

**PolyMet NorthMet EIS - Wetland Resources IAP Final Summary Memo**  
**July 1, 2011**

**Introduction**

The Minnesota Department of Natural Resources (MnDNR), U.S. Army Corps of Engineers (USACE), and U.S.D.A. Forest Service (USFS), collectively known as the Co-lead Agencies, have prepared this guidance memo as the concluding step in the impact assessment planning (IAP) process for this subject area. This memo provides (1) a summary of workgroup issues considered; and (2) specific guidance to PolyMet Mining and its consultants that is to be incorporated into a work plan for Co-Lead Agency review and approval prior to conducting impact analysis (i.e., modeling and other predictive work) on the Draft Alternative Summary, as amended March 4, 2011.

Estimates of the direct, potential indirect and cumulative wetland impacts that would or could result from the proposed PolyMet NorthMet project need to be disclosed in the environmental impact statement (EIS) that is being prepared. Wetland hydrology monitoring, wetland vegetation monitoring, and wetland water quality monitoring will be important in order to determine the actual indirect wetland impacts that may occur if the project is permitted. Compensatory wetland mitigation would be required for unavoidable direct and indirect wetland impacts. The EIS will include information regarding the indirect wetland impact monitoring plan and the compensatory wetland mitigation plan.

**Workgroup Facilitators:**

Jon Ahlness (USACE) and Deb McGovern (ERM)

**Workgroup Participants:**

Jon Ahlness, Steve Eggers, Ralph Augustin, Tim Peterson (USACE)  
Kate Gunderson, Doug Norris (MnDNR)  
Marty Rye (USFS)  
Margaret Watkins (Grand Portage Band)  
Nancy Schuldt, Rick Gitar (Fond du Lac Band)  
John Coleman, Esteban Chiriboga (GLIFWC)  
Nick Axtell (1854 Treaty Authority)  
Simon Manoyen, Mike Sedlacek, Melanie Haveman, James Grimes (USEPA)  
Kevin Molloy, Tom Estabrooks (MnPCA)  
Nick Rowse (USFWS)  
Steve Koster, Heather Heater, John Adams, Doug Mensing (ERM)  
Cheryl Feigum, Mark Jacobson (Barr Engineering)

**Workgroup Interaction:**

The Wetland IAP Workgroup is composed of the same people that have been participating in the NorthMet Project Wetland Workgroup that has been meeting, and will continue to meet, to address wetland delineation issues, wetland hydrology monitoring issues, wetland impact issues, and compensatory wetland mitigation issues for the proposed NorthMet project.

The Wetland Workgroup increased its activity after receiving the “NorthMet Project Baseline Wetland Type Evaluation – Mine Site and Tailings Basin Areas” report in March of 2010. A meeting/teleconference was conducted on July 27, 2010 to discuss that report. As a follow-up to that meeting/teleconference, a site visit was conducted on September 8 and 9, 2010, to field verify wetland types identified in the March 2010 report. Based upon the site visit and additional field work including a helicopter survey, PolyMet submitted a wetland type evaluation report supplement to the Wetland Workgroup on December 21, 2010. Barr Engineering has consolidated the March 2010 wetland type report and the December 2010 wetland type report supplement into a single document titled “NorthMet Project Baseline Wetland Type Evaluation” dated April 2011. In the consolidated report, the mine site area is referred to as Area One, and the tailings basin area is referred to as Area Two.

The first Wetland IAP Workgroup meeting/teleconference was conducted on October 26, 2010. At that meeting/teleconference, updates to the wetland type evaluation work were discussed along with development of impact assessment guidance to be provided to PolyMet regarding evaluation of wetland impacts (direct, potential indirect, and cumulative). In order to provide guidance regarding potential indirect wetland impacts, the Wetland IAP Workgroup believed that information was needed regarding: groundwater drawdown near the proposed open pit mine; and groundwater mounding (groundwater upwelling) near the proposed tailings basin.

The Wetland IAP Workgroup developed a list of questions regarding those two topics, and the questions were forwarded to the Water Resources IAP Workgroup on November 10, 2010. The Wetland IAP Workgroup received responses to those questions and analogue information guidelines regarding glacial aquifer drawdown near open pit iron mines on March 18, 2011, and a Wetland IAP Workgroup meeting/teleconference was conducted on March 30, 2011.

The Co-lead Agencies prepared and provided a Wetland Resources IAP Draft Summary Memo, along with three attachments, to the Wetland Resources IAP Workgroup on May 9, 2011 for review and comment. The following three attachments were provided with the draft memo:

- PolyMet NorthMet Project Co-lead Agency Workplan Preparation Guidance for Wetland Assessment
- Wetland IAP Workgroup questions for the Water Resources IAP Workgroup and that Workgroup’s responses
- Summary of Indirect Wetland Impact Analogue Information by John L. Adams of ERM dated February 26, 2011

A meeting/teleconference of the Wetland Resources IAP Workgroup was conducted on May 13, 2011 to discuss the draft memo and attachments.

The remainder of this document summarizes the key issues, decisions, and points of disagreement discussed during the Wetland Resources IAP Workgroup activities to date. The points of disagreement identified below need to be communicated to the Managing Sponsors of the Co-lead Agencies.

### **Key Issues and Decisions and Points of Disagreement**

- Wetland type evaluation for wetlands outside of the formal wetland delineations at the mine site and the tailings basin site** – The Wetland IAP Workgroup reached agreement during the March 30, 2011 meeting/teleconference regarding the acceptance of the Barr Engineering wetland typing work as accurately typing the wetlands in the Eggers and Reed wetland system for both the mine site area wetlands and the tailings basin site area wetlands. The Workgroup also agreed to use available vegetation data for subcategorizing bogs into precipitation only hydrology (ombrotrophic) vs. some groundwater hydrology (minerotrophic) bogs, and the team members will coordinate to make the subcategorizations. However, in comments on the Wetland Resources IAP Draft Summary Memo, the Grand Portage Band expressed concern that approximately 25 percent of the wetlands identified from aerial over-flights or air photos should be considered potentially misidentified as bogs.
- Water Resources IAP Workgroup responses to the Wetland IAP Workgroup questions** – Some Wetland IAP Workgroup members expressed concern that a subgroup of the Groundwater subgroup of the Water Resources IAP Workgroup prepared and submitted the responses and the associated general guidelines regarding groundwater drawdown analogue information without the input and discussion of the entire Groundwater subgroup. To respond to this concern, a Water Resources IAP Workgroup Groundwater subgroup meeting/teleconference was conducted on April 22, 2011 to discuss responses to the Wetland IAP Workgroup questions and the associated general guidelines regarding groundwater drawdown analogue information. An updated report titled “Analogue Information Relating to Mine Pit Cone of Depression Impacts on the Surficial Aquifer” by John L. Adams, ERM, and Michael Liljegren, DNR dated May 23, 2011 was prepared. That report contained revised interpretations and guidelines regarding glacial aquifer drawdown at increasing distances from open pit taconite mines. The report was provided to the Wetland IAP Workgroup members on June 7, 2011 for review and comment. John Coleman provided comments on June 14, 2011.
- Wetland impact assessment planning guidance**

Direct Wetland Impacts: The Wetland IAP Workgroup reached agreement regarding how to conduct the direct wetland impact assessment. The Co-lead Agency position is that the direct wetland impact assessment will be conducted using the same method that was used for the Draft EIS. Co-lead Agency guidance for conducting the direct wetland impact assessment is provided in the attachment to this summary memo. The Minnesota Pollution Control Agency identified that it will be important for the EIS to address how organic material excavated from directly impact wetlands will be handled and stored in order to assess any impact to surface water quality. This issue will need to be addressed in the surface water quality analysis.

Potential Indirect Wetland Impacts at the Mine Site: The Co-lead Agency position is that the assessment of potential indirect wetland impacts at the mine site should be conducted based upon an interpretation of the general analogue guidelines regarding groundwater drawdown analogue information provided by the Water Resources IAP Workgroup in accordance with the guidance provided in the attachment to this summary memo. The Co-lead Agencies believe that even with additional groundwater

data collection and additional groundwater modeling, there would still be a high level of uncertainty regarding groundwater model outputs. Therefore, the Co-lead Agencies believe that the analogue guideline method of estimating glacial aquifer groundwater drawdown near the proposed mine is reasonable and appropriate for this site and do not recommend that additional field data collection and groundwater modeling be conducted for the purpose of estimating glacial aquifer groundwater drawdown.

Some Wetland IAP Workgroup members disagree with the Co-lead Agency position. They believe that additional field data collection and additional groundwater modeling are necessary to provide groundwater drawdown cone of depression information near the open pit mine. That position was an earlier recommendation of the Wetland IAP Workgroup and was supported by Workgroup members from the Fond du Lac Band, Grand Portage Band, Great Lakes Indian Fish and Wildlife Service, U.S. Fish and Wildlife Service, 1854 Treaty Authority, Minnesota Pollution Control Agency and the U.S. Environmental Protection Agency. However; it was not supported by Workgroup members from the Co-lead Agencies, Environmental Resources Management, or Barr Engineering. In addition, some Workgroup members believe that the Co-lead Agency position is contrary to standard analysis that mining companies have to conduct as part of sulfide mine EIS processes across the country. In addition, the Grand Portage Band believes that the geology of the analogue sites appear to be non-analogous with the geology of the proposed mine site

The Co-lead Agencies have concluded that the use of lateral effect equations for ditches is not suitable for use in determining glacial aquifer drawdown near open pit mines, and that method should not be used to estimate groundwater drawdown near the NorthMet project open pits. There was no disagreement among any of the Workgroup members.

Potential Indirect Wetland Impacts at the Tailings Basin site: The Co-lead Agency position is that the assessment of potential indirect wetland impacts at the tailings basin site be conducted based upon tailings basin groundwater flow modeling (MODFLOW) and tailings basin groundwater quality modeling (GoldSim) results, which will provide information regarding: changes in groundwater seepage rates leaving the tailings basin, including the estimated portion that discharges to wetlands; changes in stream flow in the unnamed creek northwest of the tailings basin, Trimble Creek and the unnamed Creek north of tailings basin cell 2E; and water quality of the water entering those wetlands and streams. The Co-lead Agency guidance for conducting the assessment of potential indirect wetland impacts at the tailings basin is provided in the attachment to this summary memo. There was no disagreement in the in the Wetland IAP Workgroup regarding this recommendation.

Cumulative Wetland Impacts: The Co-lead Agency position is that the cumulative wetland impact assessment will be conducted using primarily the same methodology that that was used for the Draft EIS, which was based on the evaluation of direct and potential indirect wetland impacts from past, present, and reasonably foreseeable future actions within the Partridge River watershed, the Embarrass River watershed. For the SDEIS, the Section 106 area of potential effect (APE) portion of the St. Louis River (below the ordinary high water mark) from the confluence of the Embarrass River

to Lake Superior will also be included in the cumulative wetland impacts analysis. The Co-lead Agencies will also request that a qualitative analysis of estimated climate change impacts (to be coordinated with the climate change evaluation being conducted for the air impacts chapter of the SDEIS) on cumulative wetland impacts be conducted. Co-lead Agency guidance for conducting the cumulative wetland impact assessment is provided in the attachment to this summary memo. Co-lead

The Fond du Lac Band disagrees with the Co-lead Agencies regarding the definition of a reasonably foreseeable project. The Fond du Lac Band believes that several mine projects to the east and northeast of PolyMet are likely to be proposed in the near future. The Co-lead Agencies believe that a project that might be proposed is too speculative to include in a cumulative effects analysis.

The Minnesota Pollution Control Agency has requested that the EIS include an evaluation of how cumulative wetland impacts would impact water quality in the Partridge River watershed and the Embarrass River watershed. The Co-lead Agencies believe that the appropriate place in the EIS for that discussion would be in the water quality cumulative impacts section.

The Fond du Lac Band has requested that the EIS include an evaluation of cumulative impacts of Iron Range mine projects on water quality of wetlands. The Co-lead Agencies believe that the appropriate place in the EIS for a discussion of cumulative wetland water quality impacts would be in the water quality cumulative impacts section.

Water Quality Potential Indirect Wetland Impacts: The Wetland IAP Workgroup reached agreement regarding the need to evaluate potential indirect wetland impacts that may occur as a result of adverse changes to water quality in the wetlands near the mine site, tailings basin site, and the transportation corridor between the mine site and the plant site. Co-lead Agency guidance for conducting the water quality potential indirect wetland impact assessment is provided in the attachment to this summary memo.