STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

In re Minnesota Department of Natural Resources' Issuance of a Dam Safety Permits to Poly Met Mining, Inc.	Minn. Ct. App. Case No. A18-1953 Minn. Ct. App. Case No. A18-1960 Minn. Ct. App. Case No. A18-1961 **POLY MET MINING, INC.'S RESPONSE TO REQUESTS FOR RECONSIDERATION OF DAM SAFETY PERMITS**

TO: Minnesota Department of Natural Resources

Poly Met Mining, Inc. ("PolyMet") opposes the Requests for "Reconsideration" of Dam Safety Permits by Minnesota Center for Environmental Advocacy ("MCEA"), Friends of the Boundary Waters Wilderness ("Friends"), WaterLegacy, Duluth for Clean Water, the Fond du Lac Band of Lake Superior Chippewa (the "Band"), Vince Leo, Michelle Beddor, Michael Maleska, and Health Professionals for a Healthy Climate.[1]

INTRODUCTION

The environmental and permitting review process by which the Minnesota Department of Natural Resources issued permits to PolyMet was the longest and most careful in Minnesota history. Relators remain dissatisfied with the outcome.

[1] This Response refers to MCEA, WaterLegacy, Friends, the Band, Duluth for Clean Water, Vince Leo, Michelle Beddor, Michael Maleska, and Health Professionals for a Healthy Climate collectively as "Relators," except where one is specifically identified.

Now, based on a tailings dam failure in Brazil, they ask MDNR to overturn years of work and "reconsider" the Dam Safety Permits. But such "reconsideration" is not authorized by law, and not justified by the facts Relators present in any event.

First and foremost, PolyMet's Dam Safety Permits are "irrevocable" under Minnesota Statutes section 103G.315 and beyond MDNR's jurisdiction now that Relators have filed appeals. Regardless, Relators' conclusory statements about a dam failure in Brazil do not constitute evidence that could change MDNR's analysis and conclusions regarding PolyMet's Dam Safety Permits. MDNR already considered and addressed Relators' various concerns about dam failures at other locations. And, as a factual matter, the slope of PolyMet's dam is flatter, and thus more stable, than the other dam failures on which Relators rely. Citing another example of a dam failure at a different location does not provide a reliable reason to doubt the extensively evaluated dams at PolyMet's NorthMet project site.

ARGUMENT

I. Minnesota law does not authorize reconsideration of PolyMet's dam safety permits.

MDNR issued the Dam Safety Permits under Minn. Stat. § 103G.315, which sets forth the procedure for denying or issuing water permits.[2] That statute does

[2] MDNR Findings of Fact, Conclusions, and Order for NorthMet Project – Dam Safety Permits, dated November 1, 2018 ("MDNR Findings of Fact and Order on Dam Safety Permits"), at ¶ 201 (citing Minn. Stat. § 103G.315, subd. 3, and stating that "[i]f permit applicants demonstrate that their application and supporting

not specify any procedure for "reconsideration" of an issued permit. Indeed, the word "reconsider" does not even appear in section 103G.315. But the word "irrevocable" does appear. Section 103G.315, subdivision 14 states that permits granted in connection with the mining of copper, copper-nickel, or nickel "are ***irrevocable*** for the term of the permits without the consent of the permittee, except for breach or nonperformance of any condition of the permit by the permittee." Minn. Stat. § 103G.315, subd. 14(a) (emphasis added). There is no question that PolyMet's Dam Safety Permits "are granted in connection with the mining, production or beneficiation of copper, copper-nickel, or nickel within the meaning of Minn. Stat. 103G.315, subd. 14(a)."[3] Thus, PolyMet's Dam Safety Permits are "irrevocable" under the statute.

Relators—who completely ignore the irrevocable nature of the dam safety permits—suggest that MDNR still has authority to "cancel" them.[4] The problem with that suggestion is that while subdivision 11 of section 103G.315 contains a cancellation provision, it also contains an exception. Subdivision 11 applies "[e]xcept as otherwise expressly provided by law . . . ." Minn. Stat. 103G.315,

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materials satisfy those standards, DNR must issue a dam safety permit to the applicant."); *id*. at ¶¶ 256–257, 259–260 (citing Minn. Stat. § 103G.315).

[3] MDNR Findings of Fact, Conclusions, and Order for NorthMet Project – Dam Safety Permits, dated November 1, 2018 ("MDNR Findings of Fact and Order on Dam Safety Permits"), at ¶ 265.

[4] Relators' Request for Reconsideration dated February 28, 2019, at 2.

subd. 11. Subdivision 14 of section 103G.315 expressly provides that the copper-nickel dam safety permits are "irrevocable," thereby eclipsing the subdivision 11's authority to cancel such permits.

Nor can a rule override an express provision in the statute. Relators cite Minn. R. 6115.0500 as supporting the notion of reconsideration.[5] But that rule clearly states that it is "subject to the permit and public hearing provisions of Minnesota Statutes, sections 103G.251, 103G.295, 103G.297, and 103G.301 to 103G.315." Minn. R. 6115.0500. Rule 6115.0500 cannot override section 103G.315 where the rule specifically states that it is "subject to" the statute. Because Rule 6115.0500 expressly refers to and incorporates section 103G.315, the "irrevocable" provision in subdivision 14 of section 103G.315 controls.

Relators further cite *In re North Metro Harness, Inc.*, 711 N.W.2d 129, 132 (Minn. Ct. App. 2006), in support of their reconsideration argument.[6] But *North Metro Harness* did not involve any irrevocable MDNR permits related to mining activity; rather, it concerned the Minnesota Racing Commission's vote to deny a respondent a certain racetrack license. *Id*. Further, the court's ruling in *North Metro Harness* was narrower than Relators' description of it. The court held only that "***without a statute or rule proscribing such action***, a commission, in a quasi-judicial proceeding, has inherent authority to sua sponte move to reconsider

[5] Relators' Request for Reconsideration dated February 28, 2019, at 2.

[6] Relators' Request for Reconsideration dated February 28, 2019, at 2.

a decision when the time to appeal has not yet expired." *Id.* (emphasis added). Applying the actual legal standard in *North Metro Harness*, reconsideration is not available here. Because Minnesota Statutes § 103G.315, subd. 14 makes PolyMet's dam safety permits irrevocable, a statute proscribes reconsideration in this case. To the extent *North Metro Harness* references inherent authority to reconsider "without a statute or rule proscribing such action," 711 N.W.2d at 132, such inherent authority cannot exist here.

What is more, the time to reconsider expires once the underlying permitting decision is appealed. *North Metro Harness* explained that an agency has power to reconsider adjudications "until jurisdiction is lost by appeal or certiorari . . . ." 711 N.W.2d at 135–36 (quoting *Anchor Cas. Co. v. Bongards Co-Op Creamery Ass'n*, 91 N.W.2d 122, 126 (Minn. 1958)).[7] Multiple other published appellate decisions similarly state that an agency loses jurisdiction over a proceeding and the power to grant rehearing once certiorari review commences. *See, e.g.*, *Indep. Sch. Dist. No. 709 v. Bonney*, 705 N.W.2d 209, 215 (Minn. Ct. App. 2005) (stating that agency "did not have jurisdiction to reconsider its decision" because the court "granted relator's petition for writ of certiorari" before the relator requested reconsideration); *Rowe v. Dep't of Employment and Econ. Dev.*, 704 N.W.2d 191, 196

[7] In *Metro Harness*, the court concluded that reconsideration was proper, but it reached that conclusion because the commission had moved for reconsideration before the appeal, while the commission still "retained jurisdiction." 711 N.W.2d at 136. That is not the situation here.

(Minn. Ct. App. 2005) (stating that once the decisionmaker is without jurisdiction, it lacks legal authority to change the decision).[8] In this case, even assuming reconsideration were legally possible (which it is not), MDNR lost jurisdiction to reconsider when Relators filed appeals of the Dam Safety Permits.[9]

In sum, Relators' requests for "reconsideration" are barred by the statute that makes the dam safety permits "irrevocable." Their requests should be denied for that reason alone.

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[8] The unpublished decision that Relators cite does not control because it is not precedential. Minn. Stat. § 480A.08, subd. 3. The Minnesota Supreme Court has emphasized that courts may not rely on unpublished opinions of the court of appeals as binding precedent. *Vlahos v. R & I Constr., Inc.*, 676 N.W.2d 672, 676 n.3 (Minn. 2004) (stating district court erred "both as a matter of law and as a matter of practice" by relying on an unpublished opinion of the court of appeals, "stress[ing] that unpublished opinions of the court of appeals are not precedential" and noting both that "danger of miscitation [of unpublished opinions] is great because unpublished opinions rarely contain a full recitation of the facts" and that "[u]npublished opinions should not be cited by the district court as binding precedent"). Indeed, the court of appeals admonishes attorneys for even citing such unpublished opinions in their briefs. *See Roer v. Dunham*, 682 N.W.2d 179, 181 n.1 (Minn. Ct. App. 2004); *Dynamic Air, Inc. v. Bloch*, 502 N.W.2d 796, 800-01 (Minn. Ct. App. 1993) (stating dangers of miscitation and unfairness associated with use of unpublished opinions and that while persuasive, "legislature has unequivocally provided that unpublished opinions are not precedential").

[9] *In re MDNR Issuance of Dam Safety Permits to PolyMet*, No. A18-1953 (Minn. Ct. App.); *In re MDNR Issuance of Dam Safety Permits to PolyMet*, No. A18-1960 (Minn. Ct. App.); *In re MDNR Issuance of Dam Safety Permits to PolyMet*, No. A18-1961 (Minn. Ct. App.).

II. Relators do not provide any new evidence showing that the PolyMet dams would be likely to fail.

MDNR's findings regarding the Dam Safety Permits already addressed concerns about a potential dam breach.[10] MDNR found that "potential for breach of the FTB Dam is an extremely unlikely event, particularly in light of the numerous regulatory requirements and ongoing monitoring and controls that will be in place."[11] MDNR observed that "the FTB Dam design has the demonstrated capacity to safely store a large flood, withstand an earthquake, resist static liquefaction, and withstand other unlikely events and occurrences."[12] Relators' repetition of those concerns does not change anything.

A. MDNR has already accounted for Relators' generalized concerns about dam failures at other locations.

Even if Minnesota law permitted "reconsideration" of the Dam Safety Permits, Relators' conclusory statements would not justify it. Relators primarily discuss the tragic failure of the Brumadinho tailings dam in Brazil. But MDNR's Findings of Fact, Conclusions, and Order on the Dam Safety Permits already addressed Relators' similar concerns about "dam failures at other locations, including well-publicized failures at the Mount Polley Dam, in British Columbia,

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[10] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶¶ 184–199.

[11] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 188.

[12] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 187.

and the Samarco Dam, in Brazil."[13] In response, MDNR explained that the failure of other dams "does not provide reliable bases for concluding that the NorthMet Dams would be likely to fail."[14] MDNR's conclusions were instead based on a careful evaluation of PolyMet's applications and supporting materials, after which MDNR determined that PolyMet's proposed dams "as planned will meet applicable Factors of Safety and satisfy permitting requirements intended to ensure the safety and stability of the dams."[15] Further, MDNR specifically found that nothing about "other dam failures" undermines the technical support for the Dam Safety Permits.[16]

MDNR's dam safety engineers reviewed the progression of the design of the proposed flotation tailings basin and the proposed hydrometallurgical residue facility for over 10 years.[17] MDNR also sought top experts to assess and comment on the proposed design, operation, and maintenance of the proposed dams.[18] MDNR hired a team of nationally recognized external experts to assess and comment on the proposed design, operation, and maintenance of the proposed

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[13] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 163.

[14] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 164.

[15] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 165.

[16] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 165.

[17] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 3.

[18] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 3.

dams.[19] Environmental Resources Management (ERM) and its sub-consultant Knight-Piesold (KP), which are multi-national companies with experience in mine planning and mine development, assisted in the technical review of the proposed dams.[20] Emmons Olivier Resources, Inc. (EOR) experienced in mining geotechnical engineering, also consulted on the proposed dams.[21]

After 10 years of review, MDNR found that PolyMet's application and supporting materials provide the engineering and technical data necessary to show that PolyMet's proposed flotation tailings basin dam (FTB Dam) will be structurally sound.[22] Modeling further indicates that the FTB Dam will be stable and will meet or exceed the required factors of safety, and calculations demonstrate the expected gain in strength of the FTB Dam after its anticipated closure in approximately 20 years.[23] In addition, PolyMet's dam "will be subject to continuing oversight, operation and maintenance requirements, financial assurances and other requirements aimed at assuring continuing compliance with all applicable dam safety requirements."[24]

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[19] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 63.

[20] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 63.

[21] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶¶ 63–64.

[22] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 171.

[23] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 159.

[24] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 171.

For all of these reasons, MDNR concluded that PolyMet met its burden of proof, that substantial evidence supports the Findings of Fact, and that under Minnesota law, PolyMet is entitled to issuance of the requested Dam Safety Permits.[25]

B. Relators repeat concerns about "upstream" dam construction that MDNR addressed when approving the Dam Safety Permits.

Relators argue that the Brumadinho dam in Brazil used the "same outdated and faulty 'upstream' method of containment" that MDNR approved for PolyMet, and contends that dams constructed by "the upstream method are more likely to fail because the tailings are more sand-like and less dense than rocks and soil bought in from elsewhere."[26] These arguments repeat concerns about "upstream" dam construction that MDNR already addressed.

Relators acknowledge that they previously "objected to PolyMet's proposal to use the 'upstream' dam construction method for its FTB dam."[27] Indeed, during the permitting process, MDNR and its experts thoroughly analyzed the "upstream construction" method, which is "a commonly used construction method for tailings dams."[28] In this case, MDNR found that PolyMet's upstream approach for

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[25] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 8.

[26] MCEA Letter dated January 31, 2019; *see also* Relators' Request for Reconsideration dated February 28, 2019, 4–5.

[27] Relators' Request for Reconsideration dated February 28, 2019, at 4.

[28] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 168.

the FTB Dam had the advantage of "minimiz[ing] the impact on wetlands."[29] MDNR further found that the engineering and technical data show that PolyMet's dam "will be structurally sound."[30]

Besides the recent dam failure in Brazil, Relators continue to rely on the failure of the Mount Polley dam in British Columbia.[31] MDNR has already determined that the proposed NorthMet dams "contain significant differences in design from the Mount Polley dam."[32] The slopes of the proposed dams for PolyMet's NorthMet project are flatter (less steep and therefore more stable) than the Mount Polley dam.[33] Mount Polley suffered a foundation failure due to an unknown clay layer in the foundation; it did not fail due to upstream construction.[34] The foundation conditions at the PolyMet site have been researched in greater depth and are much better understood than the Mount Polley dam.[35] The long-term construction plans at the PolyMet site are also better developed for dam raises and future operations."[36] Unlike Mount Polley, the FTB

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[29] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 170.

[30] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 171.

[31] MCEA Letter dated January 31, 2019.

[32] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 166.

[33] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 166.

[34] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 167.

[35] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 166.

[36] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 166.

Dam for PolyMet's NorthMet project is a ring-dike dam, not a valley dam.[37] "Valley dams exhibit greater height and head at the base than ring-dike dams increasing the probability of dam failure."[38] To summarize, Relators' reliance on the Mount Polley dam and other dam failures "does not provide reliable bases for concluding that the NorthMet Dams would be likely to fail."[39]

C. Relators reiterate concerns about liquefaction that MDNR addressed when approving the Dam Safety Permits.

Relators' concerns about liquefaction present nothing new. MDNR recognized that the liquefaction analysis for the FTB Dam used conservative assumptions and found no meaningful risk to dam stability from liquefaction.[40] After MDNR informed PolyMet that it must demonstrate that the FTB Dam will meet a Factor of Safety of at least 1.10 under the specified liquefaction triggering scenario, PolyMet conducted detailed analyses, which demonstrated that the FTB Dam will meet a Factor of Safety of 2.07 for the specified liquefaction triggering scenario.[41] Furthermore, a seismic liquefaction screening evaluation of the FTB site showed that even if a seismic event occurred, it would not trigger liquefaction.[42]

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[37] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 167.

[38] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 167.

[39] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 164.

[40] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 185.

[41] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 107.

[42] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 123.

MDNR observed that an additional analysis shows that even if a seismic event were assumed to liquefy the tailings, the dam would deform a small amount (0.024 feet), but the dam would not fail.[43] Again, MDNR already found that "the FTB Dam design has the demonstrated capacity to safely store a large flood, withstand an earthquake, resist static liquefaction, and withstand other unlikely events and occurrences."[44] The failure of the Brumadinho dam in Brazil does not change or otherwise affect the design of or Factors of Safety calculated for PolyMet's proposed dams.[45] Relators' reliance on the dam failure in Brazil and other dam failures "does not provide reliable bases for concluding that the NorthMet Dams would be likely to fail."[46]

D. Relators reiterate concerns about "peats and slimes" that MDNR addressed when approving the Dam Safety Permits.

Although Relators raise concerns about "the uncertain foundations of a forty-year-old dam, on top of tailings, peat and slimes,"[47] MDNR already addressed such concerns before it issued the Dam Safety Permits to PolyMet. In particular, MDNR "considered the presence of the peat and slimes under the existing and future dams and basins, including comments regarding the potential negative

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[43] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 123.

[44] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 187.

[45] Olson Decl. ¶ 8.

[46] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 164.

[47] MCEA Letter dated January 31, 2019.

effects of peats and slimes on the strength and stability of the FTB Dam."[48] Acknowledging those "peats and slimes" considerations, MDNR "concluded that the FTB Dam will meet or surpass required Factors of Safety and other dam safety permitting requirements."[49] Relators' statements about "peats and slimes" present nothing new.

E. MDNR has already addressed Relators concerns about statements made by one of MDNR's outside consultants.

Relators—citing select statements by one of MDNR's outside consultants[50]—regurgitate another concern that MDNR previously addressed. After commenters raised concerns about the outside consultant's remarks, MDNR engaged in additional discussions with the consultant to ensure that technical staff reviewing the applications for the Dam Safety Permits understood the basis for his statements and the scope of his concerns in detail.[51] Taking that information into account, MDNR concluded that the dam can be managed to ensure the ongoing safety and stability of the dam and compliance with all legal requirements.[52]

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[48] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 162.

[49] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 162.

[50] MCEA Letter dated January 31, 2019 ("PolyMet's dam 'gives me severe indigestion because a lake on top of a pile of sand is inherently unstable, and irresponsible.'").

[51] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 177.

[52] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 177.

Relators' repetition of the consultant's statements now does not present any new evidence.

III. PolyMet's proposed FTB Dam is distinct from the dam in Brazil.

A. PolyMet's proposed FTB Dam has a much flatter slope—which makes it more stable—than the Brumadinho dam in Brazil.

MDNR's findings regarding PolyMet's Dam Safety Permits observed that "the FTB Dam will be constructed with a particularly flat downstream slope (in comparison to most other dams), adding additional stability."[53] MDNR also previously recognized that the slopes of PolyMet's proposed dams are flatter (less steep and therefore more stable) than the Mount Polley dam.[54] The relatively flatter slope in PolyMet's proposed FTB Dam compared to most other dams also sets PolyMet's proposed FTB Dam apart from the Brumadinho dam in Brazil. PolyMet's proposed FTB Dam has a slope of its rock buttress of 3.5H:1V.[55] PolyMet's dam slopes will be 4.5H:1V with an intermediate setback for a cumulative dam slope of 7H:1V.[56] The Brumadinho dam in Brazil had a slope

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[53] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 185.

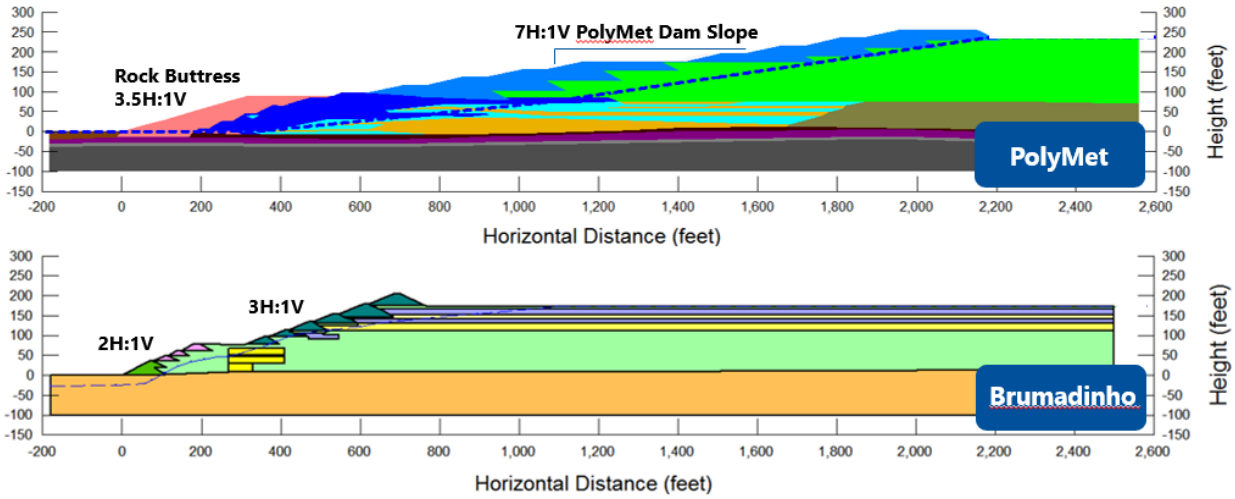
[54] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 166.

[55] Kearney Decl. ¶ 8. The "H" in the ratio stands for Horizontal Distance; the "V" in the ratio stands for Vertical Elevation. *Id*.

[56] Kearney Decl. ¶ 8. *See also* MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 39 (stating that PolyMet's FTB dam "will have a slope of 4.5 horizontal to 1 vertical (4.5H:1V)").

ranging from 2H:1V to 3H:1V,[57] which is much steeper. MDNR previously recognized that a flatter slope compared to most other dams adds stability.[58] This fact alone undermines Relators' attempt to compare the Brumadinho dam in Brazil to PolyMet's dam. The flatter slope of PolyMet's proposed dam means it will be vastly more stable than the dam in Brazil.[59]

Here is a cross-section diagram depicting a scaled comparison of the slopes of PolyMet's proposed dam and the slopes of the Brumadinho dam in Brazil:[60]



[57] Kearney Decl. ¶ 8.

[58] MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 185.

[59] Kearney Decl. ¶ 8. Furthermore, PolyMet's dam will not be as tall. After the 20-year construction period, PolyMet's FTB Dam will have a "final height of approximately 250 feet." MDNR Findings of Fact and Order on Dam Safety Permits, at ¶ 40. MCEA asserts that the Brumadinho dam in Brazil was 280-feet high. *See* MCEA Letter dated January 31, 2019.

[60] Kearney Decl. ¶ 9, Ex. A.

B. The liquefaction analysis in the design of PolyMet's FTB Dam further distinguishes it from the Brumadinho dam in Brazil.

Unlike the dams in Brazil, PolyMet's FTB dam was designed to consider the potential for liquefaction.[61] The potential for tailings liquefaction at PolyMet's FTB dam controlled the design of the upstream perimeter slopes.[62] To provide stability, the upstream slopes of PolyMet's FTB dam were designed to be very flat.[63] PolyMet's FTB dam was designed and evaluated by Barr Engineering, peer reviewed by Dr. Scott Olson and Richard Davidson (AECOM), and subsequently independently reviewed by MDNR's geotechnical engineering consultants.[64] All of them concluded that the FTB dam design was adequate, as it was designed considering that liquefaction could be triggered by an "unknown" mechanism; in other words, liquefaction could occur and the dam needed to be stable even if liquefaction did occur.[65]

In contrast to PolyMet's FTB dam, Vale's upstream tailings dams in Brazil were designed and constructed almost exclusively ***without*** considering the possibility of tailings liquefaction.[66] As a result, Vale's upstream tailings dams in

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[61] Olson Decl. ¶ 4.

[62] Olson Decl. ¶ 4.

[63] Olson Decl. ¶ 4.

[64] Olson Decl. ¶ 6.

[65] Olson Decl. ¶ 6.

[66] Olson Decl. ¶ 5.

Brazil used much steeper perimeter slopes than PolyMet will use.[67] And, contrary to Relators' suggestion, Dr. Scott Olson was not involved in the design of any upstream tailings dams in Brazil.[68]

C. Relators' arguments about the method of analysis designed by Dr. Scott Olson do not withstand scrutiny—by Dr. Scott Olson.

Although Relators assert arguments calling into question the reliability of the Olson and Stark (2003) method (referred to as the "Olson Method") of analyzing dam stability due to the failure of the Brumadinho dam in Brazil, Dr. Olson himself disagrees with the fundamental underpinnings of those arguments.

Relators claim that Pirete and Gomes used the Olson Method to assess the dam in Brazil.[69] But Pirete and Gomes incorrectly interpreted and misused the Olson Method.[70] What is more, Dr. Olson did not review or comment on the Pirete and Gomes (2013) paper before it was published.[71] Correctly applying the Olson Method should have calculated a critical failure surface at the dam in Brazil consistent with the failure observed on January 25, 2019.[72]

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[67] Olson Decl. ¶ 5.

[68] Olson Decl. ¶ 7.

[69] Relators' Request for Reconsideration dated February 28, 2019, at 8–9.

[70] Olson Decl. ¶ 3.

[71] Olson Decl. ¶ 3.

[72] Olson Decl. ¶ 3.

In a declaration accompanying this response memorandum, Dr. Olson explains how Pirete and Gomes misused the Olson Method and incorrectly concluded that the Brumadinho tailings dam in Brazil was safe against liquefaction.[73] If Pirete and Gomes had correctly applied the Olson Method, they would have identified the tailings as contractive and susceptible to liquefaction in their stability analyses, and they should have computed a critical failure surface that was consistent with the failure that actually occurred.[74] Tragically, Pirete and Gomes misused and incorrectly interpreted the Olson Method.[75] The failures of the tailings dams in Brazil do not undermine the reliability of the Olson Method.[76]

IV. Relators' requests for "reconsideration" of their requests to stay PolyMet's permits pending appellate review should be denied.

There remains no reason to stay the permits pending the appeals of MDNR's decisions. PolyMet incorporates its previous responses by reference.[77] A stay pending appeal remains improper and unnecessary to prevent harm to Relators or the public. Relators cite no authority in support of their request for reconsideration of the stay apart from the authority addressed above in section I.

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[73] Olson Decl. ¶ 3.

[74] Olson Decl. ¶ 3.

[75] Olson Decl. ¶ 3.

[76] Olson Decl. ¶ 8.

[77] *See* PolyMet's Response to Request for Stay of Permits, submitted to MDNR on November 26, 2018; PolyMet's Response to Request for Stay of Permits, submitted to MDNR on December 19, 2018.

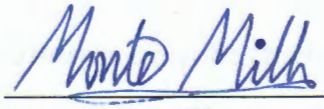
Absent legal authority, reconsideration of the stay decision similarly should be denied.

CONCLUSION

MDNR should not disturb PolyMet's legal right to the Dam Safety Permits that MDNR granted to PolyMet. For all the reasons stated above, PolyMet respectfully asks MDNR to deny Relators' requests for reconsideration.

Dated: March 12, 2019

GREENE ESPEL PLLP



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STATE OF MINNESOTA

In re Minnesota Department of Natural Resources' Issuance of a Dam Safety Permits to Poly Met Mining, Inc.	Minn. Ct. App. Case No. A18-1953 Minn. Ct. App. Case No. A18-1960 Minn. Ct. App. Case No. A18-1961 **DECLARATION OF CHRISTIE KEARNEY IN SUPPORT OF POLY MET MINING, INC.'S RESPONSE TO REQUESTS FOR RECONSIDERATION OF DAM SAFETY PERMITS**

Saint Louis County, Minnesota

I, Christie Kearney, under 28 U.S.C. § 1746 and Minn. Stat. § 358.116, do hereby state and declare as follows:

1. I am the Environmental Site Director of Poly Met Mining, Inc. (PolyMet). In my role as PolyMet's Environmental Site Director, I have knowledge regarding PolyMet's permitting and compliance process.

2. Many years ago, PolyMet developed a mission statement that it still follows today: Our mission is "[t]o permit and safely and responsibly build and operate a mining enterprise that produces essential metals for the global community, sustains and improves our way of life, protects our natural surroundings and returns value to those have a stake in us."

3. Our mission is very important to me and everyone who works at PolyMet. We have worked long and hard to ensure that the NorthMet Project will fulfill all aspects of that mission.

4. For nearly 14 years, PolyMet has worked closely with state and federal agencies, including the Minnesota Department of Natural Resources (MDNR), and Minnesota Pollution Control Agency (MPCA), U.S. Forest Service, and U.S. Army Corps of Engineers, to responsibly develop a project that will protect northeastern Minnesota's natural resources.

5. When MDNR and MPCA issued permits for the NorthMet Project, including the Dam Safety Permits, it signaled those agencies' satisfaction that the project could move forward in an environmentally protective and responsible way that satisfies the law.

6. Nothing that happened with respect to the tailings dam at the Brumadinho mine in Brazil changes the design of or Factors of Safety calculated for PolyMet's proposed dams at the NorthMet Project site.

7. Evidence of other dam failures does not provide any reliable bases for concluding that the PolyMet's proposed dams at the NorthMet Project site would be more likely to fail.

8. PolyMet's proposed flotation tailings basin dam (FTB Dam) at the NorthMet Project site is flatter, and therefore more stable, than the dam at the

Brumadinho mine in Brazil. PolyMet's proposed FTB Dam has a slope of its rock buttress of 3.5H:1V. PolyMet's dam slopes will be 4.5H:1V with an intermediate setback for a cumulative dam slope of 7H:1V. The "H" in the ratio stands for Horizontal Distance; the "V" in the ratio stands for Vertical Elevation. The dam at the Brumadinho mine in Brazil had a slope ranging from 2H:1V to 3H:1V, which is a much steeper slope than PolyMet's.

9. Attached as Exhibit A is a true and correct copy of a cross-section diagram depicting a scaled comparison of the slopes of PolyMet's proposed dam and the slopes of the dam at the Brumadinho mine in Brazil, as developed by our tailings basin Engineer of Record.

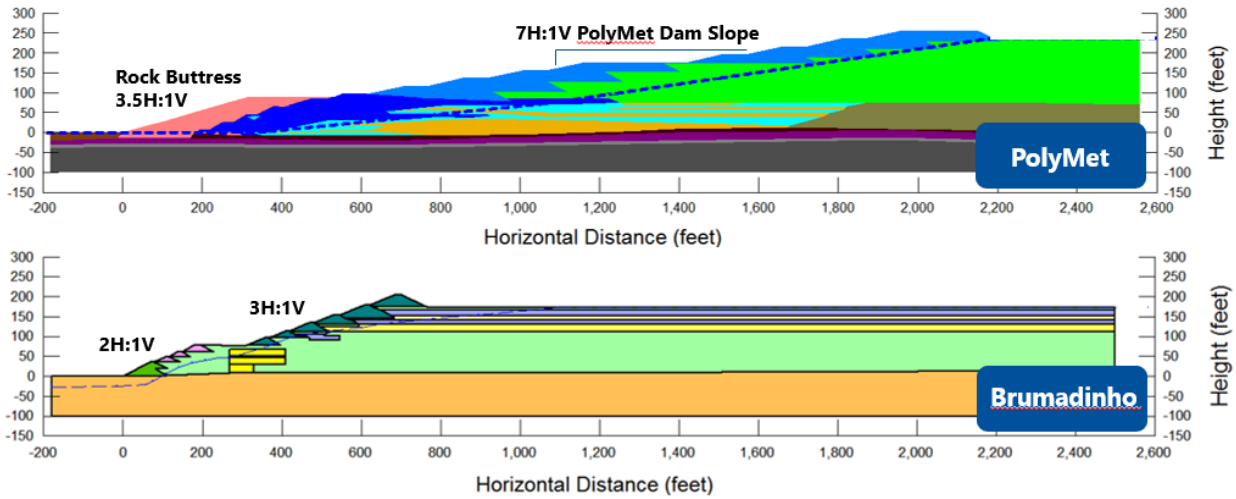
I declare under penalty of perjury that the foregoing is true and correct.

Dated: March 9, 2019

Christie Kearney

Christie Kearney

EXHIBIT A


7H:1V PolyMet Dam Slope
Rock Buttress
3.5H:1V
PolyMet
Height (feet)
Horizontal Distance (feet)
3H:1V
2H:1V
Brumadinho
Height (feet)
Horizontal Distance (feet)

STATE OF MINNESOTA

In re Minnesota Department of Natural Resources' Issuance of a Dam Safety Permits to Poly Met Mining, Inc.	Minn. Ct. App. Case No. A18-1953 Minn. Ct. App. Case No. A18-1960 Minn. Ct. App. Case No. A18-1961 **DECLARATION OF DR. SCOTT M. OLSON IN SUPPORT OF POLY MET MINING, INC.'S RESPONSE TO REQUESTS FOR RECONSIDERATION OF DAM SAFETY PERMITS**

Champaign County, Illinois

I, Dr. Scott M. Olson, under 28 U.S.C. § 1746 and Minn. Stat. § 358.116, do hereby state and declare as follows:

1. I am an Associate Professor in the Civil and Environmental Engineering Department at the University of Illinois. I hold a B.S. (University of Illinois 1993), M.S. (University of Illinois 1995), and Ph.D. (University of Illinois 2001), all in civil engineering. I teach several courses in geotechnical engineering: an undergraduate introduction to geotechnical engineering course, a mixed undergraduate and graduate course in applied soil mechanics, and three graduate courses on excavations and support systems, rock mechanics, and geotechnical field measurements. I am a licensed professional engineer and participate in consulting projects with industry.

2. I reviewed Relators' Request for Reconsideration dated February 28, 2019, and their statements about the Olson and Stark (2003) method (referred to as the "Olson Method").

3. I did not review or comment on the Pirete and Gomes (2013) paper before it was published. Tragically, the authors of the Pirete and Gomes paper misused the Olson Method and incorrectly concluded that the Brumadinho tailings dam at the Feijao mine in Brazil was safe against liquefaction. Specifically, their error lies in their interpretation of dilative materials in their stability analysis (Pirete and Gomes paper, Figures 9, 11, 13, and 14). The Pirete and Gomes Figures 6, 7, and 8 clearly illustrated that the great majority of the tailings were contractive and susceptible to liquefaction. In fact, Pirete and Gomes state, on page 42, that: "The results, in both the analysis of SPT and CPT analyses, demonstrate that the most points scored is located to the left of the Fear & Robertson boundary, corresponding to materials that tend to exhibit contractile behavior during shear, i.e., CF tailings liquefaction susceptibility is likely...." Despite this conclusion, Pirete and Gomes then inexplicably identified nearly all of the tailings below the depths of the in-situ tests described in their paper as dilative and not susceptible to liquefaction. This was an incorrect interpretation and misuse of the Olson Method. If Pirete and Gomes had correctly identified these tailings as contractive and susceptible to liquefaction in their stability analyses, they should have computed a critical failure

surface that was consistent with the failure observed on January 25, 2019, with factors of safety only slightly greater than unity under "AS IS" conditions—without considering any triggering mechanism.

4. Upstream tailings dams can be designed and operated safely when designed and operated properly. The chief difference between PolyMet's proposed flotation tailings basin (FTB) dam and the dams in Minas Gerias, Brazil can be stated in very simple terms. Namely, PolyMet's FTB dam was designed to consider the potential for liquefaction. The potential for tailings liquefaction at the FTB dam controlled the design of the upstream perimeter slopes. To provide stability, the upstream slopes of PolyMet's FTB dam were designed to be very flat.

5. In contrast to PolyMet's FTB dam, Vale's upstream tailings dams in Brazil were designed and constructed almost exclusively ***without*** considering the possibility of tailings liquefaction. As a result, Vale's upstream tailings dams in Brazil were constructed with comparatively steep perimeter slopes. Following the failure of the Brumadinho tailings dam, Vale decided to decommission at least 10 upstream tailings dams because these tailings dams all exhibit relatively steep perimeter slopes similar to the Fundao and Brumadinho dams in Brazil. Again, in comparison to those dams in Brazil, the slopes of PolyMet's FTB dam are much flatter.

6. PolyMet's FTB dam was designed and evaluated by Barr Engineering, peer reviewed by me and Richard Davidson (AECOM), and subsequently

independently reviewed by geotechnical engineering consultants hired by the Minnesota Department of Natural Resources. All of these parties concluded that the FTB dam design was adequate, as it was designed considering that liquefaction could be triggered by an "unknown" mechanism; in other words, liquefaction could occur and the dam needed to be stable even if liquefaction did occur.

7. I was not involved in the design of any upstream tailings dams in Brazil. My involvement in Brazil begin in 2016 following the November 2015 failure of the Fundao dam. I soon learned that Vale and their consultants rarely considered liquefaction in design and operation of their tailings dams—at least until recently. As a result, I worked with Vale and their consultants to help them understand how liquefaction could cause failures of Vale's upstream tailings dams. In addition, since 2017 I have served on a Vale-appointed international panel that was working with Vale to develop and use risk-based approaches to prioritize tailings dams for repair or closure, or both.

8. The failure of the Brumadinho tailings dam at the Feijao mine in Brazil does not change or otherwise affect the design of or Factors of Safety calculated for PolyMet's proposed dams at the NorthMet Project site. Furthermore, to the best of my geotechnical knowledge and experience, the failures of the tailings dams in Brazil do not undermine the reliability of the Olson Method.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: March _11_, 2019

Dr. Scott M. Olson