

March 13, 2014

Douglas Bruner  
Regulatory Branch, St. Paul District  
U.S. Army Corps of Engineers,  
180 Fifth Street East, Suite 700  
Saint Paul, MN 55101-1678

Re: MVP-1999-5528-JKA (PolyMet Mining Section 404 Permit Application)

Dear Mr. Bruner,

Please accept the following comments on the PolyMet Section 404 permit application, on behalf of the organizations Save Our Sky Blue Waters, Save Lake Superior Association, Friends of the Cloquet Valley State Forest, Northeastern Minnesotans for Wilderness, Center for Biological Diversity, and the Sierra Club North Star Chapter (collectively "Organizations"). Any questions about the comments or issues that they raise should be addressed to Jane Reyer at [jane.reyer@gmail.com](mailto:jane.reyer@gmail.com), 218/248-1349, or Marc Fink at [mfink@biologicaldiversity.org](mailto:mfink@biologicaldiversity.org), 218/464-0539. Please include all signatories to this letter in any future announcements or correspondence regarding the PolyMet permit application.

Save Our Sky Blue Waters (SOS) is a Duluth-based grassroots non-profit organization dedicated to protecting our region's waters, forests and wildlife. SOS formed in response to proposed copper-nickel sulfide mining and exploration in Minnesota's Arrowhead region and the headwaters of Lake Superior and throughout the Superior National Forest. The health of the St. Louis River watershed is a key component of our mission. SOS is a non-profit public interest environmental education and advocacy organization. The issue of potential toxic sulfide mining in northeast Minnesota may greatly impact our organization and citizens across the region.

The Friends of the Cloquet Valley State Forest is a 501c3 Organization dedicated to the protection and preservation of the natural and cultural resources of The Cloquet Valley State Forest and to the promotion of responsible enjoyment of this unique treasure. Cloquet River flows through our forest and into the St. Louis River, the people and the flora and fauna of the Cloquet River Valley are intimately connected with the fate of our river. Our members' concerns range from the health of the people to the legacy of the land, water and ecosystem we leave to the coming generations. Many of us make our livings reliant upon sustainable tourism, the natural world, art, and agriculture, and anything that disrupts the ecosystem is a threat to our livelihoods and well being.

Save Lake Superior Association (SLSA) is headquartered in Two Harbors, MN, with members residing in the three states and province on Lake Superior's shoreline and watershed. We have about 250 members, many of whom fish and recreate along the North Shore of Lake Superior, in its watershed and in the St. Louis River estuary. The mission of SLSA is to prevent further degradation of Lake Superior and to promote its

rehabilitation. We were formed in 1969 to stop the discharge of taconite tailings into Lake Superior by Reserve Mining Company. As stakeholders we are concerned about the potential destruction of natural habitat and the pollution of both air and water in Lake Superior and its watershed that would be associated with the PolyMet project.

Northeastern Minnesotans for Wilderness (NMW) is a nonprofit regional conservation organization whose core mission is to advocate for the preservation and protection of public lands, designated wilderness areas, national parks, national forests, and other wild places in the Minnesota Arrowhead Region, especially the Boundary Waters Canoe Area Wilderness, the Superior National forest, and the Quetico-Superior ecosystem. Since its founding in 1996, NMW has grown to represent over 2400 members and supporters, almost all of whom live in Minnesota. The majority of our members and supporters reside year-round or seasonally in the three-county Minnesota Arrowhead Region, own property in the three-county area, and will be directly impacted by the NorthMet Project. Our members and supporters also visit and recreate throughout the three-county area.

The Center for Biological Diversity (Center) is a national, nonprofit conservation organization with more than 675,000 members and online activists dedicated to the protection of endangered species and wild places. The Center has an office in Duluth, Minnesota, and has hundreds of members who reside within and/or regularly use, enjoy, and recreate on public lands and waters in northeastern Minnesota, including on the Superior National Forest. The Center, its staff, and its members and the interests of its staff and members would be significantly harmed and injured if the proposed project is approved and allowed to be implemented.

The Sierra Club is a national nonprofit organization of approximately 600,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. The Club's particular interest in this case stems from the proposed project's potential impacts on Minnesota's natural resources and public health, including: risks to water quality, loss of wetlands, harm to wildlife, and cumulative impacts from mining. The North Star Chapter of the Sierra Club has approximately 14,292 members in the state of Minnesota.

In addition to this letter, the Organizations are submitting extensive comments on the Supplemental Draft Environmental Impact Statement (SDEIS) to the three Co-Lead agencies. The SDEIS comments will be submitted through the Minnesota Department of Natural Resources address provided in the SDEIS public notice, and are incorporated by reference herein. The two comment letters should be read together as presenting the Organizations' objections to the issuance of a Section 404 permit for the NorthMet project as currently proposed. To avoid confusion, one exhibit list applies to both comment letters; exhibit citations below are to material on the enclosed Exhibit CD. Other non-legal citations are to the SDEIS reference material.

## **Comments on the Proposed NorthMet Project Clean Water Act Section 404 Permit Application**

Section 404 of the federal Clean Water Act requires the application of U.S. Environmental Protection Agency (EPA) Guidelines when the U.S. Army Corps of Engineers (ACE) considers issuing a permit for the discharge of dredged or fill material into federally-regulated wetlands. *See* 33 U.S.C. § 1344(b)(1). The EPA is authorized to deny or place restrictions on a permit upon a finding that the discharge “will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.” *Id.* § 1344(c). In addition to reviewing the permit application according to the Guidelines, the ACE must consider whether the permit would be in the public interest, weighing the expected benefits against the detriments. 33 CFR § 320.4(a)(1).

In its letter of February 18, 2010 to ACE, the EPA stated,

EPA finds this project may have substantial and unacceptable adverse impacts on aquatic resources of national importance (ARNI). EPA believes the coniferous and open bogs, comprising a large percentage of the approximately 33,880 total wetland acres within the Partridge River watershed to be an ARNI due to the values they provide in terms of unique habitat, biodiversity, downstream water quality, and flood control specifically, to the Lake Superior Watershed and the Great Lakes Basin.

Bharat Mathur, EPA, Letter to Colonel Jon L. Christensen, ACE (Feb. 18, 2010) (Ex. 1). The letter goes on to describe several deficiencies in the wetland portion of the Draft Environmental Impact Statement (DEIS) released in October 2009, and provides suggestions as to how the SDEIS could comply with the Guideline requirements.

The Organizations agree that the wetlands that would be impacted by this project constitute an aquatic resource of national importance. The wetlands constitute part of the One Hundred Mile Swamp, a long-recognized wetland of great value, and headwaters of the St. Louis River, the largest U.S. tributary to Lake Superior. Lake Superior and its watershed have been singled out for protection by the U.S. and Canadian governments. As the Lake Superior Lakewide Management Plan states:

The Lake Superior basin is one of the most pristine and unique ecosystems in North America. Containing the largest surface area of any freshwater lake in the world, Lake Superior has some of the most breathtaking scenery in the Great Lakes, serving as a backdrop to a wide range of recreational and outdoor activities enjoyed by people from all over the world. Sparsely populated even today, Lake Superior has not experienced the same level of development, urbanization or pollution as the other Great Lakes. Federal, state and provincial governments, tribes and First Nations, environmental groups, industry, and the public have taken steps to protect this great legacy for generations to come. This shared

partnership is viewed internationally as an excellent example of cooperative binational resource management.

The Great Lakes Water Quality Agreement (GLWQA) between the U.S. and Canada is one of the most significant environmental agreements in the history of the Great Lakes. The agreement commits both Parties to address water quality issues in a coordinated fashion. The Agreement proposes to:

*restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem.*

.....

In 1990 the International Joint Commission (IJC), an advisory body to the US and Canadian governments, recommended that Lake Superior be designated as a demonstration area "where no point source discharge of any persistent toxic substance will be permitted." On September 30, 1991, the federal governments of Canada and the U.S., the Province of Ontario, and the States of Michigan, Minnesota, and Wisconsin responded by announcing the Binational Program to Restore and Protect Lake Superior. Known as the Lake Superior Binational Program (LSBP), the Program identified two major areas of activity:

The *Zero Discharge Demonstration Program* establishes Lake Superior as a demonstration project to achieve zero discharge and zero emission of nine toxic, persistent, and bioaccumulative chemicals: mercury, total polychlorinated biphenyls (PCBs), dieldrin/aldrin, chlordane, DDT, toxaphene, 2,3,7,8-TCDD (dioxin), hexachlorobenzene (HCB) and octachlorostyrene (OCS). Voluntary pollution prevention is the preferred approach to achieving reduction goals, but enhanced controls and regulations might be necessary to achieve zero discharge.

The *Broader Program* recognizes that zero discharge of persistent toxic substances alone will not be sufficient to restore and protect Lake Superior. The Broader Program focuses on the coordination among resource and environmental agencies.

Lake Superior Binational Program, "Lake Superior Lakewide Management Plan (LaMP) 2000 Summary Edition," (Ex. 2) (emphasis in original).

The "Broader Program" has come to refer to a comprehensive intergovernment and interagency effort to restore and protect the natural environment within the Lake Superior basin. The "Ecosystems Principles and Objectives" document states:

Extensive natural environments such as forests, wetlands, lakes and watercourses, are necessary to sustain healthy native animal and plant populations in the Lake Superior ecosystem, and have inherent spiritual, aesthetic and educational value. Land and water uses should be designed and located in harmony with the

protective and productive ecosystem functions provided by these natural landscape features. Degraded features should be rehabilitated or restored where this is beneficial to the Lake Superior ecosystem.

Lake Superior Binational Program, “Ecosystems Principles and Objectives for Lake Superior” (May 4, 1998) (Ex. 3). The Habitat Objective includes the following sub-objectives:

- (a) The ecological health of Lake Superior is determined in large part by the health of its tributary lakes and rivers. Land use planning and regulation in the Lake Superior ecosystem should eliminate or avoid destructive land-water linkages (e.g. erosion of agricultural land, urban stormwater, point and non-point sources of persistent contaminants), and foster healthy land-water linkages (e.g. continuous streamside vegetation buffers, on-site treatment of runoff).
- b) The long-term consequences of incremental or cumulative landscape change, habitat destruction, and habitat fragmentation should be anticipated and avoided in the Lake Superior ecosystem, through research and planning at appropriate spatial and temporal scales.
- c) The crucial importance of nearshore, shoreline and wetland aquatic habitats in Lake Superior should be addressed through continuing efforts to identify, protect and restore key sites for reproduction and rearing of fish, water birds, mammals, other wildlife and plants.

*Id.*

The One Hundred Mile Swamp has been recognized by the U.S. Forest Service (USFS) and the Minnesota Department of Natural Resources (DNR) as an important wetland and habitat area. All parties recognize the high quality of the wetlands, and their ranking as an area of high biodiversity. As pointed out by Friends of the Boundary Waters Wilderness in its comments on scoping for the USFS land exchange for this project:

The wetlands within the federal lands are part of an area identified in two separate assessments as being especially high value habitat. Scientists concluded the area known as the “100 Mile Swamp” represents some of the highest quality habitat remaining in the landscape.

In January 1997, as part of its preparation for the Forest Plan Revision, the Superior National Forest released a report titled, “Identification of Potential Natural Areas, Including Representative Ecosystems, on the Superior National Forest” by forest biologist Robin Vora. The report summarized a process to identify natural areas on the forest that might qualify for permanent protection. The focus was to develop a list and general description of the highest quality remaining examples of common ecosystems present in each Landtype Association

(“LTA” or “landscape”). The report notes, “A network of natural areas helps to protect biological diversity at the genetic, species, ecosystem, and landscape scales. Natural areas representative of common ecosystems in natural conditions serve as baseline or reference” (Vora 1997).

The federal lands within this proposal were identified in this report as part of the “100 Mile Swamp.” It sits within LTA 8A (although another report identifies the LTA as 212 Le11, USDA 1998), and was considered one of those “ecosystems in natural condition” that was representative of its landscape, and a good candidate for protected status. The site is especially important as the LTA was noted as lacking ecosystem representation in protected areas. Features that gave this area a high ranking were its watershed integrity, the size of its wetlands, the presence of riverine ecosystems, and the large amount of interior forest present.

In December 1997, the Minnesota DNR released a report called, “Evaluation of Selected Potential Candidate Research and Natural Areas as Representative Ecological Landtype Associations on the Superior National Forest, Minnesota.” This study was conducted by plant ecologist Chel Anderson. The purpose of this assessment was to continue the evaluations begun by Robin Vora. The assessment was to further assist the Superior National Forest in evaluating areas for protection for the Forest Plan Revision process.

The study analyzed the 93 sites identified by Vora and developed a shorter list of 45 sites worthy of consideration as protected natural areas. The assessment notes that these sites represent the highest-quality remaining examples of characteristic ecosystems in each ecological Landtype Association on the Superior National Forest.

Again, the “100 Mile Swamp” appears on this list of worthy candidates. The report notes, “Inclusion of the 100 Mile Swamp site would very likely complete representation of the prominent ELTs [ecological landtypes], and provide some additional upland diversity” (Anderson 1997).

....

While the Revised Forest Plan for the Superior National Forest did not adopt the concept of protecting representative natural areas in each landscape (LTA), it does not change the fact that these wetlands represent an important, rare feature within their landscape.

Betsy Daub, Friends of the Boundary Waters Wilderness, Letter to James Sanders, USFS (Nov. 23, 2010) (Ex. 4).

In sum, this very large, high-quality wetland area is located in an internationally important watershed that has been subject to an enormous effort toward restoration and protection led by the EPA. For the reasons explained below, destruction of these wetlands

would amount to “substantial and unacceptable adverse impacts on aquatic resources of national importance.”

Many of the deficiencies described in the 2010 EPA letter remain in the amended permit application and the SDEIS. In particular, some of the specific reasons that the EPA gave for the finding that adverse impacts of the project may be substantial and unacceptable have not changed. The application and SDEIS still do not provide a mitigation plan for indirect impacts, do not provide sufficient hydrogeological information about the site on which to base an assessment, do not assess or compensate for the actual wetland functions that will be lost, do not ensure that water quality standards will be met, and propose most of the mitigation outside of the St. Louis River watershed. ACE should therefore find pursuant to 40 C.F.R. § 230.12(a)(3) that specification of this site fails to comply with the requirements of the Guidelines.

**A. Issuance of the Wetland Fill Permit Would Result in Violations of Water Quality Standards**

The EPA Guidelines provide that “No discharge of dredged or fill material shall be permitted if it [c]auses or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard, [or] [v]iolates any applicable toxic effluent standard or prohibition.” *Id.* § 230.10(b)(1) and (2). Applicable toxic effluent standards include standards for copper, lead, mercury, and nickel. *See* 40 C.F.R. § 401.15.

Consideration of water quality standards and toxic effluent standards under the Guidelines is not limited to violations due to the actual placement of dredged or fill material. The Guidelines also require consideration and findings regarding secondary effects, which refer to the effects of activities for which the fill is undertaken. *See* 40 C.F.R. § 230.11(h). In this case, all of the activities and impacts of the proposed mine are dependent on the wetland fill permit, and should be considered as part of the review under the EPA Guidelines.

The Guidelines require that a permit applicant obtain sufficient information and documentation on which to base a determination that water quality standards will not be violated. An applicant must submit sufficient information to demonstrate that the discharge will not have an unacceptable adverse impact. *See* 40 C.F.R. § 230.1(c). Violations of water quality and toxic effluent standards are unacceptable adverse impacts. The submitted material must be sufficient to support written findings regarding contaminants and secondary effects. *See id.* § 230.11(c) and (h). If the applicant does not provide sufficient information to support a finding that the discharge will not cause or contribute to violation of water quality standards, ACE must find that “there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with [the] Guidelines,” *id.* § 230.12(a)(3)(iv), and deny the permit.

Based on the information provided in the SDEIS and supporting materials, the proposed discharge would violate toxic effluent standards and cause or contribute to

violations of water quality standards, and thus the permit application must be denied. 40 C.F.R. § 230.10(b)(1). Alternatively, the permit application must be denied as not providing sufficient information to make a reasonable judgment on this issue. *Id.*, § 230.12(a)(3)(iv).

### **1. The Proposed Discharges Would Cause or Contribute to Violations of Mercury Water Quality and Effluent Standards**

Our first concern in regards to wetland water quality is that the release of mercury in leachate from waste rock and peat, in air emissions and fugitive dust, and in the discharge of water drawn from Colby Lake will lead to increased levels of mercury in fish, both in the Partridge and Embarrass Rivers and their tributaries, and in downstream lakes and the St. Louis River. Our comments on the SDEIS detail the various pathways and sources that have not been adequately considered, and our concern regarding the combined effects of an increase in mercury, a change in sulfate levels, and fluctuating water levels on mercury methylation in the wetland environment.

The SDEIS discusses the potential for wetland water quality impacts from air deposition of metals and sulfate, and from groundwater contamination by the 28 modeled solutes. The inadequacy of this discussion in regards to copper, nickel, lead, and sulfate is addressed below. The point here is that this analysis ignores mercury altogether. Neither the impacts of mercury deposition in wetlands nor the addition of mercury to groundwater flow through wetlands is assessed in the SDEIS. The SDEIS discussion meets neither NEPA requirements nor the requirements of the Section 404 permitting Guidelines in this regard.

The SDEIS does not include information on current mercury levels in water in wetlands, particularly at the mine site, but the information that it does include indicates that wetlands almost certainly already violate the applicable mercury water quality standard of 1.3 ng/L. Both the Partridge and the Embarrass Rivers already violate the numeric water column standard for mercury, as do many of the Embarrass River tributaries; the only reason that they do not appear on the impaired waters list for mercury in fish tissue is because they have not been assessed. All downstream lakes and river reaches that have been assessed are listed as impaired on that basis. PolyMet and the co-lead agencies have apparently not measured the mercury levels in the wetlands at the mine site, but wetlands measured for background purposes have a water quality level of between 1.2 and 6.7 ng/L, with only one value out of fourteen not exceeding the standard. Barr 2006f at 136. In the absence of site-specific information concerning the wetlands at the mine site, it must be assumed that wetland waters at the site do not meet the numeric standard.

The numeric standard of 1.3 ng/L is a “Class 2 standard[] for the protection of aquatic life, human health, and wildlife.” Minn. R. 7052.0100. The wetlands at issue here are classified as Class 2D waters. Minn. R. 7050.0425, .0186(1a)(B). The numeric standards for Class 2B waters apply to Class 2D waters. Minn. R. 7050.0222(6). Rule 7050.0222(6) explicitly applies to wetlands, Minn. R. 7050.186(1); in addition, the rules



direct that “[t]he quality of wetlands shall be maintained to permit the propagation and maintenance of a healthy community of aquatic and terrestrial species indigenous to wetlands, preserve wildlife habitat, and support biological diversity of the landscape.” *Id.*

Although the EPA Guidelines regarding water quality allow for a mixing zone in appropriate circumstances, mixing zones are prohibited for mercury discharges in the Lake Superior Basin. *See* Minn. R. 7052.0210(3). Furthermore, in some situations (i.e., discharge of waste rock and peat) the discharge would itself violate toxic effluent limits (and prohibition) for mercury, and the discharge is also precluded by the Guidelines on that basis.

The SDEIS states the assumption that the release of constituents into groundwater will impact water quality in wetlands. In regards to the mine site,

Water quality modeling results indicate groundwater quality along each flowpath would likely change from existing conditions. It was conservatively assumed that these changes may cause potential indirect effects to the character, function, and quality of minerotrophic wetlands; therefore, it was also assumed that all downgradient minerotrophic wetlands located within the five Mine Site surficial aquifer flowpaths may have potential indirect wetland effects related to water quality changes as a result of leakage/seepage from mine features (PolyMet 2013b). This analysis indicates areas that can be conservatively assumed to have potential indirect effects due to changes in groundwater quality.

SDEIS 5-283. At the Plant Site, Table 5.2.3-13 lists the wetland acres that could be affected by ground and/or surface water quality as 4,638 acres. SDEIS 5-307.

As explained above, the SDEIS does not apply these assessments to mercury. However, as explained in our comments on the SDEIS, leachate that discharges to the groundwater flow paths from waste rock stockpiles, the East Pit (which will be filled with waste rock), the Overburden Storage and Laydown Area, and the Tailings Basin is virtually certain to have a mercury level above 1.3 ng/L, and mercury from the waste rock, peat, and tailings will contribute to that level. Since the SDEIS assumes that changes in groundwater quality may effect wetland water quality, and since the groundwater will include mercury released from mining features (including fill material) the only possible conclusion is that the fill may cause or contribute to violation of the mercury water quality standard and violate an applicable toxic effluent standard or prohibition.

In addition, the level of water quality impacts in general as assessed in the SDEIS is based on a flawed model that most likely seriously underestimates the flow of groundwater. This situation is further discussed in our SDEIS comments. This underestimated flow could significantly affect the prediction of mercury increases in wetlands, particularly from the Overburden Stockpile and Laydown Area, the Category 1 Waste Rock Stockpile, and the East Pit. Similarly, the SDEIS is unrealistically optimistic about the amount of Tailings Basin seepage that will be collected, and the amount of

mercury from that source is also likely to be greater than might be supposed based on the SDEIS.

ACE should also consider the impact of fugitive dust and Plant emissions on mercury levels in the wetlands, as the fugitive dust would result from the same activities that require the Section 404 permit and are thus secondary impacts under 40 C.F.R. § 230.11(h). As indicated by the mercury deposition analysis, emissions from the Plant will increase the mercury load in wetlands at both the Plant and Mine Sites and in the Embarrass and Partridge Rivers and their tributaries. *See* Barr 2013k, Large Figure 7 and App. F. Unfortunately, mercury deposition has been quantified and considered for downstream lakes only, and not for wetlands or rivers and streams. The SDEIS also explicitly ignores mercury in fugitive dust at the mine site. Although this is a relatively small source in regards to total emissions, virtually all of it will be deposited at the mine site, within the Partridge River watershed, and it is thus virtually certain to cause or contribute to water quality standard violations in wetlands and the Partridge River.

Finally, the mine project includes a plan to discharge Colby Lake water into wetlands and headwaters immediately below the Tailings Basin. As explained in our comments on the SDEIS, Colby Lake water has a high level of mercury. Releasing this water into wetlands along with sulfate and combined with fluctuating water levels will almost certainly result in increased mercury methylation in this wetland system. ACE should consider this scenario both as a secondary effect, and in its public interest review pursuant to 33 CFR § 320.4. Any project that includes a plan so tailored to increasing mercury methylation cannot be in the public interest in Northeastern Minnesota, where the mercury level in fish tissue has reached the level of a public health crisis.

## **2. The Proposed Discharge Will Cause or Contribute to Violations of Other Water Quality Standards**

In addition to mercury, the discharge of dredged and fill material at both the Mine Site and the Plant Site may cause or contribute to violations of other water quality standards due to both groundwater contamination and air deposition of sulfur and metals. Although the SDEIS states an assumption that wetland water quality may be impacted by these sources, it provides no assessment of what those impacts might be. And although it provides some predictions (however incomplete) regarding groundwater quality at the property line, the Partridge River, and the Embarrass River and its tributaries, it provides no information on groundwater quality where it may first surface to wetlands.

The SDEIS does not fully describe its groundwater quality predictions in regards to the depth at which the pollution is likely to be found, whether the entire flow path is likely to be affected or whether we can expect a narrower plume of contamination, etc. According to the Wetland Data Package,

The amount of groundwater discharge to surface water and wetlands between the mine features and the Partridge River is expected to be minimal relative to the amount of groundwater discharge to the Partridge River itself. Significant

quantities of groundwater are not expected to discharge to the wetlands because of the very low hydraulic conductivities of the underlying peat layers, as cited in Section 5.2.1.2.2. In the water quality model, it is assumed that the leakage/seepage from mine features discharges to the Partridge River; there is assumed to be no groundwater discharge to surface water or wetlands along intermediate portions of the flow paths (Reference (12)). Therefore, the water quality model cannot be used to quantify the amount of leakage/seepage from mine features that discharges directly to individual wetlands.

PolyMet 2013b at 40.

However, not all of the wetlands have underlying peat layers, and Section 5.2.1.2.2 also discusses the wide range of hydraulic conductivities at the site. In addition, in the context of impacts from drawdown, Section 5.2.1.2.2 reveals that within 1,000 feet of the pits, impacts are likely even to peat wetlands. In short, the SDEIS and its reference material do not provide support for the assertion that “significant quantities of groundwater are not expected to discharge to the wetlands.” Mineotrophic wetlands form when the groundwater level approaches the land surface for a significant portion of the year. In essence, water in these systems *is* groundwater. In the absence of adequate rationale for the assumption that groundwater flowing from the mine features would not enter these wetlands, ACE must assume that contamination would impact all wetlands that are hydrologically connected to groundwater in each flow path.

The Wetlands Data Package suggests using the evaluation locations for the Dunka Road to assess potential water quality impacts to wetlands:

The water quality model includes groundwater quality evaluation locations within the surficial aquifer and located along the Dunka Road for each of the groundwater flow paths. These evaluation locations are within the PolyMet property boundary, typically within close proximity of the mine features and are located up gradient of most of the groundwater-fed wetlands at the Mine Site. Thus, results of the water quality modeling within these flow paths can be used to evaluate groundwater quality that could flow to down gradient groundwater fed wetlands.

*Id.* The Data Package does not, however, provide the water quality predictions for those locations; that information can be found in Attachment J of the Water Modeling Data Package Vol. I (PolyMet 2013i). As explained above, the Class 2B standards apply to wetlands. The following table shows the approximate P90 predictions of groundwater quality at the Dunka Road for several flow paths, as compared to the Class 2B standards. Standards that vary based on hardness are given for a hardness of 100 mg/L. All values are ug/L.

Pollutant	Class 2B Standard	East Pit Cat. 2/3	Ore Surge Pile	WWTF	OSLA	West Pit
Aluminum	125	420	200	165	170	
Cobalt	5.0	13	9.0			53
Cadmium	2.5				3.0	
Lead	3.2					8.2

These values do not refer to the leachate from the various sources. Rather, they reflect very significant dilution by other groundwater. In fact, it is entirely unclear from the discussion in the SDEIS, the Water Modeling Data Package, and the Wetland Data Package that this is not actually the predicted quality of water in groundwater-supported wetlands at the Dunka Road.

The concentrations of these and other constituents in leachate from some sources will be several orders of magnitude greater than the predicted water quality at Dunka Rd. Thus if anything does not go as planned (for instance, if the liners leak more than expected, if outflow from the pits is greater than expected, if waste rock is not sorted as accurately as expected, if flooding temporarily overcomes the leachate collection system, etc.) pollutant levels in water discharged to wetlands could be far worse than these predictions. We have particular concerns about pollutants (such as copper and nickel) for which predictions are based on concentration caps and adsorption rates. The leachate for these pollutants is expected to be extremely contaminated, and we do not believe that the predictions accurately reflect the potential for releases to groundwater and wetlands. We thus provide the following table showing leachate levels for those contaminants that are included in Attachment H of the Water Modeling Data Package Vol. 1 (PolyMet 2013i). Once again, all values shown are approximate P90 predictions in ug/L. Standards that vary based on hardness are given for a hardness of 100 mg/L.

Pollutant	Class 2B Standard	Cat. 2/3 Stockpile	Ore Surge Pile	Cat. 1 Stockpile	East Pit Porewater	West Pit Year 40
Aluminum	125	800,000	820,000			
Antimony	31	2,400	2,600	90	86	
Arsenic	53	100	100	100	100	
Cadmium	2.5	200	210	8.0	32	3.8
Cobalt	5.0	24,000	40,000	320	1,600	70
Copper	9.3	165,000	165,000	660	12,800	650
Lead	3.2	550	550	100		26
Nickel	52	350,000	820,000	6,600	30,000	800
Selenium	5.0	130	160	70	90	
Silver	1.0	48	48			
Thallium	0.56	9.8	30			
Zinc	120	20,000	26,000	390	1,600	230

It is clear from this table that the potential for water quality violations in wetlands surrounding the stockpiles and pits is significant. While the values given for the Category 1 Stockpile and the pit water are not as high as those for the temporary sources, some of the constituents will remain many times higher than the standard for more than 200 years, which was the extent of the modeling period. Also, a larger quantity of water is predicted to enter the groundwater system from the pits than from the other sources on this table. The East Pit is located at a greater distance from Dunka Road, and significant wetlands lie between the two. *See* SDEIS Figure 5.2.3-1. Thus the use of the Dunka Road evaluation location may not capture potential exceedances of the standards for those wetlands.

The SDEIS completely ignores potential impacts to the wetlands between the Category 1 Stockpile and Yelp Creek. If the water collection system is not 100 percent effective, Category 1 Stockpile leachate is likely to travel in that direction. East Pit porewater is also likely to travel north and east into adjacent wetlands. These areas need to be included in an assessment of water quality impacts on wetlands.

While the Guidelines allow for mixing zones in some situations, in this case the level of wetland destruction that is already proposed for permitting, the high quality and value of the wetlands at issue, their importance as wildlife habitat, and the large acreage of potential impacts are such that any mixing zone must be very carefully assessed. Neither the permit application nor the SDEIS delineate or otherwise describe a mixing zone. If a mixing zone is being considered, it needs to be delineated and disclosed, and an assessment must be done to make sure that wildlife and aquatic life uses are protected. *See* Minn. R. 7050.186(1). A mixing zone based on the property line with no assessment of impacts on wildlife and aquatic life is inappropriate for surface water, especially when it is located on what is currently public land.

The wetland fill at the Plant Site is also likely to result in water quality standard violations. The fill is required in part to buttress and otherwise alter the Tailings Basin so

that it can receive tailings from the NorthMet project. The resulting discharge of pollutants from the tailings to wetlands and headwater streams should thus be considered pursuant to 40 C.F.R. § 230.11(h).

The SDEIS assumes that more than 99 percent of the Tailings Basin seepage will be collected by the water collection system. The groundwater that is expected to escape the system is apparently assumed to travel underground, not discharging to any wetlands or streams until several miles downstream. No rationale for this assumption is given in the SDEIS. For reasons given in the comments of other parties, particularly the Minnesota Center for Environmental Advocacy and Water Legacy, it is highly unlikely that the collection system will be as effective as the SDEIS predicts. A greater volume of water is likely to enter wetlands and headwaters through groundwater, and that water is likely to mix with wetland and other surface water much more quickly than the SDEIS predicts.

The SDEIS further assumes that 100 percent of the seepage from the south wall of the tailings basin will be collected, and will not enter Second Creek and its associated wetlands. No details are given regarding the water collection system or the hydrology or surface features of the area. At the very least, the SDEIS needs to provide adequate support for the assumption that seepage will not affect wetland water quality in this area.

Finally, the SDEIS does not address the potential for seepage from the east side of the tailings basin and the potential that it will drain to Spring Mine Creek. Although most of the east side consists of higher elevation bedrock, a break in the bedrock provides an opening toward Spring Mine Creek. This entire area appears to consist of wetlands that currently drain toward the Tailings Basin. However, the east side of the tailings basin will gain significant elevation from the NorthMet project, which will result in a reversal of the drainage. Significant seepage is likely, and no collection is planned.

The PolyMet materials do not include predictions for seepage at the east side of the Tailings Basin, but predictions for water quality at the North, Northwest, West, and South toes indicate approximate water quality, shown in the following table. The values are approximate maximum P90 values, in ug/L. Values for standards that vary by hardness are given for a hardness of 100 mg/L.

Pollutant	2B Standard	North Toe	Northwest Toe	South Toe	West Toe
Cobalt	5.0	82	35	128	16
Copper	9.3	690	360	680	180
Nickel	52	1200	600	1700	200
Lead	3.2	64	26	76	15
Zinc	120	250	170	290	

See Water Modeling Data Package Vol. 2 (PolyMet 2013j), Attachment F. This is water that will discharge directly to groundwater, in a landscape that is virtually all wetland. As is clear from this table, if sufficient water escapes collection the water standards will be

exceeded. This seems particularly inevitable on the east side, where seepage is likely to affect Spring Mine Creek as well as wetlands.

**B. The Proposed Discharges Would Cause or Contribute to Significant Degradation of Waters of the United States.**

The EPA Guidelines provide that “no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States,” 40 C.F.R. § 230.10(c), and lists various factors to consider in making this determination. According to these provisions, the proposed discharges would cause or contribute to significant degradation of waters of the United States in several ways, and therefore the permit application must be denied.

**1. The Proposed Discharges Would Contribute to Degradation of the St. Louis River System Due to Sulfate Pollution.**

In addition to degradation evidenced by water quality standard violations as described above, this project would release additional sulfate into the St. Louis River system. As the largest U.S. tributary to Lake Superior, this river system is of national and international importance. It is already heavily impacted by sulfates, to the point where historic wild rice stands have disappeared from many areas and fish is unsafe to eat. Most of the sulfate pollution is from mining. Permitting new open pit mines within this watershed will only add to an already intractable problem.

Currently, a 10 mg/L sulfate water quality standard applies only to waters that produce wild rice. It is becoming increasingly clear, however, that a much lower standard is needed, and that standard will need to be applied throughout the system. This is necessary to reduce the sulfate levels downstream, to reduce the impacts of hydrogen sulfide to the entire system, and to reduce the amount of mercury in fish tissue to safe levels. In a similar situation stemming from mercury, sulfates, and vast expanses of wetlands in the Florida Everglades, the Comprehensive Everglades Restoration Plan has set a target sulfate level of 1 mg/L in Everglades waters. Scheidt, D.J., and P.I. Kalla, Everglades ecosystem assessment: water management and quality, eutrophication, mercury contamination, soils and habitat: monitoring for adaptive management: a R-EMAP status report. USEPA Region 4 (2007) (Ex. 5). In Minnesota, the natural background level appears to be about 3 mg/L, and it is likely that *any* anthropogenic sources that add to that level create a problem.

All waters within the St. Louis River system that have been tested for fish tissue mercury levels are on the impaired waters list. Mercury levels are so high that many of these waters will still be impaired even if or when the statewide mercury TMDL is fully implemented. MPCA, “Minnesota Statewide Mercury Total Maximum Daily Load” (March 27, 2007) (Ex. 6). A mercury TMDL is thus still needed for the St. Louis River. An inter-government effort to develop this TMDL was begun by the U.S. EPA, the Minnesota Pollution Control Agency (MPCA), the Wisconsin DNR, and tribal agencies. However, MPCA pulled out of this effort when it became apparent that it was headed

toward limiting sulfate discharges throughout the watershed. See Josephine Marcotty, “Minnesota drops out of St. Louis River mercury project” Minneapolis Star Tribune (April 11, 2013), accessed at <http://www.startribune.com/politics/statelocal/202636921.html> on March 10, 2014 (Ex. 7).

In addition, the discharge of sulfates into wetlands can produce hydrogen sulfide, which is toxic to plants and aquatic organisms. Researchers for the Minnesota Pollution Control Agency have recently been assessing hydrogen sulfide as the suspected agent in the decline of wild rice in high sulfate waters. See, e.g., Nathan W. Johnson, “Response of rooting zone geochemistry to experimental manipulation of sulfate levels in Wild Rice mesocosms” (Dec. 31, 2013) (Ex. 8). Professor John Pastor, who is one of the researchers for the wild rice study, was recently quoted in the press as saying “We found there really is no threshold at which sulfide becomes toxic. As soon as you add any, you get a decline in growth rate.” Stephanie Hemphill, “Current sulfate standard is about right to protect wild rice, research indicates,” MinnPost (Feb. 26, 2014), accessed at [http://www.minnpost.com/environment/2014/02/current-sulfate-standard-about-right-protect-wild-rice-research-indicates?utm\\_source=MinnPost+e-mail+newsletters&utm\\_campaign=d89b9effa5-2\\_26\\_2014\\_Daily\\_Newsletter2\\_26\\_2014&utm\\_medium=email&utm\\_term=0\\_3631302e9c-d89b9effa5-123374190](http://www.minnpost.com/environment/2014/02/current-sulfate-standard-about-right-protect-wild-rice-research-indicates?utm_source=MinnPost+e-mail+newsletters&utm_campaign=d89b9effa5-2_26_2014_Daily_Newsletter2_26_2014&utm_medium=email&utm_term=0_3631302e9c-d89b9effa5-123374190) on March 10, 2014 (Ex. 9). Similarly an article in the Minneapolis Star Tribune reads,

It’s also clear, now, that it’s not just wild rice that suffers from too much sulfate. The toxic reaction that occurs in the muck around the plant’s roots can affect virtually all types of aquatic flora, or any type of living thing that relies on oxygen, scientists say.

“It’s going to affect everything out there,” said John Pastor, a biologist at the University of Minnesota Duluth, who ran one of the wild rice studies. “It’s going to affect the whole food web.”

Josephine Marcotty, “Research, legal wrangling reap wild rice protections,” Minneapolis Star Tribune (Feb. 26, 2014), accessed at <http://www.startribune.com/lifestyle/health/247183881.html?page=all&prepage=1&c=y#continue> on March 10, 2014 (Ex. 10).

Hydrogen sulfide is toxic not just to plants, but to aquatic life. It can form when sulfates are released to the environment at less than 10 mg/L. As it forms in aquatic environments with organic sediments, sulfate releases to wetland environments are particularly problematic. In addition to the wild rice study material, we are attaching a review of studies of hydrogen sulfide toxicity, Lamers, Leon P.M., *et al.*, “Sulfide as a soil phytotoxin – a review,” 4 *Frontiers in Plant Science* 268 (July 2013) (Ex. 11).

Hydrogen sulfide is mentioned in the SDEIS only in relation to air emissions. The SDEIS completely ignores the potential for degradation of plant and aquatic life due to



the reduction of sulfate to sulfide within the wetland environment. Considering that several streams within the Plant Site are on the impaired waters list for Fishes Bioassessments, PolyMet and the agencies need to investigate the role of sulfate in the degradation of aquatic communities before permitting any additional releases.

According to the SDEIS, sulfate will not be an issue because the water treatment plant and facility will remove sulfate to 9 mg/L before discharge to the environment. At this point, it appears that the 9 mg/L target is not sufficiently protective of the environment. Furthermore, as with the metals discussed above, high levels of sulfate will leach into wetlands from stockpiles, pits, and the Tailings Basin. Sulfur from air deposition will add to those levels. As with the metals, the SDEIS relies on attenuation and dilution in its predictions regarding sulfate levels in the Partridge and Embarrass Rivers. And as with the metals, the SDEIS does not disclose the levels of sulfate that will discharge to wetlands, far upstream of the surface water evaluation points. And finally, as with the metals, the SDEIS relies on a faulty model of the mine site and unrealistically optimistic predictions of the effectiveness of water collection to minimize the amount of contaminated water predicted to escape into groundwater and wetlands from the mine features.

The use of the Dunka Road evaluation point for assessing water quality impacts to wetlands is discussed above. The maximum predicted P90 sulfate levels in the groundwater flow paths at the Dunka Road average between 20 and 60 mg/L. Maximum P90 levels in leachate from mine features is presented in the following table, with approximate values taken from the Water Modeling Data Package Vol. 1, Attachment J (PolyMet 2013i).

	Cat. 2/3 Stockpile	Ore Surge Pile	Cat. 1 Stockpile	East Pit Porewater
Sulfate (mg/L)	12,000	13,000	4,000	2,400

Sulfate in the Category 1 Stockpile leachate is of particular concern, because it continues at this level beyond Year 200. Some unknown amount of this water is likely to discharge into the wetland immediately south of Yelp Creek; Yelp Creek itself is located about 1,000 feet from the foot of the stockpile.

At the Tailings Basin, seepage is predicted to be as high as 850 mg/L in the short term, and 380 mg/L in the long term (more than 200 years). *See* Water Modeling Data Package Vol. 2, Att. F (PolyMet 2013j).

In summary, due to deficiencies in the SDEIS, we do not know how much sulfate would be released to the St. Louis River over the coming decades and centuries due to this mine, but we do know that the potential is high. We also do not know the level to which we must reduce sulfate additions to wetland, stream and lake environments to restore the ecosystem and eliminate negative impacts on human and wildlife health and welfare. But we do know that significant reductions are needed, and that the level is

likely to be below the level at which PolyMet expects to discharge for hundreds of years. If ACE does not have sufficient information to determine whether this mine would contribute to significant degradation of the waters of the United States due to sulfate discharges, it must deny the permit based on a finding that it has insufficient information on which to make a judgment. 40 C.F.R. § 230.12(a)(3)(iv).

## **2. The Destruction of These Wetlands Would Impact State-Listed Plant and Animal Species.**

In addition to the prohibition of permitting the destruction of critical habitat for federally-listed endangered and threatened species (discussed below), the Guidelines require consideration of impacts on state-listed species and other wildlife that is dependent on aquatic ecosystems when determining whether a permitted discharge would cause or contribute to significant degradation of waters of the United States. 40 C.F.R. § 230.30, .32. In this case, the destruction of an important population of a state-listed endangered plant species and the destruction of habitat for moose, a state-listed species of special concern, compel a finding that the permitted discharge would cause or contribute to significant degradation of waters of the United States, and thus must be denied pursuant to 40 C.F.R. § 230.10(c).

The moose is an iconic Northern Minnesota animal that is in a serious decline within the state. Although the Mine Site appears to provide prime moose habitat, no assessment of the loss of this habitat was included in the SDEIS. We address this issue further in our SDEIS comments. Moose are particularly dependent on wetlands for thermoregulation in the summer; this habitat is becoming increasingly important as the summers get warmer. Global warming is believed to be one of the primary reasons for the moose's decline.

In addition, the wetland fill will destroy one of the few known populations of floating marsh marigold in Minnesota, a wetland-dependent plant. This plant is listed as endangered in Minnesota, and has been found only in St. Louis County. *See* MDNR, Rare Species Guide, *Caltha Natans*, accessed at [http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PD\\_RAN06020](http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PD_RAN06020) on February 26, 2014 (Ex. 12). According to the SDEIS, eight percent of the known populations in Minnesota will be affected. No mitigation plan has been presented to ensure the survival of this species in Minnesota.

## **C. The Proposed Discharges Would Destroy Critical Habitat for the Canada Lynx**

The EPA Guidelines provide that “No discharge of dredged or fill material shall be permitted if it: . . . results in likelihood of the destruction or adverse modification of a habitat which is determined by the Secretary of Interior or Commerce, as appropriate, to be a critical habitat under the Endangered Species Act of 1973, as amended.” 40 C.F.R. § 230.10(b)(3). There is no question that the proposed project would destroy more than two square miles of federally-designated critical Canada lynx habitat, and despite wetland

mitigation and a proposed land exchange, those two square miles will be a net loss in critical habitat. The Section 404 permit must therefore be denied on this basis as well. The issue is further addressed in our SDEIS comments.

**D. PolyMet Has Not Provided Enough Information on Alternatives to Allow a Finding That There Is No Practicable Alternative**

The EPA Guidelines provide that “no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem.” 40 C.F.R. § 230.10(a). “An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” For many years, the EPA and other parties have suggested that the possibility of an underground mine should be assessed as an alternative to PolyMet’s preferred alternative. There appears to be no disagreement that an underground mine would have less adverse impact on the aquatic ecosystem.

The Underground Mine and other alternatives, and the lack of sufficient information and assessment, are addressed in our comments on the SDEIS. The Section 404 permit must be denied because “there does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with [the] Guidelines,” 40 C.F.R. § 230.12(a)(3)(iv), regarding the availability of practicable alternatives.

**E. The Proposed Mitigation Does Not Include All Appropriate and Practicable Steps to Avoid and Minimize Adverse Impacts**

The EPA Guidelines provide that “no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.” 40 C.F.R. § 230.10(d). Appropriate compensatory mitigation is generally required to minimize potential adverse impacts. *See* 40 C.F.R. § 230.91(c)(2). The mitigation proposed in this case does not “minimize potential adverse impacts of the discharge on the aquatic ecosystem.” The Section 404 permit must therefore be denied due to the lack of an adequate mitigation plan.

**1. The Proposed Mitigation Does Not Compensate For Lost Functions**

In many cases, a finding that a discharge will have a significant impact on waters of the United States can be avoided by providing compensatory mitigation that addresses that impact. For instance, if the significant impact is a loss of flood water storage capacity, restoration of a former wetland area in the same watershed might provide comparable water storage capacity. If the significant impact is a loss of wildlife habitat, comparable wildlife habitat could be created within the range of the species for whom that habitat is important. In this case, however, most of the proposed mitigation is located in places where it cannot compensate for lost functions. The restoration of wetlands

outside of the St. Louis River watershed cannot compensate for the loss of functions such as flood control, water storage to support river and stream baseflows, and filtering of pollutants and particulates within the watershed. In particular, peat is known to sequester mercury. The destruction of peat bogs will not only release mercury currently stored in peat, it will reduce the mercury sequestration capacity of the watershed, which is likely to have a continuing impact on mercury levels in rivers and streams, and thus on the level of mercury in fish tissue within the St. Louis River system. The loss of this capacity cannot be compensated for by increasing the capacity for mercury sequestration in another watershed (even if the creation of a peat bog were possible).

In addition to these watershed-dependant functions, the mine site provides habitat for a number of wildlife species that do not range as far south as the proposed mitigation sites. Two of these are Canada lynx and moose. Moose in particular need wetlands for thermoregulation in summer, and with global warming that need is increasing. Northeastern Minnesota is increasingly becoming the last viable area within the Midwest for northern species as temperatures grow warmer, and many other species could be affected by the loss of habitat in this area. The restoration or rehabilitation of wetlands south of St. Louis County will not compensate for this loss.

Another function that will be lost at the site is the loss of biodiversity, particularly in regards to black spruce/Jack pine forest, which is considered imperiled/vulnerable in Minnesota. This ecosystem is disappearing due to global warming, and any attempt to create this ecosystem is unlikely to be successful; that would be particularly true south of St. Louis County. Finally, as discussed above the wetland fill would destroy one of the few known Minnesota populations of floating marsh marigold, which is state-listed as endangered and has been found only in St. Louis County. Restoring wetlands in the Aitkin and Hinckley areas will not replace habitat for this rare plant.

This should not be construed as a complete list of the functions that cannot be replaced by the proposed mitigation. The fact is that PolyMet still has not conducted an assessment of the wetland functions that will be lost, despite many comments in 2010 pointing out this requirement, including those from the EPA. Rather than describing the functions that each wetland provides, the SDEIS simply assigns a rank to each wetland based on its quality. The PolyMet mitigation plan is geared toward replacing lost wetlands with wetlands of a similar quality (i.e., high, medium, or low), without regard for functions. This approach does not comply with the EPA Guidelines. Without an assessment, the ACE cannot determine whether mitigation would “compensate[e] for the aquatic resource functions that will be lost as a result of the permitted activity.” 230.93(a)(1). Unless and until PolyMet provides an assessment of lost wetland functions and a mitigation plan designed to replace those functions, ACE must deny this permit application.

## **2. The Proposed Mitigation Does Not Compensate for Indirect Impacts**

In addition to the direct destruction of 916 acres of wetlands, the SDEIS acknowledges that the proposed project would destroy or degrade thousands of additional

acres. Neither the permit application nor the SDEIS provides a mitigation plan for this significant loss of wetlands.

The indirect loss and degradation of wetlands is a “secondary effect” of the proposed wetland fill activity that must be considered pursuant to 40 C.F.R. § 230.11(h). The EPA has stated very clearly in both its February 18, 2010 letter and in a November 17, 2013 letter regarding the proposed Rosemont Mine in Arizona that indirect impacts must be mitigated. The 2010 letter states:

EPA also finds the wetland mitigation plan environmentally unacceptable because it does not provide mitigation for all impacts to wetlands, particularly for indirect impacts,

and:

Insofar as the USACE is using the DEIS to support the CWA Section 404 wetlands fill permit decision, the revised/supplemental DEIS needs to address several wetland permitting issues, including . . . a complete analysis of and mitigation for the indirect impacts to wetlands.

Bharat Mathur, EPA, Letter to Colonel Jon L. Christensen, ACE (Feb. 18, 2010) (Ex. 1).

.In regards to the Rosemont Mine, the EPA states:

EPA’s Guidelines (40 C.F.R. 230.11(h)) and the 2008 Mitigation Rule (40 C.F.R. 230.93) clearly state the need to compensate for losses of waters due to secondary impacts. The requirement that secondary impacts be fully compensated is consistent with standard practice for projects of this magnitude and essential given that the range, extent and severity of secondary adverse impacts upon aquatic resources are as significant as the direct impacts.

Jane Diamond, EPA, Letter to Colonel Kim Colloton, ACE (Nov. 7, 2013) (Ex. 13). This is true of the impacts in this case as well.

The need for compensatory mitigation for indirect impacts is clear given the Guideline requirement that mitigation be “based on what is practicable and capable of compensating for the aquatic resource functions that will be lost as a result of the permitted activity.” 40 C.F.R. § 230.93(a)(1). Where significant aquatic resource functions will be lost due to indirect impacts such as groundwater drawdown, limiting compensation to direct impacts will not compensate for lost functions. Again, the Guidelines state that “the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions.” 40 C.F.R. § 230.93(f). If the losses due to indirect impacts are not accounted for, the amount of mitigation will not be sufficient to replace the lost values.

The Guidelines require that “[i]mplementation of the compensatory mitigation project shall be, to the maximum extent practicable, in advance of or concurrent with the activity causing the authorized impacts.” 40 C.F.R. § 230.93(m). While the exact extent of indirect wetland loss cannot be predicted, some amount of loss is certain. For instance, minerotrophic wetlands within a certain distance of the mine are certain to be lost to groundwater drawdown. Implementing compensatory mitigation in advance of this impact is thus practicable.

To the extent that losses cannot be predicted, the permit needs to be detailed, clear, and unequivocal on the mitigation that will be required once impacts are ascertained. The permit application and SDEIS make vague references to additional mitigation if it is deemed appropriate based on monitoring. This is completely insufficient to ensure that lost wetland functions will be compensated for. Although the permit application provides monitoring locations, it does not say what parameters will be monitored, or what would constitute an impact. For instance, will monitoring be limited to groundwater levels, or will wetland vegetation and water quality also be monitored? Will wetlands be deemed “impacted” only when the groundwater level drops a foot below their lowest (i.e., late summer) levels, or will the hydrological regime throughout the year be considered (and if so, how)? Finally, it provides no plan as to what sort of mitigation will be undertaken when wetlands are found to be impacted.

The St. Louis River watershed and Lake Superior basin stand to lose a very substantial amount of wetlands due to this project. It is possible that more than eleven square miles of wetlands will be lost, and that the vast majority would not be replaced. This makes a mockery of the federal goals of no net loss of wetland acreage or function.

### **3. The Proposed Mitigation Plan Was Not Based on a Watershed Approach.**

The Guidelines require that compensatory mitigation be based on a watershed approach “to the extent appropriate and practicable.” 40 C.F.R. § 230.93(c)(1). In a situation where the watershed is losing between 912 and 7350 acres of wetlands, the watershed approach is not only appropriate, but necessary to compensate for lost functions. *See, e.g.*, 40 C.F.R. § 230.93(a)(1) (“Compensatory mitigation requirements must be commensurate with the amount and type of impact.”).

The Guidelines define “watershed approach” as

an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by DA permits.

40 C.F.R. § 230.92. Compensatory mitigation should be based on an appropriate watershed plan if one is available. 40 C.F.R. § 230.93(c)(1).

The permit application describes a process of looking for large acreages within the St. Louis River watershed that could be used for mitigation sites. It describes nothing, however, in regard to watershed needs or plans, or how the proposed mitigation will compensate for lost watershed functions.

PolyMet has apparently rejected several potential mitigation possibilities as too expensive or bothersome. While the Guidelines do emphasize “practicability,” ACE needs to consider that term in light of the extremely large loss that it would be permitting here. People are used to thinking in terms of economy of scale, according to which large-scale mitigation would cost less (in terms of both money and time) on a per-acre basis than would small-scale mitigation. That mindset should not be allowed to limit the consideration of mitigation possibilities in this case. The loss of function with this amount of acreage is much greater than the simple multiplication of small losses, and this reality should be factored in when ACE considers whether particular mitigation possibilities are practicable.

#### **F. This Wetland Loss Is Too Large To Be Permitted**

The reality here is that the proposed loss of wetlands is too large to be compensated for. It represents a loss to the Partridge River watershed and to wildlife that cannot be replaced due to its size. PolyMet is having trouble finding mitigation sites within the St. Louis River watershed because of the sheer size of the proposed loss.

At some point, all of the state and federal agencies involved need to take a step back and acknowledge that in permitting new, large open pit mines in the St. Louis River watershed, they are approving significant losses of wetlands within the system that cannot be replaced. This flies in the face of all of the effort and planning that has gone into the Lakewide Management Plan and the Binational Program to Restore and Protect the Lake Superior Basin. EPA and other agencies have singled out Lake Superior as a watershed of particular importance for protection due to the amount and quality of its water. A strong argument could be made that Lake Superior is the single most important resource on the planet; other freshwater bodies of its size are heavily polluted. And yet the governments are apparently proceeding with permitting thousands of acres of wetland destruction without ever stopping to consider whether this is appropriate as a matter of public policy. And they are adding to the problem by permitting the “indirect” destruction of wetlands without any real consideration beforehand of what will be lost.

This is particularly disturbing given that the wetlands here are not even private property; they belong to the federal government. While PolyMet has private property interests in the mineral estate, the federal government most certainly has authority to limit the circumstances under which the minerals can be extracted in order to protect valuable public resources. PolyMet has rejected underground mining as an option because it is not currently economically feasible. Twenty years ago, open pit mining was not

economically feasible because of the cost of complying with environmental standards. Federal environmental standards include no net loss in the functions of wetlands; if mining is not economically feasible because of that standard, it should not be done. No doubt the day will come when underground mining becomes economically feasible, and perhaps a plan could be produced at that time that would comply with environmental standards.

**G. Approval of this permit application is not in the public interest.**

In addition to reviewing the permit application according to the EPA Guidelines, ACE must consider whether granting the permit would be in the public interest, weighing the expected benefits against the detriments. 33 CFR § 320.4(a)(1). Granting this permit would not be in the public interest for the many reasons discussed above and in our comments to the SDEIS.

We particularly want to emphasize the impact of wetland destruction on global climate change. Returning to the Friends of the Boundary Waters scoping comments on the USFS land exchange:

Peatlands are wetlands that form over hundreds and thousands of years. They consist of the decayed remains of plants, accumulating in stagnant, low-oxygen conditions that prevent the normal decomposition of vegetation. Peat bogs function as a natural water filter, preventing flooding. Many support rare plants and animals. Peatlands are important terrestrial environments in the sequestration of carbon that would otherwise contribute to climate change. The destruction of peatlands can release large quantities of previously sequestered CO<sub>2</sub> into the atmosphere.

.....

Scientists have calculated that the loss of 1,000 acres of Minnesota peatlands translates to a release of approximately 2.7 million metric tons of CO<sub>2</sub> to the atmosphere. This is an increase in Minnesota's total annual emissions of CO<sub>2</sub> by approximately two percent (above 2005 levels) (Anderson et al., 2008). PolyMet's impacts on Minnesota's carbon emissions are likely to be close to this level, given their peatland impacts are nearly 900 acres and perhaps higher.

In 2007, the Minnesota State Legislature requested that the University of Minnesota produce an assessment of the potential capacity for carbon sequestration in Minnesota's terrestrial ecosystems. The Minnesota Terrestrial Carbon Sequestration Project, an interdisciplinary research group, was organized to produce that assessment. The team analyzed existing scientific literature, land existing in broad land use categories, and the role of current state policies and programs on carbon sequestration potentials. In February 2008, the Project produced a report titled, "The Potential for Terrestrial Carbon Sequestration in



Minnesota.” Some of the key findings and recommendations of that team of researchers are:

- Peatlands in Minnesota contain the largest carbon stocks in the state, in excess of 4 billion metric tons
- Release of this carbon to the atmosphere as CO<sub>2</sub> can result from peatland drainage and conversion
- Release of this carbon to the atmosphere would accelerate global warming and require greater reductions in CO<sub>2</sub> emissions elsewhere
- Destruction of 1,000 acres of peatland in Minnesota from mining or other activities would increase the state’s total CO<sub>2</sub> emissions by 2% over 2005 levels

The top recommendation of this research group: “Preserve the existing large carbon stocks in peatlands and forests by identifying and protecting peatlands and forests vulnerable to conversion, fire, and other preventable threats” (Anderson et. al 2008).

In December 2006, Governor Tim Pawlenty announced the state’s “Next Generation Energy Initiative,” including the development of a comprehensive plan to reduce Minnesota’s emissions of greenhouse gases. The Minnesota Climate Change Advisory Group, a broad-based group of Minnesota citizens and leaders, was created to develop state-level policy recommendations to the Governor. In April 2008, the Advisory Group released its report titled, “Minnesota Climate Change Advisory Group Final Report: A Report to the Minnesota Legislature.” Some of its key findings and recommendations include:

- “Wetlands have among the highest potential carbon-sequestration capacities for any type of land cover in Minnesota. Peatlands are likely Minnesota’s largest single carbon sink, containing 37% of all carbon stored in the state...”
- Recommendation: “Protecting these enormous carbon reservoirs (peatlands)...is critical.”

The policy goals from the Advisory Group included:

- Protect and restore northern peatlands.
- By 2015, identify peatlands at risk of releasing greenhouse gases because of lowered water table or industrial uses such as mining.
- Design policies to protect peatlands and wetlands from drainage and other carbon- releasing land uses.


Betsy Daub, Friends of the Boundary Waters Wilderness Letter to James Sanders (Nov. 23, 2010) (Ex. 4), quoting Anderson, Jim, *et al.*, “The Potential for Terrestrial Carbon Sequestration in Minnesota: A Report to the Department of Natural Resources from the Minnesota Terrestrial Carbon Sequestration Initiative” (Feb. 2008) (Ex. 14) and Minnesota Climate Change Advisory Group, “Final Report to the Minnesota Legislature”

(April 2008) (Ex. 15). In light of these state recommendations and policies, the destruction of this amount of peatlands cannot be considered to be in the public interest.

The ACE public interest review weighs the financial and other benefits of projects that require wetland destruction against the environmental and other costs. PolyMet sponsored an economic study that was used in the SDEIS that vastly overstates the financial benefits of this project, and these projections cannot be used in a legitimate cost/benefit analysis. Furthermore, the SDEIS assumes that these metals are needed by the world economy, and this assumption cannot be accepted as true without supporting evidence. These issues are addressed in our SDEIS comments; we highlight them here as of particular importance to the public interest review.

For the above reasons and those stated in comments on the SDEIS, the Section 404 permit application for the NorthMet project must be denied. Thank you for the opportunity to comment, and please keep us informed of developments in this process.

Sincerely,



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