WaterLegacy

Protecting Minnesota's waters and the communities who rely on them

Petition for Supplemental Environmental Impact Statement to the United States Army Corps of Engineers, the U.S.D.A. Forest Service, and the Minnesota Department of Natural Resources for the *PolyMet NorthMet Copper-Nickel Mine Project and Land Exchange*

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SUBMITTED BY:

Paula Goodman Maccabee (#129550).
JUST CHANGE LAW OFFICES
1961 Selby Ave.
St. Paul MN 55104
phone: 651-646-8890
fax: 651-646-5754
cell: 651-775-7128
e-mail: pmaccabee@justchangelaw.com

Counsel and Advocacy Director for WaterLegacy

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INTRODUCTION

WaterLegacy submits this Petition for preparation of a Supplemental Environmental Impact Statement (Supplemental EIS) for the PolyMet NorthMet Copper-Nickel Mine Project and Land Exchange (PolyMet Project) proposed by PolyMet Mining, Corp. and Poly Met Mining Inc., its subsidiary (PolyMet). Our Petition for a Supplemental EIS is submitted to the Co-Lead Agencies for environmental review of the PolyMet Project, namely the United States Army Corps of Engineers, the U.S.D.A. Forest Service, and the Minnesota Department of Natural Resources and is also provided to the Minnesota Environmental Quality Board and to Cooperating Agencies in the PolyMet Project environmental review process.

A Supplemental EIS must be prepared under federal and Minnesota law, which require that a responsible governmental agency prepare a supplemental EIS when new information or new circumstances have the potential to result in significant environmental effects and when project alternatives or changes are proposed that are relevant to significant environmental effects.

The PolyMet NorthMet Mining Project and Land Exchange Final Environmental Impact Statement (PolyMet Final EIS or PolyMet FEIS) was released in November 2015,[1] and the Minnesota Department of Natural Resources (MDNR) declared the FEIS to be adequate in March 2016.[2] The U.S.D.A. Forest Service (Forest Service) in its Final Record of Decision for the PolyMet Land Exchange on January 9, 2017 (PolyMet Land Exchange ROD) also deemed the Final EIS adequate.[3] The U.S. Army Corps of Engineers (Army Corps) has not yet made an adequacy determination regarding the Final EIS.

The MDNR has made no decisions regarding PolyMet Project permits. However, the Forest Service approved the PolyMet Land Exchange specifically and clearly relying on the completeness and adequacy of the PolyMet FEIS:

> The FEIS discloses the effects of the land exchange and the mining project and informs my decision on the land exchange. Forest Service.[4]
>
> In describing this decision, I considered the environmental effects of each alternative disclosed in the FEIS for the land exchange and the mining project.[5]
>
> While my decision is only for the land exchange, I have considered the effects of both the mining project and the land exchange as documented in the FEIS in making this public interest determination.[6]

The PolyMet FEIS is inadequate to address substantial new information, new circumstances, new alternatives, and project changes that have occurred since completion of the FEIS, and the

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[1] MDNR et al., NorthMet Mining Project and Land Exchange Final Environmental Impact Statement (PolyMet FEIS), November 2015, available at https://www.dnr.state.mn.us/input/environmentalreview/polymet/feis-toc.html.
[2] MDNR, Record of Decision, *In the Matter of the Final Environmental Impact Statement for the PolyMet Mining, Inc., NorthMet Mining Project and Land Exchange* (MDNR PolyMet FEIS ROD), March 3, 2016, available at https://files.dnr.state.mn.us/input/environmentalreview/polymet/polymet-eis-rod-030316-final.pdf.
[3] U.S. Forest Service, Final Record of Decision for the NorthMet Land Exchange (PolyMet Land Exchange ROD), Jan. 9. 2017, p. 34, available at https://www.fs.usda.gov/nfs/11558/www/nepa/72870_FSPLT3_3913258.pdf.
[4] *Id.*, p. 5
[5] *Id.*, p. 10
[6] *Id.*, p. 15.

PolyMet Land Exchange relied on its adequacy and completeness. The grounds for a Supplemental EIS are summarized below and then discussed in detail.

During environmental review of the PolyMet Project, WaterLegacy objected to the Agencies' failure to analyze cumulative impacts of reasonably foreseeable project expansions. At that time, however, the only information regarding future expansions was provided in a third party report to investors and contained no detail as to the scale, scope or plan for any proposed expansion.[7]

This situation changed dramatically in March 2018, when PolyMet filed an official Technical Report detailing two scenarios for expanded mining and processing, along with capital needs, operational details, and costs.[8] These intensified mining scenarios assume an additional significance since the Technical Report calls into question the economic feasibility of the PolyMet Proposed Action without such increases in mining and ore processing.

During environmental review, WaterLegacy also objected to the failure of the PolyMet Final EIS to analyze alternative methods or alternative sites for flotation tailings disposal, including former mine facilities in the vicinity of the LTVSMC plant.[9] In its discussion of its expansion scenario, PolyMet's March 2018 report also proposed use of two abandoned mine pits near the plant for disposal of the increased volume of tailings.[10]

When PolyMet's applications for a Permit to Mine and for Water Appropriations and Dam Safety permits became available, WaterLegacy requested that a hearing and Supplemental EIS be provided by the Army Corps to address changes in tailings dam construction and safety, mine site water appropriations, and proposed mine site practices that could affect water quality and the capacity for adaptive management at the site.[11] Additional information demonstrating that a Supplemental EIS must analyze these changes in practices has come to light in the state permitting process.

Finally, since the Final EIS was completed, PolyMet has proposed a plan for wetlands replacement that bears no resemblance to the wetlands mitigation plan described in the Final EIS. PolyMet's new mitigation to compensate for effects of the PolyMet project on wetlands and wetlands functions haven't been subject to any public environmental review.

WaterLegacy requests a Supplemental EIS be prepared on the following grounds:

1. **New information and new circumstances described in PolyMet's 2018 Technical Report require a Supplemental EIS since they affect the feasibility of the Proposed Action described in the PolyMet FEIS and its ability to meet its stated Purpose and Need, including financing reclamation and closure.**

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[7] WaterLegacy Comments on the PolyMet NorthMet Mining Project and Land Exchange Final Environmental Impact Statement (WaterLegacy Comments on PolyMet FEIS), Dec. 14, 2015, pp. 93-94, referencing Edison Investment Report, Nov. 2013, attached as Ex. 54 to WaterLegacy's Comments on the PolyMet NorthMet Mining Project and Land Exchange Supplemental Draft Environmental Impact Statement, March 13, 2014. WaterLegacy FEIS Comments and SDEIS Exhibits are available at http://waterlegacy.org/Polymet-Sulfide-Mine and http://waterlegacy.org/PolyMet-SDEIS-Comments and as part of the environmental review record.

[8] *NorthMet Project Form NI 43-101F1 Technical Report*, prepared for PolyMet Mining by M3 Engineering and Technology Corp. (PolyMet 2018 Technical Report), March 26, 2018, *attached as Exhibit 1.*

[9] WaterLegacy Comments on PolyMet FEIS, *supra*, p. 86.

[10] PolyMet 2018 Technical Report, *Exhibit 1*, p. 243.

[11] WaterLegacy Letter to USACE, Request for Public Notice, Hearing and Supplemental EIS, *attached as Exhibit 2.*

2. **Increased mining described in PolyMet's 2018 Technical Report is a substantial change and a significant new circumstance bearing on the Proposed Action and the environmental effects of the Project and requiring a Supplemental EIS.**

   A. **Increased mining is a significant new circumstance and substantial change not evaluated in the PolyMet FEIS and foreseeably affecting the proposed action.**

   B. **A Supplemental EIS is required to evaluate the foreseeable cumulative impacts of PolyMet's increased mining and processing scenarios.**

   C. **Increased PolyMet Project mining and processing have the potential to result in significant environmental effects.**

3. **PolyMet's recent plan for tailings disposal in abandoned mine pits is a feasible alternative that must be analyzed in a Supplemental EIS.**

4. **Substantial changes in the PolyMet project since the Final EIS must be analyzed in a Supplemental EIS, including a change in methods to provide tailings dam safety, increases in mine site water appropriations, and elimination of the Mine Site water treatment facility.**

   A. **Elimination of Cement Deep Soil Mixing and effects on predicted tailings dam safety require a Supplemental EIS.**

   B. **Increased water appropriations and effects on water quality and the Partridge River headwaters require a Supplemental EIS.**

   C. **Elimination of the Mine Site Wastewater Treatment Facility and effects on water quality require a Supplemental EIS**

5. **PolyMet's new wetlands mitigation plan, which has had no environmental review, is a new mitigation alternative that must be analyzed in a Supplemental EIS.**

Adverse effects from changes in the PolyMet Project that reduce factors of safety that prevent dam failure, increase water appropriations, and eliminate mine site wastewater treatment are all compounded by the fact that the PolyMet Project could triple in size. A Supplemental EIS is required to evaluate the cumulative environmental effects of reasonably foreseeable PolyMet Project expansions along with potential synergistic effects of mining expansions and project changes.

DISCUSSION

1. **New information and new circumstances described in PolyMet's 2018 Technical Report require a Supplemental EIS since they affect the feasibility of the Proposed Action described in the PolyMet FEIS and its ability to meet its stated purpose and need, including financing reclamation and closure.**

The National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy Act (MEPA) both require that a supplemental environmental impact statement be prepared when

there are significant new circumstances or information that bear on the proposed action or its impacts. NEPA states:

> Agencies: shall prepare supplements to either draft or final environmental impact statements if. . (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. 40 C.F. R. §1502.9(c)(1).[12]

MEPA similarly requires that a responsible government unit shall prepare a supplement to an environmental impact statement when substantial new information or new circumstances significantly affect the potential environmental effects from the proposed project or significantly affect the availability of prudent and feasible alternatives. Minn. R. 4410.3000, Subp. 3, Item A (1) and (2).

The PolyMet NorthMet final environmental impact statement (PolyMet FEIS) discussed a single Proposed Action with an ore processing rate of 32,000 tons per day[13] from a surface mine with three pits over an approximately 20-year mine life.[14] The FEIS stated, "The NorthMet Project No Action Alternative (i.e., the NorthMet Project Proposed Action would not occur) is the only alternative to the NorthMet Project Proposed Action evaluated in detail in this FEIS."[15]

Return on investment was an explicit part of the FEIS evaluation of project feasibility. The FEIS rejected an underground mining alternative based on an assessment consistent with the National Instrument 43-101 reporting standard used for public disclosure of information on stock exchanges supervised by the Canadian Securities Administrators. Based on that assessment, underground mining "would not generate enough revenue to pay for all costs associated with underground mining."[16] Similarly, the potential for a smaller scale project was rejected on the grounds that "the return on investment for a smaller scale project was infeasible."[17]

In ruling out the underground mining alternative that would have eliminated conflict with the Weeks Act, the U.S. Forest Service Final Record of Decision for the PolyMet Land Exchange adopted the FEIS assessment that such an alternative would not be reasonable if it were "economically infeasible."[18]

In ruling out the underground mining alternative to the Proposed Action, the Co-Lead Agencies defined economic feasibility to include the profit margin to private investors:

> Economic feasibility is based on the balance of *costs and profit margins* against the value of the mineable material. Since PolyMet is a private sector and for-profit company, the value of the saleable material would need to provide sufficient income to cover operating cost (which includes, but is not limited to, the cost of mining, processing, transportation,

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[12] NEPA requirements regarding supplementation of an EIS are also incorporated by reference in regulations of the U.S. Army Corps at 33 C.F.R. § 230.13(b).
[13] References to "tons per day" or "tpd" in these comments are short tons per day, also abbreviated as "STPD."
[14] PolyMet FEIS, 1-5, 3-40, 3-41, 3-103.
[15] *Id.*, 3-146.
[16] *Id.*, 3-160.
[17] *Id.*, 3-148.
[18] PolyMet Land Exchange ROD, p. 28.

> and waste management), capital cost (to build and sustain facilities), *an adequate return to investors*, reclamation, and closure costs and taxes.[19]

The economic feasibility of PolyMet's 32,000 tons per day Proposed Action was based on analysis conducted in 2012 consistent with Canada's National Instrument 43-101 standards.[20] According to this analysis, PolyMet predicted that the total capital cost for the project, including the hydrometallurgical process, would be $517 million, plus an additional $85 million for environmental measures for a total cost of $602 million.[21] The after tax internal rate of return for the PolyMet project was projected as 30.6%.[22]

PolyMet's March 26, 2018 Technical Report conforms to the same Canadian NI 43-101 standards. This 2018 Technical Report provides significant new information and demonstrates significant new circumstances that call into question the economic feasibility of the Proposed Action described in the PolyMet FEIS.

The statements in PolyMet's 2018 Technical Report about the economic potential of its Proposed Action are guarded and conditional. The Report states that analysis, "demonstrates that the NorthMet Project is *technically viable* and has the *potential to generate positive economic returns based on the assumptions and conditions* set out in this Report."[23]

The PolyMet 2018 Technical Report projects capital costs for the Proposed Action, including the hydrometallurgical process, at $1,204 million,[24] double the costs estimated in the 2012 analysis upon which the FEIS relied. The 2018 Report also projects an after tax rate of return on investment which is approximately one-third of that projected in 2012. The Proposed Action, without hydrometallurgical processing would have capital costs of $945 million and an after tax internal rate of return (IRR) of 9.6%, while the complete Project studied in the FEIS would have a capital cost of $1,204 million and an IRR of 10.3%.[25]

In short, new and official information prepared for PolyMet shows that its Proposed Action would require twice the capital outlay proposed in the analysis that supported the FEIS, while reducing the expected return to investors by approximately two-thirds.

PolyMet's 2018 Technical Report also acknowledges that even its predicted rates of return are uncertain since, "Financial returns for the Project are highly sensitive to changes in metal prices."[26] For the FEIS Proposed Action including the hydrometallurgical process, for example, just a 10% reduction in estimated metals prices would result in an after tax rate of return of 6.5%, nearly a 47% drop in the projected (10.3%) rate of return for the PolyMet Project.[27]

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[19] MDNR, et al., Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, Sept. 27, 2013, Appx. B to the PolyMet FEIS, p. 5 (emphasis added), available at https://files.dnr.state.mn.us/input/environmentalreview/polymet/feis/016_appendix_b_underground_mining_alternative_position_paper.pdf.
[20] PolyMet FEIS, 3-160, 5.
[21] Updated NI 43-101 Technical Report on the NorthMet Deposit, prepared for PolyMet Mining by AGP Mining Consultants October 12, 2012, updated in January 14, 2013 (PolyMet 2012 Technical Report), p. 22-5, *Report excerpts attached as Exhibit 3.*
[22] *Id.*, pp. 1-9, 22-6.
[23] PolyMet 2018 Technical Report, *Exhibit 1*, *supra*, p. 251 (emphasis added).
[24] *Id.*, pp. 21, 228.
[25] *Id.*, pp. 21, 227.
[26] *Id.*, p. 26.
[27] *Id.*, p. 227 (Tables 22-4 and 22-5).

In an expert opinion prepared for the Minnesota Center for Environmental Advocacy, Jim Kuipers, P.E., explained that the internal rate of return for the PolyMet 32,000 short tons per day Proposed Action, along with its 7.5 year payback, represent an economically unfavorable result:

> The highly volatile nature of the metal mining business generally requires a higher return on investment. While there is no standard, other than the higher the IRR the better, it is common for major mining firms to require a 30% or even 40% IRR before giving approval to a new mining project in particular. Given the high level of economic sensitivity involved with any metals mining project this result cannot be viewed favorably, particularly as compared to previous project forecasts. Taken to an extreme, the result could be viewed as suggesting the project is no longer economic based on the realization of the capital costs in particular for the proposed project resulting in low return.[28]

The unfavorable economics of the PolyMet Proposed Action can be compared with recent reports pertaining to other proposed new copper mines. The NI 43-101 Technical Report update filed in March 2018 on SEDAR for the Ivanhoe Mines Limited Kamoa-Kakula project contains projections for a new open-pit and underground copper mine project. The Kakula open-pit operation, at a capital cost of $1.2 billion (similar to that of the PolyMet Proposed Action), would have an after-tax internal rate of return of 36.2% and a payback period of 3.1 years.[29]

The NI 43-101 Preliminary Feasibility Study for the Timok Project prepared for Nevsun Resources filed on SEDAR in May 2018 for Nevsun Resources describes a future underground mine for a massive copper and gold sulfide deposit in Serbia. The Timok Project has an initial capital cost of $574 million and is projected to generate an after-tax internal rate of return of 80%.[30] The payback for the Timok project would be 0.9 years.[31]

In addition to the potential that the PolyMet Proposed Action, given its current capital costs and projected rate of return, is no longer economically feasible as defined by the Co-Lead Agencies, there is a significant likelihood that the Proposed Action is no longer sufficiently profitable to sustain costs of reclamation and closure required to prevent and minimize long-term environmental harm. The Purpose and Need Statement for the PolyMet NorthMet project specifically included sufficient resources to cover reclamation and closure costs:

> To extract and process metals in a technically and economically feasible manner, such that there would be *sufficient income to cover*: operating cost (which includes but is not limited to the cost of mining, processing, transportation, and waste management), capital cost (needed to build and sustain facilities), an adequate return to investors, *reclamation, and closure costs* and taxes.[32]

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[28] J. Kuipers, PolyMet NorthMet Mine Economic Analysis, prepared for MCEA May 18, 2018, p. 4, *attached as Exhibit 4* (emphasis is original).
[29] Resource Update for Technical Report NI 43-101 for the Kamoa-Kakula Project, prepared by OreWin for Ivanhoe Mines Limited, report date March 23, 2018, pp. 35, 38, *excerpt attached as Exhibit 5.*
[30] NI43-101 Technical Report - Pre-Feasibility Study for the Timok Project, Serbia, prepared by Knight Piesold Consulting for Nevsun Resources Ltd., report date May 11, 2018, pp. 1-1. 1-17, *excerpt attached as Exhibit 6.*
[31] *Id.*, p. 1-17.
[32] PolyMet FEIS, 1-11 (emphasis added).

Although PolyMet's 2018 Technical Report states that costs for financial assurance "have been accounted for in the overall project economics,"[33] a closer review of the Report suggests that its analysis may have minimized costs for reclamation, long-term active water quality treatment and financial assurance to cover these costs. Unlike other categories of costs, which are carefully detailed,[34] costs for reclamation, closure and financial assurance are neither specific nor transparent.

The only place in the 2018 Technical Report listing costs that might reflect reclamation is Table 22-9.[35] This Table lists General and Administrative (G&A), Royalties & Reclamation as a single line item beginning in the first construction year at $10 million and ranging between about $20 million to $34 million during mine operations years.[36] Elsewhere the Report discloses that General and Administrative costs average $5 million per year while the mine is operating,[37] but Royalties are not specified and cannot be disaggregated from Reclamation costs.

After Mine Year 20, the Report's financial model suggests that both G&A and Royalties will cease, and Reclamation is estimated between $10 and $12 million for three years. By four years after mine closure, less than $4 million is allocated for reclamation costs and, after Mine Year 24; the Report does not supply any cost figures for reclamation.[38]

PolyMet's 2018 Technical Report text also suggests that long-term water quality treatment is neither assumed nor financed in Project cost estimates. Although the Report includes reverse osmosis treatment during operations,[39] the Closure Plan described in the Report does not seem to include any long-term active water quality treatment. It describes "water management," "water management infrastructure reclamation" and includes "plans to transition from mechanical to non-mechanical water treatment."[40]

The Report also states, "For purposes of this study, PolyMet has assumed that the Minnesota water quality standards governing sulfate in wild rice water will be revised, as required by law, after the Project is in operations.[41] This assumption, used to project lower long-term Project costs, has no basis in fact, and is inconsistent with the federal Clean Water Act, as explained in reports of the Minnesota Administrative Law Judge (ALJ) and Chief ALJ.[42]

PolyMet's 2018 Report fails to demonstrate there would be income to cover reclamation and closure costs under current economic projections. The diminished rate of return disclosed for the Proposed Action in the Technical Report (9.6% without or 10.3% with hydrometallurgical processing) doesn't reflect the full costs of reclamation and closure to protect water quality. The

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[33] PolyMet 2018 Technical Report, *Exhibit 1*, p. 196.
[34] In contrast, the PolyMet 2018 Technical Report provides detailed predictions of capital costs, indirect construction costs, labor costs, power use costs, costs for reagents and consumables, costs for parts and supplies, and even lab assay costs. *Id.*, pp. 202, 207-211, 215-216, 219-222.
[35] *Id.*, p. 230, Table 22-9.
[36] *Id.*
[37] *Id.*, p. 212 (Table 21-7).
[38] *Id.*, p. 230, Table 22-9.
[39] *Id.*, p. 188.
[40] *Id.*, p. 196.
[41] *Id.*, p. 197.
[42] *See In the Matter of the Proposed Rules of the Pollution Control Agency Amending the Sulfate Water Quality Standard Applicable to Wild Rice and Identification of Wild Rice Rivers,* OAH 80-9003-34519 Revisor R-4324, Jan. 9 and 11, 2018, Report of the Chief Administrative Law Judge, p. 1, and Report of the Administrative Law Judge, pp. 5, 53, *attached as Exhibit 7.*

rate of return if long-term water quality treatment were financed could be substantially less than disclosed in the 2018 Technical Report, further undermining economic feasibility.

This month, a new issue has been revealed which could raise additional questions about the financial feasibility of the PolyMet Proposed Action. As detailed in WaterLegacy's April 2018 Comments on Petitions for a Contested Case Hearing for the PolyMet Permit to Mine, PolyMet is dependent on the Glencore PLC multinational corporation.[43] Glencore would purchase, transport and sell all products generated by the PolyMet NorthMet Project, provides "technical" and "financial" support to PolyMet, would own 40.3% of PolyMet shares if all warrants were exercised, and its resources mitigate the risk that PolyMet development would falter due to lack of capital.[44]

In early July 2018, Glencore admitted it had received a subpoena from the U.S. Department of Justice seeking material related to "compliance with the Foreign Corrupt Practices Act" and U.S. money laundering rules.[45] The Department of Justice has requested documents relating to Glencore's dealings in Nigeria, the Democratic Republic of Congo and Venezuela dating back to 2007, and experts have warned that "a lengthy DoJ investigation could be highly disruptive and result in a multibillion dollar fine."[46] Glencore also faces at least two shareholder lawsuits for concealing regulatory scrutiny into its compliance with money laundering and bribery laws, including the U.S. Foreign Corrupt Practices Act, and resulting losses in stock value.[47]

The PolyMet 2018 Technical Report contains new information and describes new circumstances regarding the capital cost and rate of return predicted for the Proposed Action described in the PolyMet FEIS. The Report calls into question whether the PolyMet Project will be economically feasible at the scale proposed in the FEIS and undermines the likelihood that costs for closure and reclamation will be covered by the Project, as required by its Statement of Purpose and Need. A Supplemental EIS is required when new circumstances affect the Purpose and Need for the Project. *See City of S. Pasadena v. Slater*, 56 F. Supp. 1106, 1133 (C.D. Cal. 1999)(requiring preparation of a Supplemental EIS to evaluate changes in project purpose and need resulting from new circumstances before a final decision on the project).

Although it is too early to know the outcome of the investigation, concerns about the current financial feasibility of the PolyMet FEIS Proposed Action are heightened by the new U.S. Department of Justice investigation into money laundering and bribery by PolyMet's financial backer and strategic partner, Glencore, and related litigation. A Supplemental EIS is needed to evaluate whether the PolyMet Project is financially feasible, with sufficient capital and income to cover costs needed not only for operations, but to minimize and mitigate environmental harm.

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[43] Water Legacy, Comments on Petitions for Contested Case Hearing, *In re the Matter of the Minnesota Department of Natural Resources' Consideration of a draft Permit to Mine for the PolyMet NorthMet Copper-Nickel Mine Project*, April 5, 2018, pp. 7-10, *attached with Table of Exhibits and Comment Ex. 2, 3, 4, 5, and 7 as Exhibit 8.*
[44] *Id.*, pp. 7-10, *citing* Ex. 2, 3, 4, and 7 to *Exhibit 8*, and PolyMet 2018 Technical Report, *supra, Exhibit 1.*
[45] S. Reed & M. de la Merced, Glencore's Shares Drop After Justice Department Subpoena, *The New York Times*, July 3, 2018, *included in Exhibit 9.*
[46] J. Yeomans, Glencore board forms defence committee as DoJ subpoena looms, July 11, 2018, *The Telegraph, included in Exhibit 9.*
[47] J. Stempel (Reuters), Glencore Faces Lawsuits over U.S. Subpoena, Stock Drop, July 11, 2018, *U.S. News*; *Church v. Glencore PLC et al.*, 2:18-cv-11477 (U.S.D.C. N.J), Complaint filed July 9, 2018 and *Robison v. Glencore PLC et al.*, 1:18-cv-06286 (U.S.D.C. S.D. N.Y.) Complaint filed July 11, 2018, *included in Exhibit 9.*

2. Increased mining described in PolyMet's 2018 Technical Report is a substantial change and a significant new circumstance bearing on the Proposed Action and the environmental effects of the Project and requiring a Supplemental EIS.

The increased mining scenarios[48] described in PolyMet's 2018 Technical Report reflect significant new information, new circumstances and a substantial change with the potential for significant environmental effects requiring a Supplemental EIS and an analysis of the cumulative impacts of these expanded mining plans.

The 2018 Technical Report describes scenarios that would increase processing of ore for the PolyMet Project to a rate of 59,000 or 118,000 tons per day. The marginal profitability of the 32,000 tons per day Proposed Action, as compared to these expansion scenarios, makes it reasonably foreseeable that one or both scenarios will be implemented if PolyMet secures permits for its copper-nickel mine operation.

Both federal NEPA regulations and state MEPA rules require that agencies prepare a supplemental EIS when there are substantial changes in the proposed action relevant to environmental concerns. 40 C.F.R. §1502.9(c)(1)(i) and (ii); Minn. R. 4410.3000, Subp. 3, Item A (1) and (2). The substantial change in the scope and scale of these PolyMet expansion scenarios require a new and cumulative impacts analysis of the environmental effects of the PolyMet project.

A. Increased mining is a significant new circumstance and substantial change not evaluated in the PolyMet FEIS and foreseeably affecting the Proposed Action.

PolyMet's 2018 Technical Report is a radical departure from the final environmental impact statement for the NorthMet project and the 2012 Technical Report on which the FEIS was based. The 2012 Technical Report disposed of the potential for mine expansion in a single sentence: "A sustained higher metal price regime has the potential to allow expansion of the existing pit phases both laterally and to depth."[49]

The PolyMet FEIS went to considerable lengths to deny the existence of any mine plan with a different scope than the 32,000 tons per day 20-year mine plan discussed as the Proposed Action. The FEIS insisted, "There is no mine plan for any material that lies outside of the proposed open pit; as such, mining this material is not part of the NorthMet Project Proposed Action. Mining of material located beyond the proposed pit outline would be evaluated as appropriate if proposed in the future."[50]

By 2018, as explained previously, the costs for the PolyMet Proposed Action processing 32,000 tons per day of ore had doubled since the 2012 Technical Report, while the after tax internal rate of return had dropped by two-thirds. With the 2018 Technical Report, that "future" arrived.

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[48] The PolyMet 2018 Technical Report, *Exhibit 1*, uses the term "scenarios" for the 59,000 and the 118,000 tons per day potential mine plans. *See e.g.* pp. ii, 27, 127, 151.
[49] PolyMet 2012 Technical Report, *Exhibit 3*, p. 15-3.
[50] PolyMet FEIS, 3-41.

PolyMet's March 2018 Technical Report explained that the Company had contracted with M3 Engineering & Technology Corporation to complete a Technical Report at the Feasibility Study level including economic valuations using "preliminary economic assessment (PEA) level mine designs" for 59,000 and 118,000 tons per day throughputs.[51] Based on the PEA results reflected in Section 24 of the Technical Report, M3 recommended "that additional engineering and environmental studies be performed at a pre-feasibility study level to further refine the costs, valuations and environmental requirements for the potential 59,000 STPD and 118,000 STPD production scenarios."[52] The cost for the recommended study was estimated at $500,000, with an additional $2.5 million proposed to move mineralized material currently classified as "inferred," which is included in the mill feed tonnage for both expansion scenarios, into the "measured" and "indicated" categories.[53]

PolyMet's implementation of the increased mining scenarios is reasonably foreseeable - in fact highly likely - due to the marked financial improvement these expansions represent as compared to the FEIS Proposed Action. The 2018 Technical Report showed that processing 59,000 tons of ore per day, for a total of 293 tons over 15 years would result in improved financial indicators as compared to the 32,000 tons per day Proposed Action, including an after tax rate of return of 18.5%.[54] Throughput of 118,000 tons per day, processing 730 million tons over 19 years also "improves economics over the 32,000 STPD case," resulting in a 23.6% after-tax rate of return.[55]

PolyMet issued a news release when the 2018 Technical Report was filed, in which its President emphasized the economic benefits of the new expansion scenarios; "We felt it was it was important to quantify at a preliminary level what the potential economics of the entire NorthMet resources could be."[56] PolyMet's news release highlighted, "The 59,000 tpd and 118,000 tpd upside cases suggest potential valuations that range from $750 million to more than $2 billion (NPV) and IRRs that range from 18 percent to 24 percent."[57]

Communications to investors touted three Production Scenarios: the 32,000 tons per day Project for which permits have been sought, and the 59,000 tons per day and 118,000 tons per day "opportunity" and "expansion" cases.[58] The Executive Summary for investors emphasized the Project's, "Significant expansion and exploration opportunities."[59]

The table below[60] reflects the potential economics of the 59,000 and 118,000 tons per day upside scenarios as compared to the 32,000 tons per day PolyMet FEIS Proposed Action scenario.

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[51] PolyMet 2018 Technical Report, *Exhibit 1*, *supra*, p. 19.
[52] *Id.*, p. 27.
[53] *Id.*, p. 27, see Table 24-1 on p. 240 regarding inclusion of "inferred" material in new scenarios.
[54] *Id.*, p. 244.
[55] *Id.*
[56] PolyMet Mining News Release, *PolyMet reaffirms economic and technical viability of NorthMet Project*, filed on SEDAR, March 27, 2018, *attached as Exhibit 10,* p. 3.
[57] *Id.*
[58] PolyMet Mining, Investor Presentation for NorthMet Project, March 28, 2018, *attached as Exhibit 11*, pp. 11, 21.
[59] *Id.*, p. 4.
[60] Data from PolyMet 2018 Technical Report, *supra*, *Exhibit 1*, pp. 21,26, 228, 229, 239, 244-246. Discount rate used in the Report to calculate Net Present Value is 7%.

PolyMet Expansion Scenarios - Improvements in Financial Indicators			
Financial Indicator	**32,000 STPD** (2018 Report)	**59,000 STPD** (2018 Report)	**118,000 STPD** (2018 Report)
Capital Cost			
I. Without Hydromet process	$945 million	$1,095 million	$1,613 million
Increased Cost over 32,000 STPD	NA	$150 million	$668 million
II. With Hydromet process	$1,204 million	$1,354 million	$1,872 million
Increased Cost over 32,000 STPD	NA	$150 million	$668 million
After Tax IRR			
I. Without Hydromet process	9.60%	17.50%	21.90%
Ratio to 32,000 STPD	***NA***	***182%***	***228%***
II. With Hydromet	10.30%	18.50%	23.60%
Ratio to 32,000 STPD process	***NA***	***180%***	***229%***
After Tax Net Present Value			
I. Without Hydromet process	$173 million	$751 million	$1,737 million
Ratio to 32,000 STPD	***NA***	***434%***	***1004%***
II. With Hydromet process	$271 million	$963 million	$2,243 million
Ratio to 32,000 STPD	***NA***	***355%***	***827%***

Both the PolyMet 59,000 and 118,000 tons per day scenarios would result in substantial increases in the internal rate of return and in net present valuation for the PolyMet NorthMet project. Projected increases in net present value are substantially greater than the capital investment needed for these increased mine processing scenarios.

PolyMet's preliminary economic assessment of expanded mining scenarios in its 2018 Technical Report, the recommendations of its consultants to spend $3 million on additional study of these scenarios, PolyMet's communications with the press, and PolyMet's presentation to investors underscore that the 59,000 and 118,000 tons per day expansion scenarios may be integral to a positive economic valuation of the project. They are certainly foreseeable mine designs that must be evaluated in a supplemental EIS.

B. A Supplemental EIS is required to evaluate the foreseeable cumulative impacts of PolyMet's increased mining and processing scenarios.

The very language of the PolyMet 2018 Technical Report, which refers to "59,000 and 118,000 *alternate mine plan scenarios,*"[61] underscores the definite and specific nature of PolyMet's planning for expanded production at the NorthMet copper-nickel mine. Whether or not PolyMet has formally submitted its alternate mine plan expansion scenarios to the Agencies, a Supplemental EIS is needed to evaluate their foreseeable cumulative environmental impacts.

NEPA and MEPA both require environmental review of proposed actions. 42 U.S.C. §4332(C); 40 C.F.R. §§1502.2, 1508.9(b); Minn. Stat.116D.04, Subd. 2a. NEPA's implementing regulations explain that a "proposal exists at that stage in the development of an action when an agency subject to the Act has a goal and is actively preparing to make a decision on one or more

[61] PolyMet 2018 Technical Report, *Exhibit 1, supra,* p. 241 (emphasis added).

alternative means of accomplishing that goal and the effects can be meaningfully evaluated." 40 C.F.R. § 1508.23.

PolyMet's 2018 Technical Report, the recommendation of its consultant M3 Engineering & Technology Corporation for additional definitive study, and PolyMet's communications to the press and investors demonstrate that PolyMet is actively promoting alternative means of accomplishing the goal of mining copper and nickel in the Partridge River watershed and that those alternative means include scenarios processing 59,000 and 118,000 tons per day of ore, as well as the 32,000 tons per day scenario analyzed in the FEIS.

The expansion scenarios described in the PolyMet 2018 Technical Report and in PolyMet's March 2018 press and investor materials meet the criteria to be deemed "proposals" under NEPA regulations, thus requiring evaluation in a Supplemental EIS. NEPA regulations further explain, "The statement shall be prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made." 40 C.F.R. §1502.5. MEPA similarly requires that an EIS "shall be prepared as early as practical in the formulation of an action." Minn. Stat. 116D.04, Subd. 2a.

Federal NEPA regulations also define "actions" that must be analyzed in the same impact statement to include "connected actions" and "cumulative actions." Actions are "connected" if they trigger other actions which may require environmental impact statements, cannot or will not proceed unless other actions are taken, or if they are "interdependent parts of a larger action and depend on the larger action for their justification." 40 C.F.R. §1508.25 (a)(1)(i-iii).

"Cumulative" actions are defined more broadly as actions "which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement." 40 C.F.R. §1508.25 (a)(2). MEPA rules, similarly, requires that both multiple projects and "multiple stages of a single project that are connected actions or phased actions must be considered in total when determining the need for an EIS and in preparing the EIS." Minn. R. 4410.2000, Subp. 4.

The increased mining scenarios described in PolyMet 2018 Technical Report are interdependent parts of PolyMet's proposed NorthMet copper-nickel mining project, substantially improving its economic feasibility. Precedent suggests that failure to analyze these expansion scenarios would constitute improper segmentation, rendering the PolyMet FEIS inadequate.

It is well established that "an EIS must cover subsequent stages when 'the dependency is such that it would be irrational, or at least unwise, to undertake the first phase if subsequent phases were not also undertaken.'" *Thomas v. Peterson*, 753 F 2d 754, 759 (9th Cir. 1985). One of the hallmarks of improper segmentation is when the completion of a component action "may force a larger or related project to go forward notwithstanding the environmental consequences." *Hirt v. Richardson*, 127 F. Supp. 2d 833, 842 (W.D. Mich. 1999), citing *Maryland Conservation Council v. Gilcrest*, 808 F.2d 1039, 1042 (4th Cir. 1986). *See also Hammond v. Norton*, 370 F. Supp. 2d 226, 252–253 (D.D.C. 2005)(holding pipeline project was improperly segmented under NEPA and remanding for supplemental EIS).

PolyMet's increased mining scenarios are connected actions as well as alternative proposals. Should mining start, financial risks of mine closure may force an expansion to move forward.

PolyMet's increased mining scenarios are also foreseeable levels of production that must be considered in a Supplemental EIS to evaluate the cumulative impacts of the PolyMet Project.

In *Native Village of Point Hope v. Jewell*, 740 F. 3d 489 (9th Cir. 2006), the Court of Appeals held that a federal agency can neither "shirk its responsibility" to consider all foreseeable direct and indirect impacts of the proposed action nor underestimate the environmental impact of an action by using an "unrealistically low estimate" of the economically recoverable resource. *Id.* at 494, 496. The Court noted that when the first project overcomes cost, logistical and regulatory hurdles, more projects are "likely to follow." *Id.* at 503. The Court underscored, "A later project or site-specific environmental analysis is an inadequate substitute for an estimate of total production." *Id.* at 504.

The D.C. Circuit Court also held in *Natural Resources Defense Council, Inc. v. Hodel*, 865 F. 2d 288, 297 (D.C. Cir. 1988) that NEPA required evaluation of cumulative impacts to "prevent agencies from dividing one project into multiple individual actions." The Second Circuit Court, held in *Huntington v. Marsh*, 859 F. 2d 1134, 1141 (2d Cir. 1988) that in its final EIS, the Army Corps had failed to analyze the foreseeable quantities and cumulative effects of spoil to be dumped into waters of the United States. The Court explained, "While we agree with the Corps that is was not required engage in a 'crystal ball inquiry' into all possible future permit applications for purposes of a site designation study the possibility that the [Long Island Sound] site would be utilized by two federal projects involving 560,000 [cubic yards] of waste was certainly foreseeable." (citations omitted).

An Army Corps project was also remanded for failure to consider cumulative impacts of foreseeable future actions in *Tex. Comm. on Natural Res. v. Van Winkle*, 197 F. Supp. 2d 586 (N.D. Tex. 2002). The Court ruled, "Regardless of whether any of the other projects constitute actual proposals, there is a reasonable basis to believe that some or all of them will be implemented. Even if the exact future of these other projects is uncertain, uncertainty alone does not excuse the COE's failure to address the cumulative impacts of these projects." *Id.* at 618-619. On remand, the Army Corps was also directed to determine whether any of the other foreseeable project were "proposed actions" that must be considered together in a single EIS. *Id.* at fn 44.

In a recent oil and gas case, Bureau of Land Management leases were remanded due to failure to take a hard look at cumulative effects caused by the leasing, including indirect effects that are later in time, but still reasonably foreseeable. *San Juan Citizens Alliance v. United States BLM,* No. 16-cv-376-MCA-JHR, 2018 U.S. Dist. LEXIS 99644 (D. N. Mex., June 14, 2018). It was "erroneous to fail to consider, at the earliest stage feasible" the environmental consequences of foreseeable development potential under the proposed action. *Id.* at 31.

The Court in *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1078-1079 (9th Cir. 2005) held that an EIS was deficient due to its failure to analyze cumulative impacts of reasonably foreseeable projects, including new mining:

> [P]rojects need not be finalized before they are reasonably foreseeable. "NEPA requires that an EIS engage in reasonable forecasting. Because speculation is . . . implicit in NEPA, we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." [citation omitted] As the Environmental Protection Agency (EPA) also has noted, "reasonably foreseeable future actions need to be considered even if they are not specific

> proposals." EPA, *Consideration of Cumulative Impact Analysis in EPA Review of NEPA Documents*, Office of Federal Activities, 12-13 (May 1999).

The Circuit Court explained that where there is sufficient information available, "It is not appropriate to defer consideration of cumulative impacts to a future date when meaningful consideration can be given now." 668 F.3d at 1078.

Similarly, in *Great Basin Mine Watch v. Hankins*, 456 F. 3d 955 (9th Cir. 2006), the Court concluded that the cumulative impacts analysis done by the Bureau of Land Management was insufficient to address potential expansion of a gold mine. The agency "must identify and discuss the impacts that will be caused by each successive [project], including how the combination of those various impacts is expected to affect the environment, so as to provide a reasonably thorough assessment of the projects' cumulative impacts." *Id.* at 974.

PolyMet's 2018 Technical Report demonstrates that there is sufficient information about its expanded mining scenarios to permit meaningful consideration in environmental review at this time. The Report shows that these scenarios have been analyzed in great detail and specificity in terms of capital needs, operation and costs.

PolyMet and its consultants have analyzed the footprint of haul roads that would be needed for the 59,000 short tons per day (STPD) and the 118,000 STPD mine, and the changes in electrical service and pipeline diameter to account for greater power draw and larger flow volumes.[62] PolyMet has determined what changes would be needed for primary and secondary crushing facilities, additional locomotives and track, additional flotation circuits, and upgraded facilities for thickening and filtration and for loading for the 59,000 STPD and 118,000 STPD mine plans.[63] PolyMet has determined that an expanded mine pit and an 8-mile long overland conveyor from the mine site to the plant site would be needed for the 118,000 STPD mine plan.[64] PolyMet has also determined the additional capital requirements to build out the flotation tailings waste facility proposed in the FEIS to accommodate a larger tailings volume for the 59,000 STPD scenario and has evaluated the costs of placing tailings in existing taconite mine pits near the Cliffs Erie plant for the 118,000 STPD scenario.[65]

PolyMet has developed preliminary economic assessment estimates of initial and sustaining capital for the 59,000 and 118,000 STPD scenarios, as well as operating costs for each scenario.[66] These costs were developed with sufficient specificity so that PolyMet's 2018 Technical Report could conclude that the 59,000 STPD scenario would represent a cost savings per ton processed of $2.28 and the 118,000 TPD scenario would represent a cost savings per ton processed of $3.40 as compared to the 32,000 STPD case.[67]

In short, PolyMet's expanded mining scenarios are specific and detailed proposals. The only aspects of these scenarios that haven't been analyzed are their cumulative impacts on the environment.

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[62] PolyMet 2018 Technical Report, *Exhibit 1*, p. 241.
[63] *Id.*, pp. 242-243.
[64] *Id.*, pp. 239, 242
[65] *Id.*, p. 243.
[66] *Id.*
[67] *Id.* pp. 243-244.

As summarized in the next section, increased mining and processing at the PolyMet mine site, plant site and tailings site has the potential for significant impacts on the environment. The Army Corps, Forest Service and Minnesota Department of Natural Resources, must not shirk their responsibilities to provide a thorough assessment of the cumulative effects of PolyMet's 59,000 and 118,000 short tons per day mining scenarios.

C. Increased PolyMet Project mining and processing have the potential to result in significant environmental effects.

The standard under which a supplemental EIS is required, like the test for whether an EIS is required in the first instance, is whether there is "potential for significant environmental effects" resulting from the action. Minn. Stat. §116D.04, Subd. 2a; 40 C.F.R. §§1502.1, 1502.2(b), 1508.27.

"The CEQ regulations, which we have held are entitled to substantial deference, impose a duty on all federal agencies to prepare supplements to either draft or final EIS's if there 'are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.'" *Marsh v. Oregon Nat. Res. Council*, 490 U.S. 360, 372, 109 S. Ct. 1851, 104 L. Ed. 2d 377 (1989). A "minor variation" may not require a supplemental EIS, but significant new circumstances will trigger this requirement:

> Application of the "rule of reason" thus turns on the value of the new information to the still pending decisionmaking process. In this respect the decision whether to prepare a supplemental EIS is similar to the decision whether to prepare an EIS in the first instance: If there remains "major Federal actio[n]" to occur, and if the new information is sufficient to show that the remaining action will "affec[t] the quality of the human environment" in a significant manner or to a significant extent not already considered, a supplemental EIS must be prepared. 490 U.S. at 374.

In *Sierra Club v. Marsh*, the court enjoined defendants from developing a marine cargo terminal and industrial park pending a supplemental EIS. 744 F. Supp. 352 (D. Me. 1989). In related proceedings, the court held, "[L]arge increases in project scale place decisionmakers under a duty to investigate whether it is likely that there would be a significant change in the environmental picture.. . . the cumulative environmental effects of enlarging the scale of a project may effect qualitative environmental change both inside and outside the project area." *Sierra Club v. Marsh*, 714 F. Supp. 539, 569 (D. Me. 1989)(project changed from impacting 50 to potentially impacting 124 forest acres).

The Fifth Circuit Court required the U.S. Army Corps of Engineers to prepare a supplemental EIS where new information increased the potential impacts of the project from 3,800 to 8,000 acres of forest. *Louisiana Wildlife Federation, Inc. v. York*, 761 F.2d 1044, 1052-1053 (5th Cir. 1985).

Where project changes would increase traffic on a waterway 350% relative to the initial proposal, the Army Corps was also required to prepare a supplemental EIS. The Court of Appeals explained, "The previous EIS might still be valid in relation to the aspects of the project that have not been changed; but if no added statement were made, the new elements would never have their environmental impact publicly analyzed." *Environmental Defense Fund v. Marsh*, 651 F.2d 983, 992 (5th Cir. 1981).

In a recent coal mining case, where the increased mining scenario was between two and five times the production level contemplated by the prior environmental impact statements and assessment, the court found that the agency denying the need for a new EIS did not take a "hard look" with that "substantial difference in mind." *Montana Envtl. Info. Ctr. v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074, 1092 (D. Mont. 2017), *injunction narrowed in Montana Envtl. Info. Ctr. v. U.S. Office of Surface Mining,* No. CV 15-106-M-DWM, 2017 U.S. Dist. LEXIS 182814 (D. Mont. Nov. 3, 2017).

The acceleration and expansion of mining reflected in PolyMet's 2018 Technical Report do not reflect a minor variation, but a significant change in the scale and scope of the proposed project.

The 59,000 tons per day ore processing scenario would increase the rate of ore processing to 184% of the rate evaluated in the FEIS and the maximum mill tonnage to 130% of the proposal in the FEIS. The 118,000 tons per day scenario would increase the processing rate to 369% of the rate assessed the FEIS and the maximum mill tonnage to 324% of that evaluated in the FEIS.[68] The table below summarizes this information.

PolyMet Expansion Scenarios – Increases in Project Scale			
	PolyMet FEIS Proposed Action	2018 Tech. Report Scenario	2018 Tech. Report Scenario
Ore processing	32,000 tons per day	59,000 tons per day	118,000 tons per day
Change since FEIS	*NA*	***184% of FEIS rate***	***369% of FEIS rate***
Maximum mill tonnage	225 million tons	293 million tons	730 million tons
Change since FEIS	*NA*	***130% of FEIS total***	***324% of FEIS total***

PolyMet's increased mining scenarios, as described in the 2018 Technical Report,[69] would require at least these changes with potential for significant environmental effects:

- Increased ore processing rates for both the 59,000 and 118,000 STPD scenarios;
- Increased rates of primary and secondary crushing for both the 59,000 and 118,000 STPD scenarios;
- Use of semi-mobile primary crushing facilities at the mine site for the 118,000 STPD scenario;
- Increased conveyance of water from the mine site to the plant site for both the 59,000 and 118,000 STPD scenarios, requiring a larger pipeline diameter for the 118,000 STPD scenario;
- Additional rail track for both 59,000 and 118,000 STPD scenarios;
- Establishment of an 8-mile long open conveyor to transport crushed rock from the mine site to the plant site in the 118,000 STPD scenario;
- Expanded pit limit for the 118,000 STPD scenario;
- Additional haul roads for the 118,000 STPD scenario;

[68] Narrative and data in the table below are derived from PolyMet 2018 Technical Report, *Exhibit 1*, pp. 239-240.
[69] See *Id.*, pp. 239-245.

- Expanded build out of the tailings waste facility for both the 59,000 and 118,000 STPD scenarios;
- Additional tailings disposal site in abandoned mine pits for the 118,000 STPD scenario.

Based on these factors alone, potential significant environmental effects requiring analysis include at least the following:

1. Direct impacts to wetlands at the mine and plant/tailings sites due to a larger mine pit, construction of additional roads and rail track, a new 8-mile overland conveyor system, and expansion of tailings storage.
2. Indirect impacts to wetlands at the mine and plant/tailings sites due to increased mine drawdown, a larger mine pit, construction of additional roads and rail track, a new 8-mile overland conveyor system, and expansion of tailings storage.
3. Impacts to water quantity in the Partridge River and Embarrass River watersheds due to increased mining and processing.
4. Impacts to vegetation and habitats, due to increased mine drawdown, a larger mine pit, construction of additional roads and rail track, and a new overland conveyor system.
5. Impacts to wildlife and threatened, endangered and species of concern at the mine site and plant/tailings sites due to increased loss of habitat, traffic and noise.
6. Impacts of increased processing, construction, noise and dust to tribal Cultural Resources and the exercise of Treaty-reserved rights near the mine and plant/tailings sites.
7. Impacts to air quality at the mine and plant/tailings sites due to increased crushing, hauling, and processing, including primary crushing at the mine site.
8. Impacts to air quality at the mine and plant/tailings sites due to increased fossil fuel combustion.
9. Impacts to climate change effects due to increased wetlands impacts and increased fossil fuel combustion.
10. Impacts to human health resulting from increased air emissions and fossil fuel combustion at the mine and plant/tailings sites, including health impacts to workers and the public and cross-media impacts on mercury methylation and bioaccumulation.
11. Impacts to groundwater quality at the mine site and plant/tailings sites as a result of increased seepage from mine pits, tailings facilities, waste rock storage and mine site wastewater basins.
12. Impacts on surface water quality, aquatic life and downstream wild rice as a result of increased seepage at the proposed mine and plant/tailings sites and downstream in the Partridge, Embarrass and St. Louis River watersheds.
13. Impacts of increased direct discharge from the plant site water treatment facility on surface water quality, aquatic life and downstream wild rice.
14. Cumulative impacts on human health and wildlife that consume aquatic insects or fish

due to increased air emissions, direct and indirect discharges to surface water, and direct and indirect impacts on wetlands resulting in mercury methylation and bioaccumulation.

15. Impacts of dust and spillage from increased rail transport and from the 8-mile overland conveyor system on wetlands, water quality and mercury methylation and bioaccumulation.
16. Impacts on downstream reservation water quality and Treaty-reserved rights to fish and gather wild rice resulting from increased releases of pollutants to water and cross-media effects on mercury methylation and bioaccumulation in fish.
17. Impacts of increased volumes of tailings, waste rock and water on the quantity of seepage of contaminated wastewater and likelihood of containment failure at the flotation tailings storage facility and the Category 1 waste rock stockpile.
18. Impacts of increased hydrometallurgical waste generation on the capacity of the hydrometallurgical residue facility to store highly concentrated waste without dam or liner failure.
19. Impacts of greater volumes wastewater on the efficacy of planned reverse osmosis treatment and the need to dispose of treatment residues and sludge.
20. Impacts of increased tailings generation and storage in the proposed flotation tailings basin on dam safety and the risk of tailings dam failure and inundation of downstream waters and property.
21. Impacts of newly proposed tailings storage in Cliffs Erie mine pits on surface water and groundwater quality.

The potential environmental impacts of PolyMet's proposed mining expansion scenarios described above are not exhaustive. They are representative. Specific mitigation measures, such as use of a geomembrane cover for Category 1 waste rock, and subaqueous storage of waste rock in the East Pit, may be infeasible or ineffective in an expansion scenario. It is likely that all modeling for effects on water quality, water quantity, and air quality would require revision to evaluate the changes in processing rates and mill tonnage reflected in the expansion scenarios.

Given the scale of PolyMet's 2018 alternative mine plan scenarios and the sensitivity of the headwater stream ecosystem where the NorthMet open-pit copper-nickel mine is proposed, there is a clear potential for significant environmental effects on water quality and quantity, air quality and climate change impacts, wetlands and vegetation, wildlife and aquatic life, Cultural Resources, the exercise of Treaty-reserved rights, and human health. Under both federal and Minnesota law, responsible agencies must now require a Supplemental EIS to evaluate these and other potential environmental effects resulting from PolyMet's 59,000 and 118,000 tons per day increased mining scenarios.

3. PolyMet's recent plan for tailings disposal in abandoned mine pits is a feasible alternative that must be analyzed in a Supplemental EIS.

In addition to exacerbating the risks of the flotation tailings basin design previously proposed for the NorthMet project, PolyMet's 2018 Technical Report suggested a new alternative for tailings

disposal; placement in existing taconite mine pits near the plant. This alternative tailings disposal method must be analyzed in a Supplemental EIS.

PolyMet's March 2018 Technical Report explained that both the 59,000 and 118,000 tons per day mining expansion scenarios would increase the volume of tailings. The Report provided two answers to this potential disposal problem. For the first expansion scenario, processing 293 million tons of ore at a rate of 59,000 tons per day, the Report proposed, "Additional capital would be required to build out the existing FTB [flotation tailings basin] to accommodate the tails volumes anticipated for the 59,000 STPD scenario."[70] For the second expansion scenario, processing 730 million tons at a rate of 118,000 tons per day, the Technical Report stated,

> PolyMet has evaluated placing tailings from the 118,000 STPD flotation circuit by gravity to two existing taconite mine pits near the Erie plant. This is a less costly alternative than building out the existing FTB large enough to contain the additional volume anticipated under this scenario.[71]

Building out the existing flotation tailings storage facility to accommodate additional volumes of wet tailings slurry could have significant environmental impacts not only due to increased seepage and potential failure of the containment system, but due to increased instability and risks of dam breach and collapse. Concerns regarding tailings dam safety and stability highlighted by WaterLegacy,[72] as well as by other petitioners to the MDNR for a contested case on the PolyMet Permit to Mine, must be re-evaluated in light of PolyMet's proposed build-out of the tailings storage facility to accommodate additional volume. As summarized in Section 4(A) of this Petition, even without the additional volume of tailings proposed in the expansion scenarios the PolyMet tailings plan is vulnerable to dam breach and failure to contain wet slurry and contaminated wastewater.

In addition, PolyMet's recent Technical Report contains a new proposal to deploy in-pit storage in a brownfield site as a feasible alternative for PolyMet NorthMet tailings disposal.

WaterLegacy, in our Comments on the PolyMet Final EIS, specifically objected that the agencies had failed to conduct an analysis of alternative tailings disposal methods and locations to determine if such alternatives would have fewer environmental effects than proposed wet slurry disposal on top of an existing unlined taconite tailings facility.[73] We included with our comments a map of alternative locations for tailings disposal, including in-pit disposal sites shown in the 2005 Scoping Report for the PolyMet NorthMet EIS.[74]

The MDNR's FEIS adequacy decision acknowledged that EIS Scoping required evaluation of in-pit tailings disposal, if it were feasible, as well as disposal of tailings in a lined tailings basin.[75] The MDNR noted that in-pit disposal option was dismissed in 2009 on the grounds that the

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[70] PolyMet 2018 Technical Report, *Exhibit 1*, p. 243.
[71] *Id.*
[72] WaterLegacy Objections & Petition for Contested Case Hearing, *In re the Matter of the Minnesota Department of Natural Resources' Consideration of a draft Permit to Mine for the PolyMet NorthMet Copper-Nickel Mine Project*, Feb. 27, 2018 pp. 6-11, available at https://files.dnr.state.mn.us/lands_minerals/northmet/permit_to_mine/contested-case/waterlegacy-objections-and-petition.pdf .
[73] WaterLegacy Comments on PolyMet FEIS, *supra*, pp. 84-86.
[74] This map, Figure 1 Alternative Sites under Consideration, was included with WaterLegacy's Comments on PolyMet FEIS, and is *attached as Exhibit 12*.
[75] MDNR PolyMet FEIS ROD, *supra*, p. 13

single pit reviewed (Area 5 pit) would not have enough capacity for all tailings produced.[76] The Forest Service Land Exchange ROD also assumed that "all practical means to avoid or minimize environmental harm" had been selected in the FEIS process.[77]

Despite repeated objections by environmental groups and tribes to the impacts and safety risks of PolyMet's proposal to dispose of wet slurry tailings on top of an unlined legacy pollution site held back by earthen dams, the environmental review record provides no analysis of the costs or environmental effects of any alternative tailings storage. PolyMet's new proposal that two existing mine pits should be used for tailings disposal under its expansion scenario demonstrates that other alternatives for tailings storage are feasible and must now be analyzed.

Under NEPA, it is axiomatic that analysis of alternatives "is the heart of the environmental impact statement." 40 C.FR. §1502.14. All reasonable alternatives must be rigorously explored and objectively evaluated, §1502.14(a), and the EIS must discuss the environmental effects of these reasonable alternatives. §1502.16(d).

An EIS that fails to consider alternatives is inadequate, *Utahns v. United States DOT*, 305 F. 3d 1152, 1192 (10th Cir. 2002). A supplemental EIS will be required when a reasonable alternatives analysis has not been performed. *Sierra Club v. Marsh*, 744 F. Supp. 352 (D. Me. 1989); *Conservation Law Found. v. Department of the Air Force,* 864 F. Supp. 265, 287 (D. N.H. 1994), order requiring supplemental EIS not appealed in *Conservation Law Foundation v. Busey*, 79 F.3d 1250, 1270 (1st Cir. 1996).

Minnesota law imposes clear requirements for analysis of alternatives in environmental review. In addition to imposing a duty on the responsible governmental unit to study, develop and describe appropriate alternatives, Minn. Stat. § 116D.03, Subd. 2(4), MEPA prohibits state action, "where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative" to that action. In this analysis, the state's concern for protection of air, water, land and natural resources is "paramount" and "Economic considerations alone shall not justify such conduct." Minn. Stat. §116D.04, Subd. 6.

Minnesota courts have held that the Minnesota Pollution Control Agency must prepare a supplemental EIS on alternatives when there are new circumstances and new information regarding the availability of a prudent and feasible alternative. *In re Winona County Municipal Solid Waste Incinerat*or, 442 N.W.2d 344, 347 (Mn. Ct. App. 1989), the Court of Appeals noted that an alternative incinerator location was not considered in the final EIS due to its lack of long-term availability. The Court ruled that, when the MPCA learned of the alternative, the Agency was "obligated to investigate and consider the important 'substantial new information' of the availability of the [alternative location], because this option 'significantly affects' a 'prudent and feasible alternative with possible 'lesser environmental effects.'" *Id.* at 350.

On appeal, the Supreme Court ruled that the supplemental EIS reopened the environmental review process, and that the Agency would have to make a new preliminary determination whether and on what conditions a permit could issue based on the supplemental EIS. *Winona v. Minnesota Pollution Control Agency*, 449 N.W.2d 441, 442 (Minn. S. Ct. 1990).

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[76] *Id.*, p. 18.
[77] *PolyMet Land Exchange ROD, supra*, p. 14.

PolyMet's 2018 Technical Report has provided substantial new information about the availability of more than one taconite mine pit on the Cliffs Erie site for in-pit tailings disposal and about PolyMet's intention to use in-pit tailings disposal in addition to the flotation tailings plan described in the FEIS, based on its cost effectiveness. Based on this new information as well as the expansion scenarios described in the 2018 Report, a Supplemental EIS must take a hard look at alternative methods of tailings disposal for the proposed PolyMet NorthMet project.

4. Substantial changes in the PolyMet project since the Final EIS must be analyzed in a Supplemental EIS, including a change in methods to provide tailings dam safety, increases in mine site water appropriations, and elimination of the Mine Site water treatment facility.

NEPA requires a supplementary EIS when substantial changes have been made in a proposed project that are "relevant to environmental concerns". 40 C.F.R. §1502.9(c)(1)(i), incorporated by reference in 33 C.F.R. §230.13(b). MEPA requires a supplemental EIS when substantial project changes "affect the potential significant adverse environmental effects of the project." Minn. R. 4410.3000, Subp. 3, Item A (1).

Where an original EIS is insufficient to evaluate project changes, a supplemental EIS must be completed. *Environmental Defense Fund v. Marsh*, *supra*, 651 F.2d at 991-993 (requiring supplemental EIS); *Sierra Club v. Marsh*, *supra*, 744 F. Supp. at 368 (injunction issued due to probability of success on the NEPA claim); *Sierra Club v. Marsh*, *supra*, 714 F. Supp. at 585 (injunction issued due to failure to prepare supplemental EIS); *Louisiana Wildlife Federation v. York*, *supra*, 761 F.2d at 1053 (remand for reconsideration of changes that may require a supplemental EIS). *See also, Idaho Sporting Congress, Inc. v. Alexander*, 222 F. 3d 562, 567-568 (9th Cir. 2000)(injunction issued due to failure to prepare supplementary EIS).

Changes in PolyMet Project design and mitigation since the PolyMet Final EIS increase the risk of dam failure, markedly increase water appropriations, and remove a critical facility intended to mitigate project adverse effects on water quality. These changes also undermine the Land Exchange decision, which explicitly concluded that the environment and human health would be protected based on "the FEIS analysis" and the "application of the design features and mitigation measures included in the mining project" as proposed in the FEIS.[78] A Supplemental EIS is required to address substantial project changes and ensure the protection of the environment and human health.

A. Elimination of Cement Deep Soil Mixing and effects on predicted tailings dam safety require a Supplemental EIS

In determining that the PolyMet FEIS was "adequate," the MDNR emphasized that PolyMet had adopted project improvements including cement deep soil mixing (CDSM) "as an engineering measure to stabilize the existing tailings and peat layers in the northern dams of the LTVSMC Tailings Basin prior to the use of that facility for the NorthMet tailings."[79] CDSM was characterized as an "upgrade" to the failings basin facility "for increased stability on the former

[78] *Id.*, pp. 20-21.
[79] MDNR PolyMet FEIS ROD, p. 44.

LTVSMC tailings basin."[80] CDSM would be implemented on the north side of the tailings basin "to meet the required factor of safety."[81]

Since the MDNR decision on the adequacy of the FEIS, PolyMet's proposal for CDSM to achieve dam stability has been shelved. PolyMet is now proposing a buttress and underdrain to obtain dam stability.[82]

But, the tailings dam as currently proposed by PolyMet fails to meet even the MDNR's 1.1 factor of safety for full liquefaction.[83] With operation lift 8 as the trigger, Cross-Section F and Cross-Section G on the north side of the tailings facility barely meet the proposed safety factor of 1.1 for fully liquefied conditions.[84] Cross-section F, with an erosion liquefaction trigger, fails this test and attains only a 1.07 factor of safety.[85]

Changes in the magnitude of risk posed by a project require a supplemental EIS. In *Roosevelt Campobello International Park Com. v. U.S. EPA*, 684 F. 2d 1041, 1055, 1057 (1st Cir. 1982), a supplemental EIS was required to consider new studies regarding the risk of a major oil spill.

This requirement for a Supplemental EIS is particularly compelling for the PolyMet Project since, in the current record, there is *no* proposed tailings facility design that would meet the factor of safety for liquefaction set by the MDNR.

PolyMet's Permit to Mine Application proposed that achieving "desired" factors of safety can be an "iterative design process," allowing PolyMet to construct and operate the tailings facility "in a manner that is estimated to achieve desired slope stability factors of safety."[86] In addition, "adaptive management" or "contingency mitigations" could be implemented "[i]f updated models project that the planned or constructed FTB [flotation tailings basin] dams may not meet required factors of safety."[87] However, MDNR's own consultants have objected that PolyMet's proposed observational method "is not a substitute for careful initial design."[88]

It should be obvious that dam safety design is not the type of endeavor where a mining company can get an "A" for effort. Dam safety factors are required; not optional. Project changes since a final EIS that result in a structure that fails to meet the minimum safety standards contained in the final EIS require supplemental environmental review.

MDNR's draft Conditions for the PolyMet Permit to Mine suggest that PolyMet would prepare a tailings basin buttress "no later than 30 days *following permit issuance* . . . to demonstrate to the DNR that the use of the buttress material will meet all applicable standards, statutes and

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[80] *Id.*, p. 45.
[81] *Id.*, p. 63.
[82] PolyMet Permit to Mine Application for the NorthMet Project December 2017 (PolyMet Permit to Mine Application), p. 268, *excerpts from the Permit to Mine Application and cited Appendices are attached as Exhibit 13.* Permit to Mine documents are available at https://www.dnr.state.mn.us/polymet/permitting/ptm/index.html.
[83] WaterLegacy's Objections to PolyMet Draft Permit to Mine, *supra*, p. 10 and its Exhibit 10, pp. 19-20, also show that the MDNR's 1.1 factor of safety for the PolyMet tailings dam is insufficiently protective.
[84] PolyMet Permit to Mine Application, *Exhibit 13*, *supra*, p. 302.
[85] *Id.*,, p. 301, Table 10-8,
[86] *Id.*, p. 266.
[87] *Id.*, pp. 44-45.
[88] EOR (Emmons & Olivier Resources) Review Team, PolyMet Dam Safety Permit Application Review, May 15, 2017 ("EOR Dam Safety Review"), p. 3, *attached as Exhibit 14.*

regulations to be protective of natural resources."[89] Even if such a design were possible, the MDNR's proposed process would violate NEPA and MEPA, by foreclosing public review of whether such a design and footprint would create significant additional environmental impacts.

WaterLegacy is not advocating that the MDNR require PolyMet to reinstate the CDSM plan for tailings dam stability. MDNR's consultants have questioned the effectiveness of CDSM, stating that, although CDSM had been used in constructing embankments and dams, CDSM "to our knowledge has not been used in a tailings basin."[90] PolyMet's proposal of CDSM in its design plans may have been improvident.

NEPA's procedural requirements preclude an agency from relying on an unproven technology to meet standards during the EIS process, and then shielding from public review any examination of whether another project plan chosen after permit issuance will or will not protect natural resources. Fundamentally, a "bait-and-switch tactic . . defeats the purpose and intent of NEPA to allow the public opportunity to participate in the decision-making process." *Friends of the Clearwater v. McAllister*, 214 F. Supp. 2d 1083, 1089 (D. Mont. 2002).

Elimination of CDSM from PolyMet's design plans must trigger a Supplemental EIS because PolyMet can't demonstrate that its changed proposal for a flotation tailings dam will meet minimum standards to prevent dam breach and failure. The MDNR may not issue a permit that is likely to cause pollution, impairment or destruction or water, land or other natural resources if there is a feasible and prudent alternative. Minn. Stat. §116D.04, Subd. 6. Alternatives, including dry stacking of tailings on a stable, lined foundation, must be evaluated to meet dam safety standards.

B. Increased water appropriations and effects on water quality and the Partridge River headwaters require a Supplemental EIS.

One of the most striking changes in the PolyMet NorthMet mine project between the Final EIS and the release of draft permits was the change in disclosed PolyMet water appropriations at both the mine site and the plant site. The scale of this change far exceeds the impacts found in case law to constitute significant environmental effects requiring a supplemental EIS.

Where water quantity impacts differed from those previously analyzed in environmental review, "the Forest Service's failure to prepare a supplemental EIS was arbitrary and capricious." *Dubois v. U.S. Dep't of Agric.*, 102 F. 3d 1273, 1293 (1st Cir. 1996). Where the selected plan would require four million gallons more water to be withdrawn for the project, this increased water appropriation was "expected to have a significant enough effect on the environment that additional analysis through a supplemental EIS would be required." *Id.*

An Agency is not allowed to segment its analysis and "defer" evaluation of water quantity impact until after the final EIS. *Williams v. Dombeck*, 151 F. Supp. 2d 9, 19-20 (D.D.C. 2001). A final EIS that failed to take a "hard look" at the cumulative effects of "the amount of groundwater which is likely to be used" and conduct a "genuine analysis of the environmental impacts of the use" was held "inadequate under NEPA because it fails to consider the cumulative impacts of the use of groundwater." *Id.*, at 21, 27.

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[89] MDNR, Draft Special Conditions for the Permit to Mine (MDNR Draft Conditions), Jan. 5, 2018, p. 4 ¶26, *excerpt attached as Exhibit 15.*

[90] EOR Dam Safety Review, *Exhibit 14, supra,* p. 4.

A recent copper-nickel mining exploration case found an agency analysis arbitrary and capricious when there was no evidence that substantial reductions in baseflow would have "nonsignificant" environmental effects. *Save Our Cabinets v. U.S. Forest Service*, 254 F. Supp. 3d 1241, 1253-1254 (D. Mont. 2017). Similarly, a recent oil and gas leasing case found that because the Bureau of Land Management "failed to use the information it had at this stage to consider the impacts of the agency action on water quantity, BLM failed to meet its duty to take a hard look at the environmental impacts of the proposed action." *San Juan Citizens Alliance v. United States BLM, supra*, 2018 U.S. Dist. LEXIS 99644, slip op. 59.

The PolyMet FEIS provided little direct information regarding the water appropriations that would be needed for its copper-nickel mining and processing project. The only clear description of water appropriation contained in the final EIS stated that the maximum annual volume of the water appropriation from Colby Lake would be 1,300 million gallons per year.[91]

However, PolyMet Draft Water Appropriation Permit 2017-0260 released by the MDNR in 2017 would allow PolyMet an appropriation of 1,800 million gallons per year from Colby Lake.[92] The water appropriation proposed in the state permitting process from Colby Lake alone is ***500 million gallons more*** than the appropriation described as the maximum in the PolyMet FEIS. As compared with the FEIS appropriation from Colby Lake, the draft permit change in water use is also 496 million gallons per year more than the four million gallons identified in *Dubois v. U.S. Dep't of Agric., supra*, 102 F. 3d at 1293, as significant enough to require a supplemental EIS.

The table below[93] shows this discrepancy as well as the paucity of data in the FEIS regarding PolyMet predicted annual water usage.

Annual Water Appropriations - PolyMet Draft Permit Compared to FEIS (million gallons per year)			
Draft Permit Number Description of Use	**Draft Water Permit** Appropriation	**FEIS** (5-201) Appropriation	**Increased Water Use**
2016-1363 (Mine Site Area) East Pit Dewatering	1000 MGY	Not Stated	Unknown
2016-1364 (Mine Site Area) Central Pit Dewatering	700 MGY	Not Stated	Unknown
2016-1365 (Mine Site Area) West Pit Dewatering	800 MGY	Not Stated	Unknown
2016-1367 (Mine Site Area) All Mine Site Infrastructure	1200 MGY	Not Stated	Unknown
2016-1369 (Plant Site Area) Mine Processing	675 MGY	Not Stated	Unknown
2017-0260 (Colby Lake) Mine Processing	1800 MGY	1300 MGY	***500 MGY***
TOTAL Water Usage	**6175 MGY**	Not Stated	Unknown

[91] PolyMet FEIS, 5-201, Table 5.2.2-40, estimate based on 90th percentile projection.
[92] MDNR, Draft Water Appropriation Permit 2017-0260 for PolyMet, included with draft Permits 2016-1363, 2016-1364, 2016-1365, 2016-1367, and 2016-1369 (Draft Water Appropriations Permits) *in Exhibit 16.*
[93] Annual water appropriations data taken from PolyMet FEIS, 5-201 (no other information in FEIS regarding annual water appropriation) and listed Draft Water Appropriations Permits, *supra, Exhibit 16.*

Water usage is also reflected in gallons per minute authorized to be pumped or isolated from the watershed as a result of mine dewatering, processing, construction or containment of contaminated contact water and wastewater. As set forth in the table below, the PolyMet FEIS disclosed 2,697 gallons per minute of water capture near the Plant/Tailings Site in the PolyMet FEIS. [94] However, Draft PolyMet Water Appropriations permits identified 7,150 gallons per minute of water usage,[95] a level that is ***265%*** of that described in the PolyMet FEIS and 4,453 gallon per minute more than previously disclosed in the FEIS.

Comparison of Water Usage (Plant/Tailings Site Watersheds) PolyMet Draft Permits & FEIS (gallons per minute)		
Draft Permit Number Description of Use	Draft Water Permit (gpm)	FEIS (5-52) (gpm)
2016-1369		
Colby Lake pipe upgrade	300	
FTB seepage construction dewatering	3350	
FTB seepage capture (surface & groundwater)		2,697
Misc. construction dewatering	100	
Sewage construction dewatering	100	
Lined & concrete ponds	50	
Hydromet (HRF) wick drain pumping	2850	TBD
Hydromet (HRF) wick drain gravity	150	TBD
Hydromet (HRF) liner	250	
TOTAL Water Usage from Plant Site Watersheds	**7,150**	**2,697**

The upper Partridge River headwaters at the proposed Mine Site are particularly vulnerable to increased water appropriation due to low flows and the prevalence of wetlands. The PolyMet FEIS acknowledged that the project would result in streamflow reductions and modeled a peak reduction of 8 percent during low-flow conditions.[96]

The PolyMet FEIS did not calculate how actual water appropriations in the Partridge River headwaters would affect wetlands.[97] However, the FEIS claimed that reduced flows at the mine site would not change the geomorphology of the upper Partridge River and that changes in flow were within the "range of annual natural variability." [98] Thus, the FEIS claimed, "reduced flows are not anticipated to result in any measurable effect on available aquatic habitat in any streams in the NorthMet Project area, as long as seasonal flow variation is also maintained."[99]

Water appropriations from mine pit dewatering, construction and wastewater containment were

[94] Water usage data derived from captured groundwater and surface water seepage in PolyMet FEIS, 5-52.
[95] Draft Water Appropriations Permit 2106-1369, *Exhibit 16, supra.*
[96] PolyMet NorthMet FEIS, 5-139; 5-140.
[97] *Id.*, 5-111 to 5-114. Wetlands impacts were characterized using the Canisteo Pit "analog."
[98] *Id.*, 5-140.
[99] *Id.*, 5-453.

estimated at a maximum of 2,990 gallons per minute in the PolyMet FEIS.[100] The maximum pumping rates in PolyMet's Water Appropriations permits are summarized below.[101]

Comparison of Water Appropriations (Partridge River Headwaters) PolyMet Draft Permits & FEIS		
Draft Permit Number Description of Use	**Water Permit Application** (gallons per minute)	**FEIS (5-146)** Highest gpm P90
2016-1363		
East Pit Dewatering	**2,340**	**1,750**
2016-1364		
Central Pit Dewatering	**1,300**	**55**
2016-1365		
West Pit Dewatering	**2,640**	400
2016-1367		
Cat 1 containment construction	275	
Cat 1 containment operation	14,400	375
Cat 1 foundation construction	3,375	
Cat 2/3 foundation construction	1,525	
Cat 2/3 liner drainage	430	145
Cat 2/3 underdrain	50	
Cat 4 foundation construction	850	
Cat 4 liner drainage	130	
Cat 4 underdrain	25	
Building construction	50	
Holding pond, EQ and construction basins	75	
Haul roads, OSLA and rail transfer runoff	470	65
Mine water pond construction	200	
Miscellaneous construction	100	
Ore surge foundation construction	200	
Ore surge liner drainage	80	25
Ore surge underdrain	25	
Stormwater pond construction	750	
WWTP reject concentrate		175
MAX Mine Site Infrastructure	**23,010**	
MAX Appropriation from Mine Site Area	**29,290 gal/minute**	**2,990 gal/minute**

Adding the estimated pumping rates from PolyMet's 2017 Water Appropriation Permit Application reflects a total of 29,290 gallons per minute, ***nearly 10 times*** the 2,990 gallons per minute water usage described in the PolyMet Final EIS. Even applying adjustments proposed by PolyMet in its Application, water use proposed in the PolyMet permitting process (26,830 gallons per minute),[102] is ***nine times*** the maximum rate disclosed in the PolyMet FEIS.

In the Water Appropriation permit process, since the PolyMet Final EIS was completed, substantial changes have been made in both predicted annual and maximum water usage. First,

[100] *Id.*, 5-146 (additive of the highest potential P90 process flow for each time period).
[101] *Id.*; *see also* PolyMet Water Appropriation Permit Applications, April 2017, pp. 26-27, *excerpt attached as Exhibit 17.*
[102] See PolyMet Water Appropriation Permit Applications, *Exhibit 17*, p. 26, fn. 7, explaining PolyMet adjustments.

these discrepancies require supplemental analysis to determine conformity with the requirements of laws pertaining to diversion and consumptive use of Great Lakes public waters.[103]

In addition, the 28% increase (500 million gallons per year) in annual water appropriations piped from Colby Lake to the Embarrass River watershed would contain highly elevated mercury concentrations.[104] Supplemental modeling of mercury concentrations at the tailings basin and analysis of mercury-specific water quality treatment is needed to ensure that neither direct discharge from the plant nor seepage from the tailings facility causes or contributes to mercury impairments of water quality in the Embarrass River watershed.

Changes in water appropriation in the upper Partridge River headwaters also have a clear potential for significant environmental effects. Most water appropriated from the Partridge River headwaters would be pumped to the tailings basin and discharged in the Embarrass River watershed nine miles away,[105] diminishing upper Partridge River streamflow.

Additional analysis is needed to determine how much streamflow would be reduced in the Partridge River headwaters applying the water usage described in the 2017 permitting process. Even without PolyMet's expansion scenarios, it is unreasonable to assume that predictions made in the FEIS that streamflow would be reduced no more than 8 percent and seasonal flow variation maintained would still be valid with nine to ten times the level of water use.

Reduction of streamflow in the Partridge River headwaters could cumulatively affect aquatic life. The upper Partridge River already has a low flow (7Q10) where the lowest 7-day average that occurs at least once every 10 years is zero, so no dilution can be assumed to mitigate pollutant discharge.[106] The effects of any increase in sulfates, conductivity, or metals to which aquatic life are vulnerable as a result of PolyMet mine discharge to the upper Partridge River, whether directly or through groundwater, would be exacerbated by streamflow reduction. The PolyMet FEIS contains no analysis of the cumulative effects of direct releases, seepage from mine pits and other mine features, and reduced streamflow on the Partridge River using current projections of maximum pumping rates, which are nine or ten times higher than those described in the FEIS.

In addition to affecting aquatic life, increased water appropriations in the upper Partridge River have the potential for significant effects on wetlands. Jonathan Price, an expert on mine drawdown and wetlands effects, has explained that the Minnesota wetlands at and near the PolyMet NorthMet site are sensitive to "increases in recharge that will occur with abstraction of water from the regional groundwater system, such as with mine drainage."[107] Dr. Price elaborated,

> The limited recharge is what makes a Minnesota peatland system, like that at the NorthMet site, highly vulnerable to mine drawdown. The depressurization of the deep

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[103] *See* Minn. Stat. §103G.265, Subd. 4; Great Lakes – St. Lawrence River Basin Water Resources Compact, Dec. 13, 2005, Sect. 4.6(1); 4.9(2)(b)-(c), available at http://www.glslcompactcouncil.org/Agreements.aspx#Implementing%20Agreements.

[104] Data provided in the PolyMet FEIS indicates that Colby Lake mercury concentrations are between 4.6 and 8.7 nanograms per liter (ng/L), far exceeding Minnesota's applicable mercury standard in the Lake Superior Basin of 1.3 ng/L. PolyMet FEIS, 4-37 to 4-38.

[105] *See* Draft Water Appropriations Permits, Attachment A of 2016-1363, 2016-1364, 2016-1365, Attachment B of 2016-1367, *Exhibit 16, supra.*

[106] *See* MPCA, PolyMet NorthMet NPDES/SDS Fact Sheet, Attach. 3, pp. 2-3 *excerpt provided as Exhibit 18.*

[107] J. Price, Evaluation of the Impact of the Proposed NorthMet Mine on Local Wetlands (2017), p. 4, *attached as Exhibit 19.*

> groundwater associated with the cone of depression will increase the hydraulic gradients between the near-surface groundwater in the wetlands, and the regional groundwater, and thus increase the rate of water loss (recharge) affecting the capacity of the system to sustain wetlands.[108]

The change in annual water usage from Colby Lake and the changes in maximum water appropriations from the Plant Site and Mine Site described in the Water Appropriations permitting process far exceed the threshold for potential significant environmental effects. Increased use of Colby Lake water at the Plant could have effects on mercury discharge to impaired waters, while increased pumping from the Partridge River headwaters could have significant effects on aquatic life and on wetlands. A Supplemental EIS is required to evaluate the effects of these changes and their cumulative impacts with foreseeable expansions under the PolyMet 2018 Technical Report *alternative mine plan scenarios*.

C. Elimination of the Mine Site Wastewater Treatment Facility and effects on water quality require a Supplemental EIS.

The PolyMet Final EIS claimed, "*With the proposed engineering controls*, the water quality model predicts that the NorthMet Project Proposed Action would not cause any significant water quality impacts." [109] Throughout environmental review, WaterLegacy and independent experts on whom we've relied have challenged the data, assumptions, methodology and thresholds of significance behind this assertion. What has been undisputed throughout environmental review is that even the most sanguine predictions of the water quality impacts of PolyMet's proposed open-pit copper-nickel mine depend on engineering controls.

Eliminating the Mine Site Wastewater Treatment Facility (WWTF), as PolyMet has proposed in the state permitting process since the final EIS was completed, has the potential for significant environmental effects on water quality downstream of the NorthMet Mine Site. The potential harm from eliminating active treatment at the mine site would increase during reclamation and closure. Eliminating the WWTF would also prevent implementation of mitigation and adaptive measures described in the FEIS and emphasized in the MDNR's decision that the PolyMet FEIS was adequate.

To understand the significance of PolyMet's proposed change to eliminate the Mine Site WWTF, it is necessary to review the history of this mitigation feature. Throughout environmental review in the Draft EIS, Supplemental Draft EIS and the Final EIS - PolyMet's plan included a Mine Site Wastewater Treatment Facility (WWTF). For at least five years, since the Supplemental Draft EIS was released, PolyMet has promised to protect water quality in the Partridge River watershed by upgrading the Mine Site WWTF during closure to provide reverse osmosis treatment of discharge and collected seepage.[110]

In eliminating the WWTF, the current PolyMet proposal has selected an alternative that was never considered in any environmental review document. An alternative that "entails a different

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[108] *Id.*, pp. 4-5.
[109] PolyMet FEIS, ES-35, 4-313, 5-9 (repeated verbatim).
[110] MDNR et al., PolyMet NorthMet Supplemental Draft Environmental Impact Statement, Nov. 2013 ("PolyMet SDEIS"), see e.g. ES-24, 5-6, Fig. 5.2.2-15, available at https://www.dnr.state.mn.us/input/environmentalreview/polymet/sdeis-toc.html.

configuration of activities and locations" that are relevant to environmental concerns and does not fall "within the spectrum" of alternatives analyzed in prior environmental review requires preparation of a supplemental EIS. Failure to prepare a supplemental EIS is arbitrary and capricious. *Dubois v. U.S. Dep't of Agric., supra*, 102 F. 3d at 1292.

The WWTF was a critical part of plans to protect water quality at the mine site during operations, closure and post closure and to provide adaptive engineering and contingency mitigation throughout the PolyMet Final EIS. The FEIS and its appendices contain 464 references to the WWTF. All FEIS modeling of solute levels in mine site surficial aquifer and surface water was based on treatment at the WWTF.[111] WWTF functions highlighted in the FEIS included the following:

- During operations, the WWTF would treat mine processing water to reduce chemical parameters before wastewater is piped eight miles overland to the tailings pond.[112]
- Process water treated at the Mine Site WWTF would be used to flood the East Pit and combined East Central Pit after it was backfilled with waste rock to ensure subaqueous disposal conditions and reduce sulfide oxidation and metals leachate.[113]
- Reverse osmosis or equivalent technology would be added to the Mine Site WWTF at closure. The WWTF would also be an adaptive engineering control that could be "adjusted as needed to manage sulfate concentrations," and "could be expanded or treatment capabilities modified to meet water quality standards."[114]
- Once the West Pit would fill post-closure, its discharge would be pumped to the Mine Site WWTF (upgraded to include RO or equivalent technology) for treatment to meet water quality standards before discharge to the West Pit Overflow Creek south of the Mine Site.[115]
- Category 1 waste rockpile drainage from the seepage containment system would be treated at the Mine Site WWTF during closure and reclamation.[116]
- The Mine Site WWTF "would be maintained to treat pit lake water quality for as long as necessary."[117]
- West Pit water would be treated and returned to the West Pit to manage water quality within the pit prior to groundwater outflow from the pit lake through the surficial aquifer.[118]
- "By pumping pit lake water to the WWTF, the pit water level would be managed to always provide sufficient freeboard to absorb extreme precipitation events without overflowing."[119]

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[111] PolyMet FEIS, *see e.g.* 5-117 to 5-130, 5-145 to 5-151.
[112] *Id.*, 3-53, 5-101, 5-184.
[113] *Id.*, ES-23 to ES-24, 3-47, 5-101, 5-104.
[114] *Id.*, ES-25, 3-52, Fig. 3.2-12, Fig. 3.2-13, 5-236, 5-237.
[115] *Id.*, 3-65. 3-72.
[116] *Id.*, 3-66, 3-72.
[117] *Id.*, ES-24.
[118] *Id.*, 3-72.
[119] *Id.*, 5-105.

- Water from the combined East Central Pit would also be pumped to the Mine Site WWTF and treated and then sent to the combined East Central Pit and West Pit to improve pore water quality migrating through the surficial aquifer south 5-85-8 to the Partridge River.[120]
- During post-closure, the Mine Site WWTF would continue to operate until such time as monitoring and pilot-testing demonstrated that a transition could be made to non-mechanical treatment.[121]
- Treatment at the Mine Site WWTF could also be used as contingency mitigation if West Pit water quality or Tailings Basin pond water quality was worse than expected.[122]
- If groundwater extraction wells were required as contingency mitigation due to northward flow of mine site groundwater, the extracted water would be treated at the Mine Site WWTF.[123]

The MDNR's Record of Decision (ROD) that the PolyMet FEIS was "adequate" highlighted the functions of the WWTF throughout the environmental review process.[124] The MDNR's findings relied on the WWTF in order to achieve compliance with water quality criteria. The ROD stated the project would include "WWTF at the Mine Site (upgraded in closure to include reverse osmosis or an equivalently performing technology)."[125] The ROD repeated that "The WWTF would be upgraded to a reverse osmosis ("RO") process or equivalently performing technology that would meet water quality targets during closure and long-term maintenance to manage sulfate concentrations."[126]

The MDNR's findings that the PolyMet FEIS was adequate relied on the Mine Site WWTF to provide adaptive mitigation. If adverse effects on Partridge River surface waters were predicted by monitoring and modeling once the PolyMet Project was approved, adaptive measures would be implemented, including the following:

- Modifying the WWTF design to generate cleaner effluent.
- Increasing the volume of WWTF discharge in closure. The Proposer could temporarily increase the volume of treated water from the WWTF during low-flow conditions, to dilute pollutant concentrations in the Partridge River.[127]

MDNR findings also relied on the Mine Site WWTF to address contingency mitigation in the event that PolyMet's predictions about water quality were overly optimistic. If "West Pit water quality is not as expected," contingency mitigation measures would include "pumping West Pit water to the WWTF for treatment." [128] If "Tailings Basin pond water quality is worse than

[120] *Id.*, 3-72, 5-102, 5-103.
[121] *Id.*, 5-8.
[122] *Id.*, 5-239.
[123] *Id.*, 5-242.
[124] MDNR PolyMet FEIS ROD, *supra*, pp. 19, 23, 30, 39.
[125] *Id.*, p. 39.
[126] *Id.*, p. 54.
[127] *Id.*, p. 55.
[128] *Id.*, p. 57.

expected," contingency mitigation methods would include "Reduce solute load delivered to the Tailings Basin pond by incorporating additional treatment at the Mine Site WWTF."[129]

As newly configured in the PolyMet Permit to Mine Application, the treatment train proposed for the Mine Site WWTF in the PolyMet FEIS would be located at the plant site.[130] PolyMet's proposed project changes would *eliminate **any** mechanical water quality treatment at the Mine Site, whether during operations, reclamation or post-closure*.

Elimination of the Mine Site WWTF would markedly increase toxicity of materials piped across eight miles of wetlands and other natural ecosystems during operations, increasing the environmental concern posed by pipeline spills or leaks.

Effluent piped from the mine site High Concentration (West) Equalization Basin would contain 5,000 times the level of copper and 3,584 times the level of nickel (far above the levels toxic to fish and aquatic life), and 790 times the levels of manganese and 35 times the levels of lead (far above the levels neurotoxic to humans) as would have been transported if a Mine Site WWTF had treated these wastes before piping them to the plant site.[131] Even "Low" Concentration (East) Equalization Basin wastewater, untreated, would contain 370 times the level of copper and 218 times the level of nickel in WWTF treated effluent,[132] multiplying several hundred-fold the level of contaminants that would be transported to the PolyMet plant in overland pipelines.

Next, treatment of contaminated process water from the mine site would depend on operation of pumps and pipelines. In the event of a disruption of the central pumping system or pipelines, no method of treatment would be available to address contaminated groundwater seepage or overflow of wastewater from equalization basins at the mine site.

The PolyMet mine pits would be perpetual sources of water pollution.[133] Modeling for the Proposed Action included mechanical water quality treatment for mine site contamination for at least 200 years.[134] Under PolyMet's current proposal that eliminates the Mine Site WWTF, any treatment of high concentration solutes from East Pit water or West Pit water would require extensive piping back and forth with an additional risk of spills and leaks.

The PolyMet FEIS stated that mechanical treatment would be maintained at the Mine Site "until if, and when non-mechanical, passive treatment if proven."[135] The MDNR Record of Decision finding the PolyMet FEIS adequate concluded, "With *mechanical treatment as proposed*, the project is predicted to meet applicable water quality evaluation criteria. The WWTP (wastewater

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[129] *Id.*
[130] PolyMet Permit to Mine Application, *Exhibit 13, supra,* p. xxix.
[131] Compare treatment targets in the PolyMet Adaptive Management Plan, Appendix 11.4 of the PolyMet Permit to Mine Application at Table 2-1 with concentrations in Mine Year 14, P90 in Large Table 4 of the Adaptive Management Plan. High Concentration (West) Equalization Basin levels include: copper 110,000 µg/L; nickel 405,000 µg/L; manganese 39,500 µg/L and lead 361µg/L. Aquatic life water quality standards in 50 mg/L of background hardness are 5.2 µg/L for copper; 29 µg/L for nickel; and 1.3 for lead under Minn. R., 7052.0100, subp. 6 and Minn. R. 7052.0222, subp. 2. Table 2-1 and Large Table 4 *included in Exhibit 13, supra.*
[132] *Id.,* Large Table 4 also includes concentrations in the Low Concentration (East) Equalization Basin. Mine Year 14 P90 concentrations include copper 7,410 µg/L; and nickel 24,600 µg/L.
[133] PolyMet FEIS, 5-144.
[134] *See* PolyMet SDEIS, *supra*, ES-11, 5-154.
[135] PolyMet FEIS, 3-14.

treatment plan at the tailings site) and WWTF operating and replacement costs would be included in long-term financial assurance estimates."[136]

PolyMet's current proposal seems to promote an early transition to passive treatment. PolyMet's Permit to Mine Application states "non-mechanical water treatment technology could be implemented at the Mine Site a few years after the West Pit has been flooded during the postclosure maintenance phase."[137] The Company's Reclamation, Closure and Postclosure Maintenance Plan proposes to transition from the mechanical treatment train provided at the Plant Site "to non-mechanical treatment systems as early in the reclamation, closure, and postclosure maintenance phases as possible ."[138] The lack of any wastewater treatment plant at the Mine Site may predetermine this outcome irrespective of effects on water quality.

The descriptions of WWTF functions in the PolyMet FEIS and the MDNR's adequacy decision also demonstrate that elimination of the Mine Site WWTF would create obstacles to effective adaptive mitigation and contingency mitigation. Several functions highlighted in the PolyMet FEIS, such as preventing overflow of the West Pit, temporarily increasing the volume of treated water from the WWTF during low-flow conditions to restore flow or dilute pollutant concentrations in the upper Partridge River, or treating groundwater from extraction wells to prevent northward groundwater flow, would not be available without the WWTF.

Elimination of the Mine Site WWTF would increase the hazard posed by pipeline spills and has the potential to prevent compliance with water quality standards in the Partridge River watershed, particularly during closure and post-closure.

Removal of the WWTF would prevent mitigation or adaptive management if pit contamination levels are higher than predicted, if low flows or high contaminant levels jeopardize aquatic life, or if seepage migrates northward to the Rainy River (Boundary Waters) watershed once mine pits are full. The "contingency mitigation" relied upon in the Forest Service Land Exchange ROD to "preemptively stop a northward flowpath and prevent its potential impacts,"[139] would no longer be available should the Mine Site WWTF be eliminated as PolyMet has recently proposed.

Elimination of the WWTF and failure to plan for long-term treatment costs[140] increases the likelihood that PolyMet will abandon its mine once operations cease, leaving no engineered system to prevent pollution and impairment of the Partridge River headwaters. A Supplemental EIS is required to analyze the environmental impacts of eliminating Mine Site active treatment.

5. PolyMet's new wetland mitigation plan, which has had no environmental review, is a new mitigation alternative that must be analyzed in a Supplemental EIS.

The PolyMet Final EIS described a wetland compensation plan to mitigate adverse effects from loss of wetlands and wetlands functions. Since the PolyMet FEIS was completed, in the

[136] MDNR PolyMet FEIS ROD, *supra*, p. 79 (emphasis added).
[137] PolyMet Permit to Mine Application, *Exhibit 13*, *supra*, p. 447.
[138] PolyMet Closure & Postclosure Plan, Appx. 14 of PolyMet Permit to Mine Application, pp. 13, 25, *Exhibit 13*.
[139] PolyMet Land Exchange ROD, *supra*, p. 21
[140] See Section 1 of this Petition, explaining that PolyMet's 2018 Technical Report did not appear to include long-term mechanical treatment costs in its financial feasibility analysis.

Minnesota state permitting process, PolyMet has proposed a completely different wetland mitigation plan. Under state MEPA, this new wetlands mitigation plan constitutes a substantial change in the proposed project that affects potential significant environmental effects. Minn. R. 4410.3000, Subp. 3, Item A(1). Under NEPA, this is a substantial change in the relevant to environmental concerns. 40 C.F.R. § 1502.9(c)(1)(i).

The PolyMet final environmental impact statement concluded that the Proposed Action would directly impact 913.8 acres of wetlands, and impact another 26.9 acres as a result of wetland fragmentation.[141] Methods of assessing indirect wetlands impacts and the delineation of mine site wetlands are highly disputed.[142] However, there is no question that certain loss of at least 940 acres of wetlands in the Lake Superior Basin as a result of the PolyMet NorthMet copper-nickel mine project is a significant environmental impact requiring mitigation.

Based on its estimates of direct wetlands loss and fragmentation, the PolyMet FEIS detailed wetland compensation in three separate wetlands: the Aitkin Site, the Hinckley Site and the Zim Site. Proposed wetland compensatory mitigation was primarily in the form of wetland restoration, and the Final EIS disclosed the types of wetlands communities proposed to be restored.[143]

This wetland mitigation plan detailed in the PolyMet FEIS was also described in PolyMet's Revised Wetland Permit Application to the U.S. Army Corps of Engineers and was the subject of the Corps' November 2015 Public Notice for PolyMet's Section 404 Permit Application.[144] Sufficient notice and information was provided regarding PolyMet's former wetland mitigation plan to allow public review and comment.

Since the PolyMet FEIS was completed, in its 2017 Application for a state Permit to Mine, PolyMet proposed a new Wetland Replacement Plan with a completely different alternative for compensatory mitigation.[145] This new Plan proposes that directly impacted and fragmented wetlands "will be replaced and mitigated by credit purchase from an off-site wetland bank #1609 in the St. Louis River watershed (#3), in Bank Service Area (BSA) #1, in St. Louis County, prior to construction of the Project."[146]

PolyMet's new Wetland Mitigation Plan does not disclose whether proposed mitigation credit purchases would be for wetland restoration or primarily for wetland "preservation," does not reveal how proposed credits mitigate the loss of types and functions of wetlands impacted by the PolyMet project, and does not describe the stage of development of the wetland bank or whether

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[141] PolyMet FEIS, ES-36, ES-37.

[142] WaterLegacy, tribal Cooperating Agencies, and the Great Lakes Indian Fish & Wildlife Commission (GLIFWC) disputed the Co-Lead Agencies' misuse of an "analog" to minimize PolyMet indirect wetlands impacts. Expert criticism of the analog method is provided by Dr. Price in *Exhibit 19, supra*. GLIFWC and tribal Cooperating Agencies also dispute mine site wetlands delineation; direct impacts and fragmentation may be understated.

[143] *See e.g.*, PolyMet FEIS, 5-255, 5-256, 5-387.

[144] USACE, Notice of Availability of Final Environmental Impact Statement and Supplemental Notice for Section 404 Permit Application, Nov. 13, 2015, pp. 5-6, *attached without enclosures as Exhibit 20*. The PolyMet NorthMet Project Revised Wetland Permit Application, Version 1, Aug. 19, 2013, is also cited in the PolyMet FEIS, REF-41, as PolyMet 2013o.

[145] PolyMet, NorthMet Project Wetland Replacement Plan, Dec. 2017, Appendix 18.1 to the PolyMet Permit to Mine. The few pages of the Wetland Replacement Plan describing compensatory mitigation, along with its Attachment D and d-1 pertaining to wetlands bank credits are *attached as Exhibit 21*.

[146] *Id.*, p. 6.

approval of wetland mitigation credits would be feasible prior to construction of the PolyMet mine.

Federal NEPA regulations require analysis of mitigation measures not already included in the proposed action or alternatives, and that an environmental impact statement include discussions of means to mitigate adverse environmental impacts. 40 C.F.R. §§1502.14(f), 1502.16(h).

An environmental impact statement may not need to include a fully developed mitigation plan. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 109 S. Ct. 1835 (1989). However,

> The requirement that an EIS contain a detailed discussion of possible mitigation measures flows both from the language of the Act and, more expressly, from CEQ's implementing regulations. . . [O]mission of a reasonably complete discussion of possible mitigation measures would undermine the "action forcing" function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects.

490 U.S. at 351-352.

In *Conservation Law Found. v. Department of the Air Force,* the Court required the U. S. Air Force to prepare a supplemental EIS on the grounds that changes in mitigation proposed after the final EIS was completed were relevant to environmental concerns. 864 F. Supp. 265, 288 (D. N.H. 1994). The Court held that NEPA regulations "require that all measures proposed to minimize or mitigate significant environmental impacts must be identified in the FEIS." *Id.*, at 282. The EIS was "inadequate for failure to properly analyze the various mitigation measures" and "it was not reasonable for the USAF to omit in the FEIS a discussion of mitigation measures." *Id.* at 287. Reliance on documents prepared subsequent to the issuance of the EIS to address mitigation also "violated NEPA public disclosure requirements." *Id.* at 288.

When the *Conservation Law Foundation* case was appealed, federal defendants did not challenge the district court's order finding a violation of "the public disclosure requirements of NEPA" and directing the Air Force to compile a supplemental FEIS. *Conservation Law Foundation v. Busey*, 79 F.3d 1250, 1270 (1st Cir. 1996).

To obtain a supplemental EIS, plaintiffs need not demonstrate that the proposed changes in mitigation will necessarily cause greater harm than the original mitigation plan. Adoption of a new mitigation alternative can be a significant change requiring that a supplemental EIS is required, whether the proposed changes appear detrimental or beneficial to environmental effects. *National Wildlife Federation v. Marsh*, 721 F. 2d 767, 782-784 (11th Cir. 1983).

In proposing mitigation for harm to wetlands resulting from a Clean Water Act Section 404 permit, it is insufficient under NEPA for the Army Corps to state that appropriate compensatory mitigation credits will be purchased:

> The objective and purpose of compensatory mitigation for environmental harms is to "successfully replace lost functions and services." "The district engineer must determine the compensatory mitigation to be required in a DA [Department of the Army] permit, 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." To that end, the regulations require that compensatory mitigation "be commensurate with the amount and type of impact that is associated with a particular DA permit."

Basinkeeper v. U.S. Army Corps of Eng'rs, 2018 U.S. Dist. LEXIS 31897, 85 ERC (BNA) 2714, 2018 WL 1089275, slip op. 48-49 (M.D. La., Feb. 27, 2018), *citing* 33 C.F.R. §332.3(b)(1).

In *Basinkeeper*, where it was estimated that 142 total acres would be permanently impacted by a pipeline project, the Court rejected the assumption that purchase of credits would offset unavoidable project impacts to wetlands in the absence of an analysis of how credits mitigate the loss of function and value of the specific impacted swamp. *Id.*, at 50. An EIS was required to evaluate the feasibility of the chosen mitigation measures and whether they "effectively address and remediate the adverse impacts" of the project. *Id.* at 51. Pending that analysis, the Court granted plaintiffs' motion to enjoin the proposed pipeline project. *Id.* at 71.

The new Wetland Replacement Plan proposed in PolyMet's Application for a Permit to Mine is a substantial change to the mitigation alternative proposed in the PolyMet Final EIS. This change would affect mitigation of more than 940 acres of wetland loss, and potentially affect mitigation of many hundreds of additional acres of wetlands impairment and loss due to mine dewatering and pollution. It is beyond dispute that PolyMet's new wetland mitigation alternative affects potential significant environmental effects and is profoundly relevant to environmental concerns.

PolyMet's assertion in its new Wetland Replacement Plan that it will buy mitigation credits neither establishes that credits would mitigate the loss of function and value of wooded wetlands, peatlands and rare natural communities, nor meets NEPA and MEPA public disclosure requirements. A Supplemental EIS is required to allow public review of whether PolyMet's new wetland mitigation alternative would effectively remediate the adverse impacts of its copper-nickel mine project on wetlands and wetlands functions in the Partridge River and Embarrass River watersheds of the Lake Superior Basin.

CONCLUSION

On the basis of this Petition for Supplemental Environmental Impact Statement, the Exhibits and authorities cited herein, and the records from environmental review and the permitting process for the PolyMet NorthMet project, WaterLegacy requests that the Co-Lead Agencies, namely the United States Army Corps of Engineers, the U.S.D.A. Forest Service, and the Minnesota Department of Natural Resources, prepare a Supplemental EIS for the PolyMet NorthMet copper-nickel mine project and land exchange addressing each of the issues that are the subject of our Petition, namely:

1. The economic feasibility of the PolyMet FEIS Proposed Action and its ability to fulfill its Purpose and Need, given new information and changed circumstances;
2. The full scope of cumulative environmental impacts of the new expansion scenarios described in the March 2018 PolyMet Technical Report;
3. The feasibility and environmental impacts of PolyMet's newly described alternative to dispose of flotation tailings in more than one abandoned mine pit;
4. The full scope of environmental effects of changes in the PolyMet Proposed Action since the FEIS was completed described in this Petition, including A) elimination of CDSM as a means of achieving dam stability factors of safety; B) increased water appropriation and pumping rates; and C) elimination of the Mine Site Wastewater Treatment Facility; and

5. The nature of the proposed Wetland Mitigation Plan alternative identified by PolyMet since the PolyMet FEIS was completed, including its environmental effects and its ability to effectively address and remediate the adverse impacts of the PolyMet Project.

WaterLegacy requests that changes in the PolyMet Proposed Action since the PolyMet Final EIS be considered cumulatively with the expansion scenarios described in the March 2018 Technical Report. Should PolyMet's rate of processing and tonnage of milled ore triple as proposed in the expansion plan alternatives, results would include increased flotation tailings volume, water usage, mine pit enlargement and impacts to wetlands. Thus, needs for dam stability, protection of streamflow, base flow and water quality, adaptive management and contingency mitigation, and wetlands replacement would all be magnified. Project changes that increase environmental impacts would become more damaging, and project alternatives that minimize, mitigate and compensate for these harms would become yet more essential.

WaterLegacy also requests that the Co-Lead Agencies take a hard look at the financial feasibility of the PolyMet NorthMet Project at the 32,000 tons per day scale described in the Final EIS. At this scale, the Project may fail to cover reclamation and closure costs and would require twice the capital investment to produce only a third of the rate of return on which PolyMet and its investors previously relied. PolyMet's financial dependence on Glencore, even as the Department of Justice investigates Glencore for money laundering and corruption, requires yet greater scrutiny.

A Supplemental EIS must now be prepared for the PolyMet NorthMet copper-nickel mine project and land exchange to protect Minnesota taxpayers from unfunded liabilities and Lake Superior watersheds and public lands from significant environmental harm.

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Respectfully submitted,

JUST CHANGE LAW OFFICES
s/Paula G. Maccabee
Paula Goodman Maccabee (#129550)
1961 Selby Ave.
St. Paul MN 55104
phone: 651-646-8890
cell: 651-646-8890
e-mail: pmaccabee@justchangelaw.com

Counsel and Advocacy Director for WaterLegacy