaluate the severity of the adverse effects associated with the NorthMet DEIS or the long-term environmental impacts anticipated from the Project. The DNR and ACOE must clearly indicate whether any of the mitigation measures identified will be adopted and how effective the mitigation measures would be if adopted, or given a reasoned explanation as to why such an estimate is not possible. Id.

14.0 CONNECTED ACTIONS

The approach taken by the NorthMet DEIS in regard to connected actions does not comply with state or federal regulations. Federal and state laws require that the environmental impacts of connected actions be evaluated in a single EIS. 40 C.F.R. § 1508.25(a)(1); Thomas v. Peterson, 753 F.2d 754, 757 (9th Cir. 1985); Minn. Rule 4410.200, subp. 4 (“connected actions . . . must be considered in total. . . .”). A connected action includes any action that “cannot or will not proceed unless other actions are taken previously or simultaneously.” 40 C.F.R. § 1508.25(a)(ii). Under Minnesota Rules, connected actions include any projects where one induces the other or where one project is a “prerequisite for the other.” Minn. R. 4410.0200, subp 9b(A) and (B).

The NorthMet DEIS fails to analyze the power source for the NorthMet Project and the land exchange between the Forest Service and Polymet as connected actions in violation of legal requirements under NEPA and MEPA.
14.1 Land Exchange Is A Connected Action To NorthMet Project And Must Be Reviewed In Same Environmental Review Document

Both federal and state regulations require that connected actions must be discussed together in the same environmental impact statement (“EIS”). See 40 C.F.R. § 1508.25(1), Minn. Stat. § 116D.04; Minn. R. 4410.2000, subp. 4. Two projects are considered connected actions if they are related and one project would directly induce the other; one project is a prerequisite for the other and the prerequisite project is not justified by itself; or neither project is justified by itself. The courts have defined connected actions as actions that would not take place independently of one another. Native Ecosystems Council v. Dombeck, 304 F.3d 886, 894 (9th Cir. 2003).

The land exchange between the Forest Service and Polymet is clearly a connected action which must be evaluated in the Polymet DEIS under both NEPA and MEPA. The land exchange and the NorthMet project are related and the land exchange would not be necessary “but for” the NorthMet Project. The EPA specifically identified the failure of the DEIS to include impacts related to the potential land exchange as a ‘red flag’ issue and of considerable concern. The EPA noted that the land exchange is a connected action to the NorthMet project, indicating that discussion of the land exchange cannot be deferred to a separate EIS. (See EPA Comments, dated August 25, 2009).

Notwithstanding the federal and state regulations requiring the DEIS to include the land exchange as a connected action and the EPA’s identification of this issue as recently as August 25, 2009, the DNR and ACOE issued the DEIS for public comment without including this critical information.
The NorthMet DEIS indicates that it “identifies and analyzes the potential alternatives and impacts for the Project based on the successful completion of a land exchange and elimination of National Forest lands from the Project.” The NorthMet DEIS states that “the USFS and PolyMet have been having detailed discussions exploring the feasibility for a land exchange. The USFS has identified approximately 6,700 acres of National Forest land to exchange to PolyMet for a yet to be determined non-federal land” indicating that “[o]nce the current discussions have been completed and a feasible land exchange proposal has been identified, the USFS will be initiating an Environmental Impact Statement (EIS) evaluating the proposed land exchange.”

The DNR and ACOE must include the land exchange as a connected action in the NorthMet DEIS. The failure of the DEIS to include the land exchange as a connected action is a fundamental inadequacy of the DEIS.

### 14.2 NorthMet DEIS Must Include Analysis of Direct And Indirect Effects And Cumulative Impacts From The Land Exchange In NorthMet DEIS

The land exchange is a connected action that must be addressed in this DEIS, but even if it were not a connected action, the environmental indirect and cumulative effects from the land exchange must be evaluated here.

Indirect effects are those “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including

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142 DEIS at 1-2 through 1-3.
ecosystems.”[^143] A cumulative impact is “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”[^144] The land exchange is a “reasonably foreseeable future action.” Indeed, the DEIS admits that the project hinges on a successful land exchange.[^145] The environmental impacts of the land exchange will occur as an indirect (if not direct) effect of the NorthMet Project and must be disclosed and analyzed here.

The NorthMet DEIS did not include any analysis of the environmental impacts from a land exchange between the Forest Service and Polymet. The DNR and ACOE cannot defer analyzing the direct and indirect effects or of the cumulative impacts from a land exchange to a separate EIS as proposed. Inclusion of this analysis in the NorthMet DEIS is required for the DEIS to meet federal and state adequacy standards for an EIS.

A land exchange between the Forest Service and Polymet is a reasonably foreseeable future action which will unquestionably have impacts on the environment, including impacts on wildlife, vegetation, wetland destruction and mitigation, green house gas emissions, and multiple other environmental impacts. The failure to include an analysis of the cumulative impacts from the land exchange in the NorthMet DEIS prevents the public from understanding the full scope of environmental impacts associated with the NorthMet Project. Inclusion of this analysis in the NorthMet DEIS is required for the DEIS to meet federal and state adequacy standards for an EIS.

[^143]: 40 CFR § 1508.8.
[^144]: 40 CFR § 1508.7.
[^145]: DEIS at 1-2 through 1-3.
14.3 Power Generation Needed For NorthMet Project Is A Connected Action And Must Be Evaluated In The NorthMet DEIS

The NorthMet DEIS cannot avoid the analysis of the true environmental impacts of the Project by stating that it intends to purchase power from Minnesota Power and fail to analyze the environmental impacts associated with the production of this energy as a connected action in the same environmental review document. The NorthMet DEIS indicates that electrical service would be provided for the Project by a new Minnesota Power electrical substation located on Minnesota Power property southwest of the Mine Site near the Dunka Road.146

The NorthMet DEIS indicates that the Project will purchase 59.3 megawatts (MW) from one of Minnesota Power’s coal-fired power plants.147 Supplying 59.3 MW of electricity to the Project requires electricity generation and the generation of electricity is a separate, connected action that has environmental effects. As indicated earlier, alternative energy sources must be considered. In any case, it is not sufficient for the NorthMet DEIS simply to identify a “power purchase” from Minnesota Power. The purchase will require Minnesota Power to generate additional electricity. The generation of electricity, whether from coal, natural gas, hydro or wind is a “connected action” with environmental effects that must be disclosed, analyzed, and if possible mitigated. The generation of this energy is a necessary and connected action to the Project that will have major environmental consequences.

146 DEIS at 3-3.
147 DEIS at 4.6-31; (“For the NorthMet Project, indirect emissions would result from the electrical needs that would be met with offsite power supply. CO2 emissions from the power plants supplying the power are included for this project.”); Table 4.6-18; and see Indirect Emission Calculations (Attachment B to Appendix A of “Northmet Project Greenhouse Gas and Climate Change Evaluation Report,” Barr Engineering, June 2009), at p.1 and Table B-1.
15.0 PUBLIC PARTICIPATION IN ENVIRONMENTAL REVIEW PROCESS

15.1 Informational Meeting

The format of the informational meetings held by the DNR and the ACOE on December 10, 2009, in Blaine and on December 9, 2009, in Aurora did not meet the minimum requirements for public meetings required by federal and state regulations. The DNR and ACOE sponsored the meetings in Blaine and Aurora DNR “for the purpose of considering public comments on the Draft EIS”\(^{148}\). The DNR was required to hold an informational meeting on the NorthMet DEIS after the DEIS was completed and made available for public review and comment. Minn. R. 4410.2600, subp. 2. The ACOE was not required to hold an informational meeting under its rules or NEPA regulations. However, while NEPA did not require the agencies to hold an informational meeting on the NorthMet Project DEIS, once the ACOE decided to convene an informational meeting, it was obligated to conduct this meeting “in accordance with statutory requirements” applicable to the Army Corps of Engineers. 40 C.F.R. § 1506.6.

The informational meetings held in Blaine and Aurora did not meet the statutory requirements for meetings or hearings sponsored by the ACOE. Federal regulations governing hearings and meetings conducted by the ACOE include specific requirements for the conduct of ACOE hearings. Specifically, pursuant to 33 CFR § 327.8, members of the public must be permitted to submit oral or written statements concerning the subject matter of the hearing, to call witnesses who may present oral or written statements, and to present recommendations as to an appropriate decision. 33 CFR § 327.8. While the meetings in Blaine and Aurora were billed as an “informational meeting” rather than a “hearing”, the involvement of the ACOE and

\(^{148}\) See DNR Notice, dated October 29, 2009.
controlling regulations required that the meeting be conducted in a manner to ensure a fair and unbiased presentation of information or to ensure that competing points of view were allowed to be expressed in a fair and equitable manner. The fundamental concept of due process and responsibility of government agencies to the public requires nothing less.

As indicated in the attached declaration of Matthew Norton, the format of the informational meetings regarding the NorthMet DEIS failed to provide the public an opportunity to consider or discuss the environmental impacts of the Project in an open and unbiased manner. While the meeting was ostensibly structured to provide the public with an opportunity to obtain a fair and unbiased assessment of the risks and benefits of the Project, the decision by the DNR and ACOE to allow policy-makers and elected officials to speak and provide their endorsement of the Project while denying other members of the public to express their concerns or disagreement with the positions voiced by policy-makers and elected officials resulted in a one-sided presentation which was weighted in favor of the Project. Rather than an even-handed, unbiased and accurate portrayal of the project, members of the public were provided, from the politicians, with personal endorsements and at times inaccurate representations of the project. There was no equal time provided to speakers who might have expressed different points of view about the project. Conducting the event in such a fashion violated the obligations of both the DNR and ACOE to ensure that the environmental review process for the NorthMet Project met fundamental standards of due process and public participation to which agency sponsored meetings should be held.

149 See Ex. 5 (Norton Declaration).
15.2 Documentation Supporting The Conclusions Reached In NorthMet DEIS Must Be Made Available For Public Review

Closely related to NEPA’s mandate that agencies take a “hard look” at environmental impacts is NEPA’s prohibition against agency reliance upon conclusions or assumptions that are not supported by scientific or objective data. NEPA’s implementing regulations require agencies to:

[Insure the professional integrity, including scientific integrity of the discussions and analysis in environmental impact statements. Agencies shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement.]

40 CFR § 1502.24 (Methodology and Scientific Accuracy). “Unsubstantiated determinations or claims lacking in specificity can be fatal for an [environmental study] …. Such documents must not only reflect the agency’s thoughtful and probing reflection of the possible impacts associated with the proposed project, but also provide the reviewing court with the necessary factual specificity to conduct its review.” Committee to Preserve Boomer Lake Park v. Dept. of Transportation, 4 F.3d 1543, 1553 (10th Cir. 1993).

The CEQ regulations require that: “NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.” 40 CFR § 1500.1(b). To ensure information is available to citizens before decisions are made and before actions are taken, underlying environmental data from which the agency drew its conclusions must be provided in the DEIS. 40 CFR § 1502.24. Courts have held that NEPA requires that the public receive underlying environmental data from which an agency expert derived her opinion (citing for authority 40 CFR § 1502.24). Idaho Sporting Congress, 137 F.3d 1146, 1150 (9th Cir. 1998). See also Siskiyou Regional Education Project v.

Further, 40 CFR § 1502.1 mandates that NEPA documents be “supported by evidence that the agency has made the necessary environmental analysis.” Consequently, the DNR and ACOE have a duty to disclose the underlying scientific data and rationale supporting the conclusions and assumptions in the FEIS. Unsupported conclusions and assumptions in the NorthMet DEIS violate NEPA. Public availability to the underlying information on which DEIS conclusions are based is the key to fulfilling NEPA requirements. Massachusetts v. Watt, 716 F.2d 946, 951 (1st Cir. 1983) (“[U]nless a document has been publicly circulated and available for public comment, it does not satisfy NEPA’s EIS requirements.”); Dubois at 1287 (“Because of the importance of NEPA’s procedural and informational aspects, if the agency fails to properly circulate the required issues for review by interested parties, then the EIS is insufficient even if the agency’s actual decision was informed and well-reasoned.”).

Each of MCEA’s experts identifies specific concerns regarding the lack of underlying documentation supporting key conclusions reached in the DEIS. The failure of the NorthMet DEIS to include the information on which the DEIS conclusions were based is a direct violation of NEPA.150 The DNR and ACOE must provide the information identified by MCEA’s experts to the public and allow the public an opportunity to evaluate this information and comment on it prior to the release of a Final Environmental Impact Statement (“FEIS”).

150 See Exs. 1-4 (Expert Reports of Dr. Dave Chambers; Dr. Daniel Engstrom; Dr. Paul Glaser; and Dr. Donald Siegel). Please note that due to the technical nature of the concerns raised regarding the lack of supporting documentation in the DEIS, the concerns of MCEA’s experts are not replicated in these comments. MCEA incorporates the concerns identified by each of these experts herein and requests that supporting documentation addressing these concerns be provided prior to the issuance of the FEIS.
16.0 CONCLUSION

MCEA’s comments on the NorthMet DEIS focus on the agencies’ description and environmental review of the Project and not on the Project itself, except insofar as has been necessary to illustrate inconsistencies or other inadequacies in the DEIS. MCEA appreciates that the NorthMet DEIS discloses and evaluates a number of anticipated impacts from the proposed Project on the environment. However, as detailed above, there are a number of significant inadequacies in the DEIS that must be fixed in the FEIS. This concludes MCEA’s comments on the Draft EIS.