Minnesota Center for Environmental Advocacy
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May 23, 2014

VIA ELECTRONIC MAIL

Re: St. Louis River Area of Concern

Dear Members of the Great Lakes Advisory Board,

Many of us who work to preserve Lake Superior and its tributaries are concerned about the impact of proposed copper-nickel (also known as "sulfide" or "hardrock") mining operations on the St. Louis River watershed, the watershed of the largest United States tributary to Lake Superior. We appreciate the vital role of Great Lakes Restoration Initiative ("GLRI") funds in restoring waters within the Lake Superior Basin. However, we are concerned that even as state and federal agencies work to clean up extensive pollution in the St. Louis River Area of Concern ("AOC"), state agencies are also working to permit a mining operation at the headwaters of the river that threatens to undo the good works accomplished by the GLRI funds.

A company called PolyMet, backed by Glencore Xstrata, the largest commodities trading company in the world, is proposing to construct a sulfide mine at the headwaters of the St. Louis River. The mine site would be in the Partridge River watershed, and the tailings basin (where much of the waste would be stored) is in the Embarrass River watershed, both of which are tributaries to the St. Louis River. PolyMet proposes to expand an old, leaky tailings basin, and the mine itself would be excavated in a place that has never been mined before.[1]

The PolyMet project is currently in environmental review. The first draft of its Environmental Impact Statement ("EIS") was completed in 2009, but received a very poor review from the EPA. PolyMet's second draft EIS (Supplemental Draft Environmental Impact Statement, or "SDEIS") was out for public comment earlier this year. PolyMet has made some improvements in its mine plan to attempt to control pollution from its mine, but EPA has noted a number of important areas where the environmental analysis is still incomplete.[2] Sulfide mining does not have a good track record. Even when mines promise compliance, the vast majority of sulfide mines pollute surface and/or groundwater.[3] Sulfide mines in close proximity to surface water are even more likely to pollute.[4] Even using modern mining methods, we are concerned that pollution as a result of sulfide mining is all but inevitable.

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[1] MDNR, et al. 2013, Executive Summary, p. 10-11.
[2] EPA, 2014.
[3] Kuipers & Maest, 2006.
[4] *Id.*

What are the impacts of sulfide mining?

Sulfide mining poses threats to water quality from releases of sulfur compounds (sulfates and sulfuric acid) and heavy metals, as well as destruction of wetlands. Sulfide mining is different from traditional taconite mining in the Lake Superior watershed, some of which has also contributed to existing problems in the St. Louis River. Sulfide mining poses increased environmental risks. The targets of sulfide mining are metals – copper, nickel, zinc, platinum, palladium, and gold -- that are embedded in sulfide-bearing rock. When this rock is blasted and pulverized, sulfides are exposed to air and water, and may generate sulfuric acid, which is toxic to plants and animals. Sulfuric acid also increases leaching of heavy metals out of the rock.[5] Those heavy metals are toxic to plants, to animals, and to people, as well.

Heavy metals may be a problem even if sulfuric acid never develops. Mercury, arsenic, copper and zinc are among the metals that are dangerous to humans, plants, and animals that water can carry away from a sulfide mine site.[6] Finally, sulfide mining produces very large volumes of sulfates,[7] which convert to hydrogen sulfide in the sediment in wetlands, lakes, ponds and rivers. Hydrogen sulfide is toxic to wild rice and other plants.[8] Sulfates also increase mercury bioaccumulation in the food chain.

What are the problems with the analysis in PolyMet's SDEIS?

Sulfide mining would require decades, or even centuries, of water quality treatment after mining is complete. Many taconite companies that have mined in this area have gone bankrupt and disappeared. These sites later become the responsibility of public entities to clean up, when funds are available. The history of sulfide mining is no different – total cleanup costs for existing hardrock mines are estimated at $57 - 67 billion, and in many cases there is no company to bear those costs.[9] PolyMet proposes to mine for 20 years. But after the mine closes, the site will stay polluted for much, much longer. In fact, the Minnesota Department of Natural Resources has said that it doesn't know how long PolyMet will need to treat the water.[10] But the existing data from the mining company suggests that it will be at least 200 years at the mine site, and at least 500 years at the plant site.[11] PolyMet's plan after the mine closes calls for two wastewater

[5] MDNR et al., 2013, p. 5-51.
[6] Kuipers & Maest, 2005.
[7] Myers, 2014a, p. 17.
[8] Pastor, 2013; Myrbo, 2013; Oseid & Smith, 2011.
[9] Gestring, 2013.
[10] Dunbar & Kraker, 2013.
[11] *Id.*

treatment plants that both use an expensive form of reverse osmosis, as well as systems to collect and pump the water.[12]

PolyMet fails to analyze the impacts of mercury. The St. Louis River is already polluted with mercury.[13] The source of this mercury contamination is still being studied, but likely culprits include airborne mercury, waterborne mercury, and waterborne sulfates, which promote mercury methylation.[14] PolyMet will unearth rock that contains both mercury and sulfates and PolyMet's changes in hydrology will also increase downstream mercury levels. While PolyMet proposes to treat the water it can capture before the water runs off the site to remove sulfates, other water will escape untreated into nearby wetlands and rivers.[15] Moreover, PolyMet does not have a strategy for treating the water for mercury; indeed, PolyMet constructed a water model that addressed over 25 different pollutants, but not mercury. PolyMet's project has the potential to increase mercury impairments in the St. Louis River,[16] and the EPA has concluded that PolyMet's analysis of mercury releases and bioaccumulation is insufficient.[17] Increasing mercury is inconsistent with the Lake Superior Zero Discharge Demonstration Program and the Lake Superior Lakewide Management Plan ("LaMP").

PolyMet's model of ground and surface water impacts is flawed. A water model is designed to predict how much water will travel from the mine site and tailings basin to nearby wetlands, lakes, rivers and groundwater – and how polluted that water will be when it gets there. PolyMet's model made unrealistically low predictions for groundwater volume (or "recharge").[18] The Great Lakes Indian Fish and Wildlife Commission ("GLIFWC") and Minnesota Department of Natural Resources data demonstrates that the assumptions of the water model are flawed,[19] but PolyMet has yet to fix its model. In addition, PolyMet's model and the SDEIS assume that bedrock under both the mine and tailings site has no fractures and water never travels through the bedrock.[20] This assumption is clearly inaccurate,[21] and several agencies, including the U.S. EPA, the Minnesota Geological Survey, and the Minnesota Department of Health (which is responsible for regulation of groundwater quality) have pointed out this critical flawed

[12] MDNR, et. al., 2013.
[13] Anderson, et al., 2013.
[14] Weiner, et al., 2006; Coleman Wasik, et al., 2012.
[15] MDNR, 2013; Myers, 2014b.
[16] Branfireun, 2014.
[17] EPA, 2014.
[18] Dunbar & Kraker, 2014; Myers, 2014c.
[19] GLIFWC, 2014; Lehr, 2014.
[20] Myers, 2014a.
[21] Lehr, 2014; GLIFWC, 2014.

assumption.[22] If PolyMet produces a corrected model, it will show that polluted water may travel both faster and farther from the site than originally predicted.[23]

The agencies have analyzed the impacts of PolyMet assuming that little pollution will seep from mine wastes, tailings or pipelines. Although PolyMet has designed a water collection system for the permanent waste rock pile at the mine and tailings piles, neither permanent waste facility is lined and neither can control seepage from the bottom of these huge piles.[24] The tailings basin collection plan also fails to consider or control seepage to the east and south of the tailings piles.[25] PolyMet's designs may be improvements over its earlier proposal, but these plans don't control many sources of seepage, may not operate as modeled, and may fail completely, especially given that they are expected to perform perfectly for decades or centuries.[26] Tailings dams leak or fail, pipelines break and wastewater treatment systems malfunction with unnerving regularity, even in modern mines.[27] Yet PolyMet's model only evaluated the environmental impact of its mine assuming that almost no pollution will seep or leak to surface and groundwater from pipelines, mine pits, waste rock and tailing piles.

The agencies have yet to propose any financial assurance for the PolyMet mine. Minnesota law requires financial assurance for sulfide mines.[28] Financial assurance is a sort of "damage deposit" that the mining companies must provide to the state before they start construction that would cover the costs of cleanup at the mine site. PolyMet estimates that the cost of operating water treatment plants and related systems after cleanup would range between $3.5 and 6 million per year, for an undisclosed number of years.[29] At the more conservative range, this could yield a total number of $1.2 to 6 billion (based on ranges between 200 and 500 years of water treatment). EPA has requested that more information be provided on financial assurance.[30] If PolyMet closes suddenly and declares bankruptcy, or there is some catastrophe at the mine, it remains unclear whether there will be either the funds or the political will to protect Lake Superior.

PolyMet's mine may ultimately harm more than 8,200 acres of wetlands and it has no plan for mitigating most of its impacts. PolyMet will directly destroy over 900 acres of wetlands to

[22] EPA, 2014; Minnesota Geological Survey, 2014; Minnesota Department of Health, 2014.
[23] Myers, 2014b.
[24] MDNR, et al., 2013.
[25] Lehr, 2014; GLIFWC, 2014; EPA, 2014.
[26] Malusis, 2014.
[27] Gestring, 2012.
[28] Minnesota Rule 6132.1200.
[29] MDNR, et al., 2013.
[30] EPA, 2014.

build its mine.[31] But water pollution, changes at the tailings site and digging mine pits nearly 700 feet deep will harm wetlands for many acres around – potentially over 7,300 acres, according to PolyMet's own estimates.[32] PolyMet is required by state and federal law to replace all the wetlands it damages. Yet PolyMet has only proposed ways to mitigate about 900 acres of directly destroyed wetlands, and most of that mitigation would take place outside the Lake Superior Basin.[33] PolyMet has no plans in place to mitigate another 7,300 acres of impaired or destroyed wetlands. These wetlands currently provide services to the St. Louis River watershed, such as protection of water quality, habitat, recreational opportunities and mercury and carbon sequestration, all of which could be lost forever.

In summary, we are concerned that even as the GLRI funds diligent cleanup efforts throughout the Lake Superior Basin as well as in the St. Louis River watershed, proposed sulfide mining operations threaten to pollute the watershed and undo the excellent efforts of state, federal and tribal entities to reverse years of mining and industrial pollution. We strongly encourage the GLRI Advisory Committee to investigate this matter further.

Sincerely,

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[31] MDNR, et al., 2013.
[32] *Id.*
[33] Glaser, 2014.

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