

## **8.0 MAJOR DIFFERENCES OF OPINION**

### ***8.1 SUMMARY***

This chapter discloses major differences of opinion Tribal Cooperating Agencies identified with the analysis presented in the SDEIS. This information is provided to ensure that EIS reviewers are aware that major differences of opinion (MDOs) exist between the Co-lead Agencies and the Bands, GLIFWC, and 1854 Treaty Authority regarding the effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action on the environment. The Co-lead Agency rationale for the analysis as presented in the SDEIS, including references to where relevant concepts are discussed in the document, is also provided.

The USEPA is also a Cooperating Agency. The USEPA did not identify MDOs during preparation of the SDEIS.

### ***8.2 INTRODUCTION***

In developing the NorthMet Mining Project and Land Exchange EIS, the Co-lead Agencies invited the Bois Forte, Grand Portage, and Fond du Lac to be Cooperating Agencies in preparation of the EIS. Other Tribal entities participating in the EIS process include the 1854 Treaty Authority and GLIFWC. In addition, THPOs and staff from the 1854 Ceded Territory Bands have been, and continue to be, involved in Section 106 consultation with the USACE and USFS regarding potential effects on historic properties in the NorthMet Project area as directed in 36 CFR 800.

The EIS process anticipates comment and input from the Tribal Cooperating Agencies in the development of the SDEIS. The Communications and Coordination Plan commits the Co-lead Agencies to actively seek input from the Bands on how potential effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action on natural and cultural resources would affect the Bands' traditional cultural practices, and identify and disclose where differences exist between the parties.

Consistent with the Communications and Coordination Plan commitment, the Co-lead Agencies engaged the Tribal Cooperating Agencies throughout the development of the SDEIS and took into consideration their comments on the DEIS and other concerns brought forth through their participation in a series of post-DEIS technical teams, along with other information-sharing and disclosure venues. These include:

- Impact Assessment Planning (IAP). The Co-lead Agencies convened a series of workgroups from September 2010 through July 2011 to identify the evaluations necessary to determine effects on the environment of the Agencies' Draft Alternative for the NorthMet Project Proposed Action. Impact areas assessed in the IAP process included air, wetlands, geotechnical stability, and water resources in four areas (surface water, groundwater, geochemistry, and impact criteria). Each workgroup was charged to update the analyses from the DEIS required for the analysis of the Agencies' Draft Alternative in terms of 1) impact analysis requirements, 2) modeling assumptions, and 3) work plan requirements. Each workgroup adopted a Final IAP Summary Memo to capture these requirements, but also

identified key issues, decision points, and areas of disagreement with the Tribal Cooperating Agencies where applicable. See IAP Final Summary Memos (MDNR et al. 2011).

- **Tribal Issue Review Meetings.** Meetings were held approximately every other month between the Co-lead Agencies and Tribal Cooperating Agencies to discuss the potential effects of the proposed NorthMet Project Proposed Action and Land Exchange Proposed Action on tribal interests. These sessions included the Co-lead Agencies' feedback on how these same comments and concerns have been taken into consideration in the development of the SDEIS. Participants typically included staff from the Co-lead Agencies, Tribal Cooperating Agencies, and the USEPA. Twelve meetings were held from June 2011 through March 2013, and included numerous opportunities for the Tribal Cooperating Agencies to engage the Co-lead Agencies on issues of concern and disagreement.
- **Monthly Cooperating Agency Meetings.** Meetings were held once a month to provide the opportunity for the Co-lead Agencies to brief the Tribal Cooperating Agencies on the status of concerns from the Tribal Issue Review Meetings or otherwise articulated by the Bands. These sessions were facilitated by the USACE using a general agenda, where participants typically included staff from the Co-lead Agencies, Tribal Cooperating Agencies, and USEPA. High-level outcomes typically addressed coordination and information needs or gaps identified by the Cooperating Agencies.

These were the primary venues where Tribal Cooperating Agencies were provided opportunities to express their points of view on the potential effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action on the environment, including points of disagreement with the Co-lead Agencies, prior to the release and review of the PSDEIS. Other opportunities took the form of ongoing coordination for information development and availability, and ad hoc technical meetings.

The Communications and Coordination Plan also included provisions for the Co-lead Agencies to identify and disclose in the SDEIS differences of opinion with the Cooperating Agencies. The Communications and Coordination Plan notes for the MDNR, in its capacity as RGU, that *Minnesota Rules* part 4410.2300, item H, states: "The EIS shall identify and briefly discuss any major differences of opinion concerning significant impacts of the proposed project on the environment." For the USACE and USFS, in their capacity as federal Co-lead Agencies, 40 CFR §§ 1502.9 and 1503.4 note they are obligated to work with the Cooperating Agencies to obtain their comments and "shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action." The Co-lead Agencies believe these information disclosure requirements are being satisfied by providing the Tribal Cooperating Agencies MDOs in this chapter of the SDEIS.

### ***8.3 MAJOR DIFFERENCES OF OPINION***

The Co-lead Agencies distributed a PSDEIS and requested review by the Cooperating Agencies (both Tribal and USEPA) and the MPCA. Reviewers assessed the document for accuracy and identified gaps in technical information or general logic that could substantially affect the reader's understanding of the subject material. Comments were generated from all entities involved. The Co-lead Agencies reviewed all comments and incorporated suggested edits or provided additional clarification or analysis in the PSDEIS as required. All substantive

comments were reviewed and discussed by work groups comprised of technical experts from the Co-lead Agencies and MPCA.

The Co-leads worked diligently with the Cooperating Agencies over the course of the PSDEIS's development to consider and resolve any concerns prior to its release for Cooperating Agencies' review and comment. While the USEPA provided comments and suggested edits on the PSDEIS, none of these were identified as representing an MDO. For comments from the Tribal Cooperating Agencies on the PSDEIS, there were cases where the Co-lead Agencies disagreed with the comments and determined that the PSDEIS analysis was valid and best disclosed potential environmental effects and permitting requirements as directed by NEPA and MEPA. Those comments were identified as potentially representing MDOs. Three workshops were held to identify the specific issue areas and reach consensus on the language summarizing tribal views. Ultimately, 18 issue areas were identified in the workshops as being "unresolved" and determined to represent MDOs.

Supporting documentation and independent analyses for the 18 issue areas were also provided by the Tribal Cooperating Agencies (see Section 8.4). Although this information was considered, the Co-lead Agencies ultimately determined that the analyses and supporting documentation presented in the SDEIS were valid and best disclose potential environmental effects as directed by NEPA and MEPA.

Table 8-1 summarizes the information presented by the Tribal Cooperating Agencies by providing:

- the 18 issue areas;
- the Tribal Position Summaries;
- the Tribal agency(ies) holding the MDO;
- the Co-lead Agencies' responses on the issues; and
- the location in the SDEIS of reference material supporting the Co-lead Agencies' opinion on the issue.

**Table 8-1 Major Differences of Opinion**

<b>MDO #</b>	<b>Specific Major Difference of Opinion Area</b>	<b>Tribal Position Summary</b>	<b>Co-lead Agencies Response</b>
1	Impacts to flow in Embarrass and Partridge Rivers	Grand Portage, Fond du Lac, and GLIFWC believe that projected reductions in average stream flows in the Partridge and Embarrass Rivers, and subsequent impacts to aquatic habitat in these same systems, result in measurable impacts. They believe that the interaction of the project’s impacts with natural variability in precipitation would be more adverse than reported in the SDEIS. This is because effects of climatic variability are additive to the project-related change, which would be especially true for drier periods. These agencies believe there is very little understanding of the hydrology of the Upper Partridge River, and the XP-SWMM model used to extrapolate flow data is flawed and does not produce usable results. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.	<p>The Co-lead Agencies believe the understanding of the hydrology of the Partridge and Embarrass rivers is sufficient to assess effects and that the SDEIS adequately predicts potential changes to flow in the Embarrass and Partridge rivers.</p> <p>The NorthMet Project Proposed Action is not predicted to result in any substantial changes to average stream flow when compared to existing conditions. Underlying impact assessment methodologies are presented in SDEIS Section 5.2.2.2.2 and provide readers with specific information and cited reference documents that support the basis for the Co-lead Agencies’ position.</p> <p>Surface water flow monitoring is proposed for both rivers and is presented in SDEIS Section 5.2.2.3.5 for permitting agencies to consider. If actual NorthMet Project Proposed Action effects were found to be higher than predictions, then steps could be taken to reduce those effects.</p>
2	Predicted decrease in mercury loading	Fond du Lac, Grand Portage, and GLIFWC do not believe the proposed project will result in a decrease in mercury loading to the Embarrass and Partridge River aquatic systems. For the Embarrass River, they do not believe that: 1) the tailings basin will function as a mercury sink; and 2) mercury methylation would decrease due to projected reductions in sulfate contributions. For the flows for the Partridge River, Embarrass River, or their tributaries, they disagree that the project would not significantly impact flow and water level fluctuations, thus leading to increased mercury methylation and bioaccumulation, which taken together may be sufficient to impact habitat leading to alterations of species composition, food web structure, and ultimately mercury bioaccumulation. Potential mercury contributions from	<p>The Co-lead Agencies believe that the SDEIS thoroughly considers potential sources of mercury, including those identified by the Tribal Cooperating Agencies.</p> <p>The SDEIS discloses in Section 5.2.2.3.4 that the Embarrass River is predicted to result in a net increase in mercury-loadings of up to 0.6 grams per year, from 22.3 grams to 22.9 grams. For the Partridge River, the SDEIS indicates mercury-loading is predicted to</p>

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		<p>peat stored at the Overburden Laydown and Storage Area have also not been addressed. Mercury-related concerns are present for created wetlands at the East Pit and mercury concentrations in water discharged from the West Pit. Air-related mercury emissions do not account for sources from energy generation of vehicle use at the site. For the Lake Superior watershed, any additional mercury releases to the environment are exacerbating already existing impairments including fish advisories set for recreational fishing. Increased fish mercury levels will also have direct impacts on both the cultural and recreational resources of the region. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>decrease 1.2 grams per year, from 24.2 grams to 23.0 grams. This represents a projected 0.6 grams per year reduction across both river systems.</p> <p>Mercury-related analyses include water mass-balances, human health air risk assessments, potential bioaccumulation, and wetland/riparian sources of methylmercury generation. Impact assessment methodologies are presented in SDEIS Section 5.2.2.1.2 and provide readers with specific information and cited reference documents that support the basis for the Co-lead Agencies' position.</p> <p>The Co-lead Agencies understand the NorthMet Project Proposed Action includes features to control air emissions such that statewide TMDL reduction goals would not be impeded. The wastewater treatment facilities are also expected to provide mercury removal from the process water waste streams. The Co-lead Agencies respectfully disagree with the Tribal Cooperating Agencies and believe the Tailings Basin would act as a mercury sink, at least similar to other media like soils, and believe it cannot be predicted whether methylmercury production may or may not change under the NorthMet Project Proposed Action.</p> <p>In addition, surface water quality monitoring and adaptive management methods are presented in SDEIS Section 5.2.2.3.5 for permitting agencies to consider. If actual NorthMet Project Proposed Action effects were found to be higher than predictions, then steps could be taken to reduce those effects.</p>

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3	Wild rice standard regulatory applicability determinations and areas of production	<p>Grand Portage, Fond du Lac, GLIFWC, and The 1854 Treaty Authority disagree with the MPCA’s draft staff recommendations about the applicability determination of the wild rice 10 mg/L sulfate surface water standard to the NorthMet Project. These agencies do not agree with a seasonal application of the standard, or the reaches of waters determined as used for the production of wild rice, and compliance points for the sulfate standard, nor do they agree with basing a determination of a wild rice production water on the density of wild rice found growing there. The 1854 Treaty Authority states that it is arbitrary to define how much rice presence is required, especially given the lack of long-term monitoring data on a given water. Embarrass Lake is considered a water used for the production of wild rice under current MPCA draft staff recommendations; water quality is not meeting the wild rice water quality standard there and wild rice is also found further upstream in the Embarrass River because it is an existing use defined by the Clean Water Act. Grand Portage states that the wild rice sulfate standard for waters used in the production of wild rice applies in the Embarrass River. The 1854 Treaty Authority notes that research and evaluation of the standard are ongoing, and that application of the standard may change. All believe the State’s application of the wild rice standard is not in compliance with the Clean Water Act.</p> <p>This difference of opinion is directed at an element of the State’s water quality regulatory program, but is offered in the SDEIS because the effects analysis presented in the SDEIS is based on the regulatory program. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>The Co-lead Agencies acknowledge that both the proper application of the existing standard and the questions of whether and how that standard should be applied are the subjects of continuing general controversy. The Co-lead Agencies believe the MPCA’s project-specific guidance on the applicability of the wild rice standard is a relevant and appropriate water quality evaluation criterion to use in the SDEIS.</p> <p>The Co-lead Agencies acknowledge that the MPCA’s project-specific guidance may change as their NPDES/SDS permitting process progresses. If their guidance were to change in the future while the EIS is underway, the new guidance would be considered as appropriate for use in the FEIS and permitting.</p> <p>The wild rice standard is based in rule where applicability is determined by the MPCA. Any future regulatory determinations and basis for applicability of the wild rice standard is outside of the scope of this SDEIS.</p> <p>The Co-lead Agencies also note there will be opportunities for Grand Portage, Fond du Lac, GLIFWC, and The 1854 Treaty Authority to engage the MPCA in these regulatory determinations outside of this project-specific EIS, and these opportunities would be the more appropriate venue to raise these concerns.</p>
4	Impaired waters list regulatory designation should be made	<p>Grand Portage and Fond du Lac believe that sulfate concentrations should be a criteria used for designation of an impaired wild rice water. They note that no wild rice waters in the state have been designated impaired by the MPCA. Grand Portage states that all segments of the Embarrass River that are</p>	<p>The Co-lead Agencies believe it is appropriate to rely on the MPCA’s Clean Water Act Section 303(d) final 2012 TMDL List of impaired waters in the SDEIS. The Co-lead</p>

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	for Embarrass River watershed	<p>identified as wild rice waters by MPCA are impaired due to water quality exceedances for sulfate. Grand Portage further notes waters where wild rice historically occurred, all exceed the 10 mg/L sulfate standard and therefore should be on the impaired waters list because it is known that wild rice previously grew in these waters. These agencies contend the Embarrass River is already impaired so any sulfate additions constitute cumulative effects.</p> <p>This difference of opinion is directed at the MPCA’s impaired waters regulatory program, but is offered in the SDEIS because the effects analysis impact criteria presented in the SDEIS are based on information developed with respect to this regulatory program. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>Agencies recognize that there are segments of the Embarrass River on the 2012 List, but the listing is for an impairment not specific to sulfate and/or wild rice.</p> <p>The Co-lead Agencies give regulatory deference to the MPCA and USEPA’s process for determining the basis for, and finalizing, the impairments assigned to a given reach of water on the 303(d) list. The development of the 303(d) list is a separate biennial process outside the scope of the EIS.</p> <p>Furthermore, the Co-lead Agencies will continue to rely on MPCA’s project-specific guidance on the applicability of the wild rice standard as a relevant and appropriate water quality evaluation criterion to use in the SDEIS.</p>
5	Underground Mining analysis	<p>GLIFWC believes that the Underground Mine Alternative has been prematurely eliminated from consideration in the NorthMet Project SDEIS and it would provide significant environmental benefits when compared to the proposed project. An underground mine would largely eliminate impacts to wetlands, and would substantially limit water quantity and quality impacts for surface- and ground water resources. GLIFWC concurs that underground mining is technically feasible and available at the site, leaving only the lack of economic feasibility as the rationale used by the Co-lead Agencies to eliminate the alternative. On this GLIFWC’s opinion is that the Co-lead Agencies did not fully assess information on economic feasibility provided by the proposer. Deficiencies noted by GLIFWC are related to the: error term for economic projections; rates on return on investment; costs of the land exchange; environmental goods and services provided by natural systems; economic impact and inconsistency with state mineland reclamation program goals regarding perpetual maintenance and water treatment at the site. Appendix C provides additional information from this agency on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>The Co-lead Agencies believe that adequate consideration was given to the Underground Mining Alternative prior to eliminating it from further consideration for the SDEIS. This option was screened against specific alternatives-consideration criteria in terms of purpose and need, technical and economic feasibility, availability, and environmental and socioeconomic benefit.</p> <p>Both the SDEIS Section 3.2.3.4.1 and the Co-lead Agency position paper (Appendix B) disclose that an underground mine would result in a smaller footprint, thus offering certain environmental benefits such as reduced effects on wetlands, vegetation, and wildlife habitat.</p> <p>However, both the SDEIS and the Co-lead</p>

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			<p>Agency position paper also disclose that the tonnage/volume and grade (amount of metals) of rock would not generate enough revenue to pay for all costs associated with underground mining. Therefore, underground mining would not be economically feasible. The Co-lead Agencies also considered that a smaller mining operation would employ fewer workers for a shorter amount of time, resulting in fewer socioeconomic benefits than the NorthMet Project Proposed Action. Also, preliminary economic screening by PolyMet determined that sale of metal precipitates produced from an underground mine would not meet the NorthMet Project Proposed Action Purpose and Need, which is integral to whether an alternative should be evaluated in the SDEIS. Therefore, it was found to not be a reasonable alternative and was eliminated from further consideration.</p>
6	<p>West Pit backfill option analysis</p>	<p>GLIFWC believes that the West Pit Backfill option has been prematurely eliminated from consideration in the NorthMet Project SDEIS. They believe the potential environmental benefits to long term water quality have not been fully assessed and mineral encumbrance issues can be avoided. This alternative meets the purpose and need, is available, and is technically and economically feasible. By limiting the consideration of environmental benefits to only a screening-level analysis, the full effect of the alternative on the environment is not known, especially for water quality and potential need for perpetual treatment (contrary to state mineland reclamation program goals). The issue of mineral encumbrance is raised as proposer concern, but is avoided by employing standard underground mining techniques from other locations. GLIFWC's opinion is that economic considerations of a future mine expansion are the only concrete reasons for not conducting a full analysis, and every available option that might improve long term impacts should be explored regardless of mineral lease commitments. Appendix C provides additional information from this agency on this major difference of opinion revealed in</p>	<p>The Co-lead Agencies believe that the West Pit Backfill option was given adequate consideration prior to eliminating it from further examination for the SDEIS.</p> <p>SDEIS Section 3.2.3.4.2 details the factors considered by the Co-lead Agencies regarding this potential alternative, including: backfill sequencing; volume of material; water quality and WWTP treatment; visual aesthetics; operational air, noise, and dust impacts; footprint impacts for wetlands; mineral encumbrance lease provisions; and costs.</p> <p>These factors were weighed against specific alternatives-consideration criteria in terms of purpose and need, technical and economic</p>



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		<p>the development of the SDEIS.</p>	<p>feasibility, availability, and environmental and socioeconomic benefit.</p> <p>The screening analysis revealed the opportunity to reclaim wetlands and vegetation at the Category 1 Stockpile footprint would be the only measurable environmental benefit offered by backfilling the Category 1 Stockpile into the West Pit. However, because the stockpile would have to be constructed anyway even under a backfilled option, these impacts would still occur with mitigation required under wetlands-related permitting or site reclamation requirements under the Permit to Mine.</p> <p>On balance, it is the Co-lead Agencies' opinion that the West Pit Backfill option would not provide substantial environmental benefit to the project as proposed. As such, the option to backfill the West Pit was eliminated from further consideration in the SDEIS.</p>
7	<p>Partridge River baseline base flow and XP-SWMM model calibration</p>	<p>Grand Portage, Fond du Lac, and GLIFWC believe that basic site surface water flow hydrology at the Mine Site is inadequately characterized. The XP-SWMM model predictions may have underestimated baseflow conditions in the Partridge River by a factor of five (5). If true, this mis-characterization might affect water quality compliance projections in that although more baseflow might mean more dilution of contaminants, it could also mean transport of greater quantities of pollutants or drawdown for the Partridge River. They also contend that XP-SWMM's projections, which are based on data from 17 miles away collected from 1978 to 1987, do not align with the rating curve from new MDNR winter monitoring data, or the results of GLIFWC's own projections taken from two years of new data from the Dunka Road gage. Because XP-SWMM's low estimates of baseflow are used in the calibration of the MODFLOW model, it will influence many aspects of the baseline site characterization and impact prediction. These include pit inflow, dewatering impacts to the Partridge River and wetlands, water treatment needs,</p>	<p>The Co-lead Agencies believe that the SDEIS adequately predicts Partridge River baseline baseflow and that the XP-SWMM model calibration was appropriate.</p> <p>Baseflow estimation methodologies, including limitations, and data sources are presented in SDEIS section 4.2.2.2.2 and provide readers with specific information and cited reference documents that support the basis for the Co-lead Agencies' position. Section 5.2.2.2.2 identifies the methods to assess existing conditions in the Partridge River, while Table 5.2.2-4 provides the results of the XP-SWMM modeling for various reaches of the river.</p>

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		<p>groundwater flow rates, contaminant transport times and concentrations, and contaminant dilution in the Partridge River watershed. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>Regarding the use of the 1978 to 1987 flow data, the Co-lead Agencies believe it is reasonable to rely on this information because there have not been any relevant changes in the watershed since that time. In addition, the SDEIS acknowledges the issue by noting in Section 4.2.2.2 the implications of using a lower modeled baseflow are that any changes of flow volume due to withdrawals, discharges, or augmentation would result in greater effects during the impact modeling than if higher baseflow values were used, such as showing higher concentrations of solutes in the rivers and creeks.</p> <p>Surface water flow monitoring is proposed for the Partridge River and is presented in SDEIS Section 5.2.2.3.5 for permitting agencies to consider. If actual NorthMet Project Proposed Action effects were found to be higher than predictions, then steps could be taken to reduce those effects.</p>
8	<p>Analog method to assess indirect impacts from mine dewatering</p>	<p>Grand Portage, Fond du Lac, GLIFWC, and The 1854 Treaty Authority believe that the Co-lead Agencies' proposed analog method of assessing potential indirect impacts from mine site pit dewatering is not rigorous, and as such should not be the sole means of indirect impact assessment for the SDEIS. Resource assessment areas of concern include wetlands, groundwater, and surface waters. All these agencies consider the impact zones and distances to be somewhat arbitrary, and also challenge the automatic exclusion of ombrotrophic wetlands from potential drawdown effects. Accounting for these factors GLIFWC conducted an independent assessment using the same methods as the Co-lead Agencies, along with additional analog data from other mining-impacted sites, which found an estimated total of 5719.75 acres of wetlands would be potentially susceptible to severe indirect impacts from mine pit drawdown. These agencies are of the opinion that the USACE should require up front mitigation for all severely impacted wetlands, but at a minimum up front mitigation should be required for wetlands occurring in</p>	<p>The Co-lead Agencies believe that the SDEIS adequately uses the analog method to assess potential indirect effects from mine dewatering. The complex mixes of bedrock, glacial till, and wetland soils at the Mine Site impede the ability to reasonably model and accurately assess the potential effect of pit dewatering on wetlands.</p> <p>In light of this modeling limitation, wetlands were divided into zones based on distance from the open pit. The closer a wetland was to the pit during dewatering, the greater the water table drawdown would be and the greater potential there would be for hydrologic</p>

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		<p>zone 1. They also contend that additional up front mitigation should be considered for wetlands that are classified in the moderate to severe category, with robust monitoring being required for wetlands in the moderate category. These agencies also note that the upper Partridge River is located in Zone 2; GLIFWC’s independent analysis estimated drawdowns of 3 to 5 feet under the river, which would severely reduce baseflow in the channel, indirectly impact riparian wetlands downstream, and affect other surface water features. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>effects on overlying wetlands. These impact assessment methodologies are presented in SDEIS Sections 5.2.2.3.2 and 5.2.3.1.2.</p> <p>The Co-lead Agencies respectfully believe reliance on potential impact zones is appropriate but recognize uncertainty remains. In the event that the required wetland monitoring identifies additional indirect effects, permit conditions would likely include a plan for adaptive management practices to be implemented, such as hydrologic controls or additional off-site compensatory mitigation, which may be identified through annual reporting.</p>
9	<p>Mine Site groundwater impact travel times</p>	<p>Grand Portage and GLIFWC believe that assumed groundwater pollutant travel times at the mine site are underestimated. They contend that relevant literature and data suggest otherwise, and this has not been captured in the modeling of bedrock aquifer transport of pollutants from the mine pit to surface water features. Grand Portage further disagrees with the Co-lead Agencies’ assumption that the Duluth Complex would remain highly competent with extremely low hydraulic conductivities post-blasting. If true, resulting groundwater travel times through bedrock would be shorter than predicted in the SDEIS. They recommend conducting a greater characterization of the entire Partridge River watershed and mine site. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>The Co-lead Agencies believe that the SDEIS adequately predicts groundwater impact travel times at the Mine Site as a function of bedrock hydraulic conductivity. The hydrogeology of the mine site bedrock units has been evaluated as detailed in SDEIS Section 4.2.2.2.1, including the potential that fractures, including faults and fracture zones, may exist that could permit transmission of groundwater through the bedrock over distances of thousands of feet.</p> <p>SDEIS Section 5.2.2.2.1 considers how fractures may affect hydraulic conductivities at the Mine Site, and although the presence of fractures cannot be completely ruled out, site-specific data such as boring logs indicate the bedrock appears competent. Deep fractures are rarely encountered near the surface, and hydrogeologic investigations have indicated that the bulk of hydraulic conductivity of bedrock at this Mine Site is very low.</p>

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			<p>Blasting-related effects within the pit wall have also been considered. They are expected to be limited in terms of lateral extent and do not have much effect on solute transport in bedrock.</p> <p>In addition, bedrock groundwater monitoring to evaluate bedrock water quality trends is proposed at the Mine Site as presented in SDEIS Section 5.2.2.3.5 for permitting agencies to consider. If actual NorthMet Project Proposed Action effects were found to be higher than predictions, then steps could be taken to reduce those effects.</p>
10	No Action Alternative analysis	<p>Fond du Lac, Grand Portage and GLIFWC believe CEQ guidance require that water quality modeling of a No Action alternative should include activities that will occur under the existing Cliffs Consent Decree. The consent decree requires mitigation for water quality exceedances from Area Pit 5, the LTVSMC tailings basin, and the Dunka Pit, all of which under the No Action alternative would cause compliance with all water quality standards with no additional reductions in flows. Further, they contend the current modeling of the “continuation of existing conditions,” which omits the dilution effect of precipitation on the water quality of the basin, is not appropriate. Claims that the basin’s water quality has stabilized and that current conditions will not change over time is based on pond water sampling for only 4 years (2001-2004). If precipitation since 2004 has not influenced water quality by further diluting water chemistry in the pond, then more recent data on basin pool water chemistry is needed to support the assumption. These agencies are of the opinion while the CEQ makes it clear that a blind “continuation of existing conditions” model is inappropriate as a No Action alternative, a “continuation of existing conditions” model that ignores simple environmental processes such as precipitation is even less appropriate. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>The Co-lead Agencies believe that the SDEIS adequately analyzes effects on water resources under the No Action Alternative as required by NEPA/MEPA. Future remedial actions that would be required at the LTVSMC Tailings Basin under the consent decree and other permits are not established so it is not possible to model those conditions.</p> <p>The No Action Alternative is described in SDEIS Section 5.2.2.4 and acknowledges it is not static, but at this time the exact nature, timing, and effectiveness of measures under the consent decree are unknown, and thus are not quantifiable for the SDEIS.</p> <p>The Co-lead Agencies have considered the water quality implications of the No Action Alternative and believe it is reasonable to expect that water quality within the Embarrass River could improve over time, absent other unforeseen activities that could affect water quality.</p>

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			<p>The Co-lead Agencies are not relying on the continuation of existing conditions modeling scenario in consideration of the No Action Alternative. This model run represents conditions in the absence of the NorthMet Project Proposed Action and allows for a direct comparison of the predicted water quality model results with the same run with the proposed project.</p> <p>The Continuation of Existing Conditions Scenario facilitates the assessment of the extent to which the NorthMet Project Proposed Action would result in changes in water quality as captured in the model. The Co-lead Agencies believe this comparison is valuable in considering the efficacy of measures available to mitigate potential NorthMet Project Proposed Action-related adverse water quality effects for both the mine and plant sites. These mitigative measures are already contained in the design of the NorthMet Project Proposed Action, or are available as adaptive or contingent NorthMet Project Proposed Action features as detailed in SDEIS Section 5.2.2.2.5.</p>
11	Cumulative Effects to groundwater and surface water quality and quantity	Grand Portage, Fond du Lac, GLIFWC, and The 1854 Treaty Authority disagree with the Final SDD and SDEIS conclusion that no cumulative effects to groundwater resources are expected. They note bedrock and surficial ground water pollution is already documented at the old LTVSMC site (i.e., plant site; area pits 5, 6, and 9S) and the Dunka Pit. Cumulative effects at these locations should be assessed with the proposed project along with potential groundwater pollution from the Peter Mitchell Pit, Laskin Energy, Arcelor-Mittal, United Taconite, and US Steel Minntac. They suggest a future action that should be considered in a cumulative effects analysis is any potential future backfill of Virginia Formation waste rock for in-pit disposal at the Cliffs Peter Mitchell Pit. And they contend that potential dewatering-related interaction effects	The Co-lead Agencies believe that the SDEIS appropriately considered the potential for cumulative groundwater effects and accurately predicts cumulative effects to surface water quality and quantity. Cumulative effects impact assessment methodologies for both groundwater and surface water resources are presented in SDEIS Section 6.2.3.3 and provide readers with specific information and cited reference documents that support the

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		<p>between the proposed NorthMet Project and the Peter Mitchell Pit should be evaluated for cumulative effects. Appendix C provides additional information on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>basis for our position.</p> <p>The Co-lead Agencies believe the potential for cumulative effects on groundwater resources from the NorthMet Project Proposed Action is not supported. The SDEIS reports the NorthMet Project Proposed Action would affect groundwater levels, but this effect would be limited geographically and temporally, the latter being that groundwater levels would begin to be restored once pit dewatering ceases, and is subject to interactions causing cumulative effects.</p> <p>The Co-lead Agencies do believe, however, that assessment of cumulative effects on surface water quality does require consideration of potential groundwater solute contributions. SDEIS Section 6.3.3.3 provides a complete examination of this concern, including existing and potential future actions. The actions considered are: Arcelor-Mittal; Northshore Mine; Area 5 NW Pit; four POTWs; Cliffs Erie LTVSMC site; Mesabi Nugget; Mesabi Mining; Mesaba Energy – East Range Site; and Minnesota Power Laskin Energy Center.</p>
12	CEAA for Partridge and Embarrass Rivers	<p>Fond du Lac, Grand Portage, GLIFWC, and The 1854 Treaty Authority believe that limiting the cumulative effects analysis area (CEAA) for water resources to the Partridge and Embarrass River watersheds is too small. Rather, they contend the analysis should be expanded to include the St. Louis River. Impacts associated with United Taconite’s proposal for 1,200 acres of wetland destruction to build a new tailings basin should be considered. More broadly, they contend the project would add to the load of pollutants that are already causing an excursion from the water quality standards in the St. Louis River and would reduce tributary flows to the river. If true, then project-related impacts that may occur due to the project could be underestimated (due to</p>	<p>The Co-lead Agencies believe that the SDEIS uses an appropriate cumulative effects assessment area, or CEAA. The Co-lead Agencies have appropriately defined the spatial extent for the water resources CEAA to be at the scale of contributing watersheds. This is reasonable geographic area because the Plant Site is within the Embarrass River watershed and the Mine Site is within the Partridge River watershed as detailed in</p>

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		<p>modeling concerns), and would not stop before reaching the St. Louis River. This would mean that any added impact from the project to the St. Louis River would in turn impact Lake Superior, so this should be the scale to analyze cumulative effects. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>SDEIS Section 6.2.3.3.1</p> <p>The Co-lead Agencies have also considered the appropriateness of defining the CEAA for surface water quality to include the St. Louis River. Because the NorthMet Project Proposed Action would result in only minor changes in surface water hydrology and quality of the Embarrass and Partridge rivers, cumulative effects to the St. Louis River cannot be definitively assigned so it is not included in the CEAA.</p>
13	Effects on groundwater and surface water hydrology	<p>Fond du Lac, Grand Portage, and GLIFWC disagree with the conclusion that the Proposed Project is not predicted to result in any significant effects on groundwater or surface water hydrology. XP-SWMM relies on antiquated data from far downstream, which means the model's projection of hydrologic effects cannot be supported. They believe GoldSim cannot reliably predict whether the 28 solutes modeled at both the plant and mine sites would meet the Minnesota water quality standards. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>Similar and related to MDOs #1 and #7 above, the Co-lead Agencies believe that the SDEIS adequately predicts effects on groundwater and surface water hydrology. Overall water impact assessment methodologies are presented in SDEIS Section 5.2.2.2 and provide readers with specific information and cited reference documents that support the basis for the Co-leads Agencies' position.</p> <p>The Co-lead Agencies approved GoldSim to be programmed with a suite of complex algorithms to estimate the release of 28 solutes or contaminants from the mine facilities and their transport to groundwater and surface water evaluation locations. A probabilistic method was also approved to estimate the probability of a given water quality outcome occurring as a means to account for uncertainties. This is unlike deterministic modeling where all inputs are known or estimated, and when modeled, always produce a single result without accounting for uncertainty. Lack of accounting for uncertainty was identified as a</p>

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			<p>concern regarding the original DEIS’s analyses.</p> <p>The Co-lead Agencies believe focusing on the P90 threshold in assessing the NorthMet Project Proposed Action’s potential to meet applicable water quality standards is logical because it generally equates to a reasonable worst-case scenario and has been adopted for other mining NEPA documents where probabilistic modeling was used.</p> <p>Regardless, the Co-lead Agencies’ reliance on the P90 criterion does not supersede how water quality-based effluent limits (WQBELs) would be developed for NPDES/SDS permitting. Appropriate WQBELs would be derived based on water quality standards and implemented in the permit.</p> <p>In addition, water monitoring and adaptive management methods are presented in SDEIS section 5.2.2.3.5 for permitting agencies to consider. If actual NorthMet Project Proposed Action effects were found to be higher than predictions, then steps could be taken to reduce those effects.</p>
14	GoldSim not able to replicate Tailings Basin water/Partridge River Water Quality under the No Action Alternative	GLIFWC believes that the GoldSim model does not accurately predict existing water quality conditions, such as the existing exceedance of the aluminum standard in the Embarrass River, or existing conditions in the Partridge River. This agency contends that if a model is unable to accurately predict current conditions, then it is even less likely to accurately predict future project conditions. GLIFWC notes that for many parameters at several water bodies, the No-Action P50 model of annual average value is substantially different than the observed average under existing conditions. The GoldSim model(s) need to be better calibrated to existing conditions. Without new calibrations, the GoldSim model’s projections are not adequate to ensure protection of water resources. Appendix C provides additional information from this agency	The Co-lead Agencies believe that the GoldSim model adequately replicates NorthMet Project Proposed Action water quality for Tailings Basin water and the Partridge River under the Continuation of Existing Conditions modeling scenario for the SDEIS. The same hydrology and water quality existing conditions datasets that were used for modeling the Proposed Action were used for the Continuation of Existing Conditions modeling scenario. Also, this scenario never



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		<p>on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>introduces any NorthMet mine features or activities and conducts the same simulations for the same durations.</p> <p>Models calibrated for the SDEIS to address differences between observed and simulated values include Mine Site MODFLOW and XP-SWMM models, Mine Site Natural Runoff, Plant Site MODFLOW, Plant Site Natural Runoff, and existing LTVSMC Tailings Basin loading. The existing tailings basin calibration included aluminum, as well as a number of other solutes. The Co-lead Agencies evaluated the various model calibrations underlying GoldSim and believe the differences between the observed and simulated values for each of the calibration targets are minimized within accepted modeling norms.</p> <p>The GoldSim model set up and calibration information is presented in SDEIS section 5.2.2.2.3. Model predictions are also reliable and are presented in the “GoldSim Model Operations and Output” and “Application of Evaluation Criteria to Probabilistic Modeling Results” subsections in SDEIS Section 5.2.2.2.3.</p>
15	Mineral fibers	<p>Fond du Lac, Grand Portage, and The 1854 Treaty Authority believe the risks associated with exposure to mineral fibers are greater than portrayed in the SDEIS. Fond du Lac disagrees that 9% amphibole fibers identified by PolyMet testing can be considered a “small” percentage of the fibers identified, while Grand Portage notes chrysotile fibers that would be expected to be found in the NorthMet deposit are not considered. Grand Portage and Fond du Lac indicate that information cited from studies in this section is outdated and that the section should be updated to rely on the most recent reports (i.e.; U of M study released in April 2013). The Bands contend that one year of monitoring as</p>	<p>The Co-lead Agencies believe that the SDEIS adequately describes the risks associated with mineral fibers, including chrysotile (or serpentine) minerals, and potential ingestion risks. Findings from the University of Minnesota study updates to the Minnesota Legislature in April 2013 are considered in the mineral fibers portion of the document. The SDEIS also includes monitoring and</p>

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		<p>currently proposed is not adequate to account for the variability and unpredictable mineralogy in the rock to be mined, and that monitoring for mineral fibers should be conducted for the duration of the mining operation. Fond du Lac identifies that risks associated with ingestion should be considered in addition to inhalation; risks from ingestion are not discussed in the air quality section or the human health risk section of the document. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>mitigation measures described in Section 5.2.7.5.</p>
16	Rail car spillage and dust	<p>GLIFWC disagrees that the amount of ore that could escape from rail cars would be small because the rail cars proposed for use are not sealed. GLIFWC states that, given the design and current condition of rail cars proposed for transport, an ecologically significant amount of spillage could occur into streams, wetlands, and their watersheds. GLIFWC believes that fugitive dust escaping through gaps in the rail cars is also a concern. GLIFWC does not believe that the method described to segregate fines in the center of the rail car, away from the gaps, is realistic. Further, GLIFWC does not believe that monitoring of the creeks along the rail line will be effective in preventing or minimizing impacts because once detected in monitoring, the impact will have already occurred. GLIFWC states that cleanup of ore dust in an aquatic environment is a long and difficult process. Appendix C provides additional information from this agency on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>The Co-lead Agencies believe that the SDEIS adequately predicts the rail car spillage and potential environmental effects. No substantial reactive airborne fugitive dust emissions from rail transport are expected. However, the Co-lead Agencies note that estimates of potential spillage are presented in SDEIS Section 5.2.2.3.2, and potential effects are presented in Sections 5.2.2.3.2, 5.2.3.2.2, and 5.2.7.1.3. These sections provide readers with specific information and cited reference documents that support the basis for the Co-lead Agencies' position.</p> <p>Water quality monitoring for the streams located along the Transportation and Utility Corridor is recommended. If streams along the railroad corridor between the Mine Site and Plant Site were to show degradation in water quality as a result of material spilled from railcars, then contingency mitigation would be available through developing catchment areas adjacent to the tracks at stream crossings to minimize the amount of material that reaches the streams. This information is available for permitting agencies to consider as necessary.</p>
17	Use of water evaluation	<p>Fond du Lac and Grand Portage do not agree with statements in the document that indicate there is "no impact" when that assertion is based on not exceeding</p>	<p>The Co-lead Agencies believe that the SDEIS appropriately considers effects on water,</p>

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	<p>criteria vs. water quality standards</p>	<p>an evaluation criteria. They believe the SDEIS should acknowledge where there is a change, regardless if a criteria or standard is exceeded. With regard to the water quality effects analysis, Grand Portage and GLIFWC note that evaluation criteria are not equivalent to water quality standards. Grand Portage further notes that some evaluation criteria are high enough to cause human health impacts and evaluation criteria are not equal to or a substitute for water quality standards compliance. GLIFWC notes that in some areas, for example the cumulative effects section for the Partridge River, the text states all water evaluation criteria would be met, though water quality standards would be exceeded for several constituents. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>including the evaluation criteria specific to the NorthMet Project Proposed Action. It is also appropriate for the reporting of effects to reflect specific evaluation criteria based on the applicable water quality standard. CEQ guidance identifies that whether an action threatens to violate a federal, state, or local law or requirements imposed for the protection of the environment is an appropriate intensity factor for evaluating significance.</p> <p>The SDEIS also discloses where any given evaluation criterion differs from the water quality standards, which is necessary for some constituents because a specific standard has not been formulated.</p> <p>Regarding assessing effects on the Partridge River, relevant cumulative effect water evaluation criteria are described in SDEIS Section 6.2.3.3.4.</p>
<p>18</p>	<p>Loss of “High Biodiversity Significance Values” sites</p>	<p>Fond du Lac, GLIFWC, and Grand Portage believe that native plant communities identified by the Minnesota Biological Survey will be impacted by the proposed mine site and related transportation and utility corridor without appropriate mitigation for their landscape-scale and ecosystem values. There are two MBS sites of high biodiversity significance (18.8 acres) located within the transportation and utility corridor, including the 100 mile swamp and the upper Partridge River. They state that forty-one percent of the mine site consists of imperiled/vulnerable communities, but there is no proposed mitigation. Fond du Lac and Grand Portage’s opinion is that there will be a net loss to the federal estate of these MBS communities that would not be compensated with equivalent MBS land exchange parcels gained through the USFS land exchange. Appendix C provides additional information from these agencies on this major difference of opinion revealed in the development of the SDEIS.</p>	<p>The Co-lead Agencies believe that the SDEIS appropriately discloses potential effects (loss) to high biodiversity significant sites as listed in the Minnesota Biological Survey characterization data. There is no policy or requirement to mitigate effects on MBS Sites of High Biodiversity Significance for those attributes. SDEIS Section 4.2.4 discloses these MBS sites. Sections 3.2.2 and 5.2.4 also describe mine reclamation that would be completed as part of the NorthMet Project Proposed Action, some of which may allow such MBS sites to re-establish.</p>

#### ***8.4 TRIBAL AGENCY APPENDIX – SUPPORTING INFORMATION FOR TRIBAL COMMENTS***

Although not required by NEPA and MEPA, the Co-lead Agencies committed to providing an appendix in the SDEIS that contains the Tribal Cooperating Agencies' comments and supporting documentation representing MDOs. The tribal submittals in the appendix are provided verbatim and have not been verified or validated by the Co-lead Agencies. Because the Co-lead Agencies have engaged the Tribal Cooperating Agencies extensively on these issues, further examination is being deferred until public comments on the SDEIS have been received for consideration in development of the FEIS.

See Appendix C for comments and supporting documentation from the Bois Forte, Grand Portage, Fond du Lac, GLIFWC, and the 1854 Treaty Authority. These take the form of eight position papers and a Co-lead Agencies' PSDEIS comment disposition spreadsheet for the Tribal Cooperating Agencies.

Issue areas provided in Appendix C include:

- Hydrology Section;
- Mercury Section;
- Wild Rice Section;
- Underground Mine and West Pit Backfill Alternatives Section;
- Wetlands Section;
- Cumulative Effects Analysis Section;
- Proposed Transport of Ore Section;
- Perpetual Maintenance and Water Treatment at the NorthMet Project Section; and
- Tribal Responses to Co-lead Agencies' Disposition of Tribal PSDEIS Comments.