

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

In the Matter of the NorthMet Project
Permit to Mine Application

**PETITIONER WATERLEGACY'S
ARGUMENT AND EXCEPTIONS
TO THE ADMINISTRATIVE LAW
JUDGE REPORT**

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INTRODUCTION

The question before the Minnesota Department of Natural Resources (“DNR”) on remand from the Minnesota Supreme Court is whether to reissue or deny a permit to mine to Poly Met Mining, Inc. and PolyMet Mining Corp. (together “PolyMet”) for the proposed NorthMet copper-nickel mining project. The question before Director Wilson, as final DNR decisionmaker for the contested case ordered by the Minnesota Supreme Court, is whether PolyMet’s bentonite amendment plan for reactive tailings storage “as proposed in the permit application, is a ‘practical and workable’ reclamation technique that will satisfy the DNR’s reactive waste rule.” *In re NorthMet Project Permit to Mine Application (“NorthMet”)*, 959 N.W.2d 731, 754 (Minn. 2021) (citing Minn. R. 6132.2200, subp. 2(B)).

The Administrative Law Judge (“ALJ”) concluded that “the bentonite amendment is not a ‘practical and workable’ reclamation technique that will satisfy the Reactive Mine Waste Rule.” Findings of Fact, Conclusions of Law, and Recommendation, November 28, 2023 (“ALJ Report”) at 25, OAH Official Record, OAH 60-2004-37824 PolyMet Official Record (“OAH Record”) at p. 31. The ALJ recommended, with respect to the bentonite amendment, that “PolyMet’s Permit to Mine application be **DENIED**.” ALJ Report at 28, OAH Record at p. 34 (emphasis in original). The ALJ’s conclusion is correct as a matter of law and is robustly supported by the record. PolyMet has not shown that its bentonite amendment is practical and workable, pursuant to Minn. Stat. § 93.481, subd. 2, to satisfy Minnesota’s reactive mine waste requirements in Minn. R. 6132.2200, subp. 2(B).

Despite this fundamental concurrence with the ALJ’s Report, WaterLegacy takes exception to procedural rulings by the ALJ and findings of fact, conclusions, and recommendations of the ALJ related to five “factual disputes” proposed by the DNR Hearing

Team in this matter. After setting forth the Contested Case Hearing Issue, a Summary of the Bentonite Amendment, and the Standard for Review, WaterLegacy’s Argument and Exceptions addresses failure of the bentonite amendment to comply with the Reactive Mine Waste Rule (Section I), exceptions to the ALJ’s Report related to the Hearing Team’s factual disputes (Section II), and recommendations based on applicable law (Section III).

The overwhelming weight of the evidence shows that the bentonite amendment would neither store NorthMet tailings so they are no longer reactive nor prevent substantially all water from flowing through or over the tailings. The proposed bentonite amendment would degrade due to cation exchange and other factors increasing seepage, oxidation of tailings, and water pollution. PolyMet’s plan would result in sulfate and metals pollution and unacceptable adverse impacts to water resources. A NorthMet permit based on PolyMet’s tailings storage plan must be denied, and the DNR lacks authority to issue a permit to mine based on PolyMet’s application and this record.

CONTESTED CASE HEARING ISSUE

The issue presented for the contested case hearing was as follows:

Is the proposed bentonite amendment a “practical and workable” reclamation technique pursuant to Minn. Stat. § 93.481, subd. 2, that will reduce infiltration of oxygen and water into the stored tailings and satisfy the reactive mine waste rule, Minn. R. 6132.2200, subp. 2(B)?

DNR Hearing Team, Amended Notice and Order for Hearing, Feb. 14, 2022 at 8–9 ¶ 26, OAH Record at pp. 14352–14353.

SUMMARY OF THE BENTONITE AMENDMENT

NorthMet tailings waste would be deposited in a flotation tailings basin built on top of the two eastern cells (Cell 1E and 2E) of the LTV Steel Mining Company (“LTV”) taconite tailings basin and, at closure, would be the same height as its tallest western Cell 2W. Ex.

211, R.0715517 (Final EIS); Tr. Vol. 2 at 10:16–20 (Radue). The phrase “tailings basin” is a term of art, and the LTV tailings basin is actually an elevated land form like a hill. Tr. Vol. 2 at 9:24–10:3 (Radue). The current LTV tailings basin is unlined, and no bentonite or other liner would be placed on Cell 1E or 2E under NorthMet tailings before they are deposited. Ex. 207 at 29 ¶ 103 (DNR Admissions); Ex. 210, R.0065571, .0068947 (Application); Ex. 219 at 53 ¶ 230, R.0115578 (DNR Permit Findings). No bentonite would be placed on existing LTV tailings or LTV dam faces. Ex. 264, R.0723309–0723310 (Environmental Resources Management (“ERM”) Analysis for DNR).

During operations, a bentonite amendment to the dam sides would add 3% bentonite to an 18-inch layer of LTV tailings, covered with 30 inches of LTV tailings. Ex. 207, at 14–15 ¶¶ 42–43 (DNR Admissions). At closure, on the beaches PolyMet would add approximately 3% bentonite to an 18-inch thick layer of NorthMet flotation tailings, covered by 30 inches of flotation tailings. *Id.* at 17 ¶¶ 55–56. If required in order to maintain water in the pond on top of the tailings at closure, bentonite would be applied to the pond bottom through the water column either by broadcasting pellets, injection with custom-made equipment, or overlapping geosynthetic clay liner (“GCL”) panels on the pond bottom. *Id.* at 8–10 ¶¶ 16, 21–25; Ex. 74 at 31:456–32:464 (Radue). At closure, a permanent pond about 905 acres in size and 8 feet deep would remain on top of the flotation tailings; the beach area surrounding the pond on top of the tailings mound would be about 427 acres; and dam sides amended with bentonite would be about 380 acres. Ex. 74 at 9:130–135 (Radue).

The bentonite amendment is intended both to reduce permeability to water and maintain a high degree of water saturation that limits oxygen diffusion into the underlying tailings. Ex. 74 at 21:298–300 (Radue); Ex. 78 at 19:297–299 (Diedrich); Ex. 206 at 23:22–

24:1 (Benson). Bentonite, a type of clay, absorbs water and swells, saturating the space in the pores with water. All engineered barriers that use bentonite rely on the ability of the bentonite to swell and fill the pores through which water flows. Bentonite's reduction of hydraulic conductivity depends on its ability to swell in the presence of water, and hydraulic conductivity will increase if bentonite loses its ability to swell. Ex. 74 at 16:235–240 (Radue); Ex. 206 at 7:17–22 (Benson). Cation exchange and other processes that reduce bentonite's ability to swell increase oxygen diffusion as well as hydraulic conductivity. *Id.* at 7:22–8:3. An increase in hydraulic conductivity indicates that bentonite swell has been reduced, and the resulting larger pore sizes diminish the ability to maintain high water saturation and prevent oxygen diffusion into the underlying tailings. Ex. 200 at 32:10–14 (Malusis).

When oxygen gets into the tailings, the tailings become oxidized and more sulfate will be released. Tr. Vol. 4 at 108:2–5 (Malusis). Thus, “long-term containment of reactive tailings requires controlling the ingress of water and oxygen into tailings.” Ex. 206 at 16:19–20 (Benson). The ALJ found that by “decreasing oxygen and water infiltration, the bentonite amendment is designed to limit oxidation of the tailings, which would reduce the release of sulfate and metals.” ALJ Findings of Fact (“FOF”) ¶ 22, OAH Record at p. 14. In ordering the contested case hearing, the Minnesota Supreme Court explained, “The effectiveness of the bentonite amendment is critical in preventing oxygen and water from reaching the stored tailings and ensuring the NorthMet project's compliance with the DNR's reactive waste rule.” *NorthMet*, 959 N.W.2d at 754.

STANDARD FOR REVIEW

The DNR owes no deference to the Hearing Team. In a contested case, the “agency decision-maker is required to consider all of the evidence presented and come to an

independent reasoned decision rather than defer to the testimony of agency advocates.” *In re Excess Surplus Status of Blue Cross and Blue Shield of Minn.*, 624 N.W.2d 264, 266 (Minn. 2001). The department participates only “as an advocate in the matter.” *Id.* at 269. The agency must give the ALJ’s determinations “some weight,” although it ultimately “has the authority to reverse factual determinations made by an ALJ.” *In re Eller Media Co.*, 664 N.W.2d 1, 6-7 (Minn. 2003) (citing *City of Moorhead v. Minn. Pub. Utils. Comm’n*, 343 N.W.2d 843, 847 (Minn. 1984)). Minn. Stat. § 14.62 subd. 1 requires the agency to provide “reasons for each rejection or modification” of an ALJ’s “finding of fact, conclusion, or recommendation,” and failure to do so can be evidence of an “arbitrary and capricious decision.” *Bloomquist v. Comm’r of Natural Res.*, 704 N.W.2d 184, 190 (Minn. App. 2005).

ARGUMENT AND EXCEPTIONS

I. TAILINGS STORAGE WITH POLYMET’S BENTONITE AMENDMENT WOULD NOT SATISFY MINNESOTA’S REACTIVE MINE WASTE RULE.

WaterLegacy agrees with the ALJ that NorthMet tailings storage relying on the bentonite amendment would not be practical and workable to satisfy the Reactive Mine Waste Rule. Minn. Stat. § 93.481, subd. 2; Minn. R. 6132.2200, subp. 2(B). NorthMet tailings seepage would continue to release substances that adversely affect natural resources, violate environmental standards, and preclude DNR from issuing a permit to mine. However, WaterLegacy takes exception to the ALJ’s assignment of the burden of proof to Petitioners, rather than to PolyMet, and to the ALJ’s failure to include additional substantial and undisputed record evidence supporting these critical conclusions.

A. PolyMet Bears the Burden to Prove NorthMet Tailings Storage Would Comply with Law, including the Reactive Mine Waste Rule.

PolyMet’s permit to mine was reversed by the Minnesota Supreme Court, *NorthMet*,

959 N.W.2d at 738, and the DNR has not issued PolyMet a new permit. *NorthMet* held that DNR lacked substantial evidence to support approval of the bentonite amendment and must conduct a contested case hearing to determine if the bentonite amendment would be effective to comply with the Reactive Mine Waste Rule. *Id.* at 754. These rulings are the law of the case. *State v. Bailey*, 732 N.W.2d 612, 623 (Minn. 2007). PolyMet is asking DNR to reissue a permit to mine. Petitioners are not. PolyMet bears the burden of proof.

Under Minn. R. 1400.7300, subp. 5, “The party proposing that certain action be taken must prove the facts at issue by a preponderance of the evidence, unless the substantive law provides a different burden or standard.” PolyMet is proposing that its bentonite plan and permit to mine application be approved, so PolyMet has the burden of proof. *In re Excess Surplus*, 624 N.W.2d at 278–279 (plan submitted for government approval was a “proposal that the department take an action” so applicant had the burden of proof); *RDNT, LLC v. City of Bloomington*, 861 N.W.2d 71, 78 (Minn. 2015) (permit denial upheld since “the burden was on [the applicant] to show that it could satisfy the standards specified by ordinance”); *In re License Application of Rochester Ambulance Serv., Div. of Hiawatha Aviation, Inc.*, 500 N.W.2d 495, 498 (Minn. App. 1993) (applicant “bears the burden of proof in this case to show that the Commissioner should have granted the license.”)

Mining statutes confirm, rather than absolve, PolyMet of its burden. An applicant is not entitled to a permit to mine. It must show that proposed mine reclamation “complies with lawful requirements” and is “practical and workable” under available technology. Minn. Stat. § 93.481, subd. 2.¹ DNR Hearing Team counsel affirmed that PolyMet must

¹ See Ex. 219, at 11–12 ¶ 51, R.0115536–0115537 (DNR Permit Findings) (“It is for the applicant to propose and tailor a mining and reclamation plan aimed at satisfying these

demonstrate to the DNR “that its proposed project comports with Minnesota law,” and that PolyMet “has the burden” in these contested case proceedings. Hearing Team Pre-Hr’g Statement, Oct. 28, 2021, at 6, OAH Record at p. 14820; Hearing Team Pre-Hr’g Br., Mar. 3, 2023, at 18, OAH record at p. 8016 (“In order to satisfy the reactive waste rule through subpart 2(B)(1), PolyMet must show that the tailings will be stored in an environment such that they are not reactive.”). The ALJ erred in assigning a burden of proof to Petitioners. ALJ Report at 25 ¶ 4, OAH Record at p. 31. To obtain a new permit, PolyMet must show that its mine plan complies with all applicable laws. In this contested case, PolyMet must prove by a preponderance of the evidence that its proposed bentonite amendment is practical and workable to satisfy the Reactive Mine Waste Rule. PolyMet has not met this burden.

B. Bentonite’s Compliance with the Reactive Mine Waste Rule is Mandatory and is Not Satisfied by Subsequent Capture of Seepage.

1. Compliance with the Reactive Mine Waste Rule is Mandatory.

The unambiguous text of the Reactive Mine Waste Rule mandates compliance:

Subp. 2. **Requirements.** A mining operation must meet the requirements in items A to D. . .

B. A reactive mine waste storage facility must be designed . . . to either:

(1) modify the physical or chemical characteristics of the mine waste, or store it in an environment, such that the waste is no longer reactive; or

(2) during construction to the extent practicable, and at closure, permanently prevent substantially all water from moving through or over the mine waste and provide for the collection and disposal of any remaining residual waters that drain from the mine waste in compliance with federal and state standards.

Minn. R. 6132.2200, subp. 2(B) (emphasis added).

standards. It is for the DNR to review an applicant's proposed reclamation plan to determine if it satisfies legal requirements.”)

Reactive Mine Waste Rule requirements in Subpart B(2) are neither “flexible” nor “outcome-based.”² Where reclamation standards use the term “requirements, as the word suggests, [they] set forth requirements related to the goals.” *MCEA v. Minn. Dep’t of Nat. Res.*, A18-1956, 2019 WL 3545839 at *6 (Minn. Ct. App. Aug. 5, 2019). The DNR has admitted that all subparts after subpart 1 in ch. 6132 “set forth specific requirements or prohibitions on mining and reclamation activities.” Ex. 219 at 10, ¶ 45, R.0115535 (DNR Permit Findings). The DNR may not reissue a permit for a reclamation plan that does not satisfy the mandatory “requirements” of the Reactive Mine Waste Rule.

There are two options to satisfy the Rule. Either a mine must modify or store reactive mine waste so that it is no longer reactive, Subpart 2(B)(1), or it must both permanently prevent substantially all water from moving through or over the waste and also collect and dispose of all residual waters in compliance with federal and state standards, Subpart 2(B)(2). There is no flexible or hybrid third option that does not meet these requirements.

2. Unambiguous Rule Language Precludes Reliance on Seepage Capture to Meet the Requirements of Subpart 2(B)(1).

Seepage capture means trapping or diverting water and its chemical constituents after they have seeped out of the tailings basin. Seepage capture plays no role in satisfying the requirement in Subpart 2(B)(1) that reactive mine waste storage must be designed to modify or store waste such that it is no longer reactive. Subpart 2(B)(1) makes no reference at all to capture of seepage and the rule must be construed “according to the common and approved usage of its words and phrases.” *J.D. Donovan, Inc. vs. Minn. Dep’t of Transp.*, 878 N.W.2d 1, 5 (Minn. 2016). The common meaning of the word “store” is to “reserve or put away for future

² In fact, DNR “may allow variance from specific reclamation requirements” in *other* rules to “meet the requirements” of the reactive mine waste rule. Minn. R. 6132.2200, subp. 2(D).

use”³ and its gloss in a legal context includes to “keep. . . in an unchanged condition.”⁴ Neither common usage includes an extraneous feature like seepage collection or capture.

Rules, like statutes, are governed by general rules of construction. *In re Reissuance of an NPDES/SDS Permit to United States Steel Corp.*, 954 N.W.2d 572, 576 (Minn. 2021). Rules of construction “forbid adding words” to a statute whether they are “purposely omitted or inadvertently overlooked.” *Premier Bank v. Becker Dev., LLC*, 785 N.W.2d 753, 760 (Minn. 2010). *See also Hous. & Redevelopment Auth. of St. Cloud v. Royston*, 990 N.W.2d 730, 736 (Minn. App. 2023) (an interpretation “cannot rearrange or add language”). Subpart 2(B)(2) refers to seepage collection, and the Rule’s authors clearly knew of this potential feature. No words can be added or rearranged to include seepage collection in Subpart 2(B)(1). If seepage capture were intended to apply to or satisfy Subpart 2(B)(1), the Rule would have said so.

3. Unambiguous Text in Subpart 2(B)(2) Requires Both Prevention of Substantially All Water Flow and Collection of Residual Waters.

The unambiguous language of Minn. R. 6132.2200, subp. 2(B)(2) requires that reactive mine waste storage be designed to “permanently prevent substantially all water from moving through or over the mine waste” in addition to collecting and disposing of any residual waters. During construction, this requirement is qualified by the phrase “to the extent practicable,” but at closure it is unqualified. DNR lacks discretion to “add words of qualification” or disregard unambiguous rule language “under the pretext of pursuing the spirit.” *City of Brainerd v. Brainerd Inv. P’ship*, 827 N.W.2d 752, 756, 758 (Minn. 2013); Minn. Stat. § 645.16. Subpart 2(B)(2) requires *both* prevention of substantially all water infiltration *and* collection

³ *Store*, AM. HERITAGE DICTIONARY, <https://ahdictionary.com/word/search.html?q=store>.

⁴ *Store*, BLACK’S LAW DICTIONARY (11th Ed. 2019) at 1717.

and disposal of residual waters in compliance with law. *See Reimringer v. Anderson*, 960 N.W.2d 684, 688 (Minn. 2021) (“the word ‘and’ serves as a conjunctive link”).

4. No Reasonable Interpretation Allows Seepage Capture to Substitute for the Bentonite Amendment’s Compliance with Subpart 2(B).

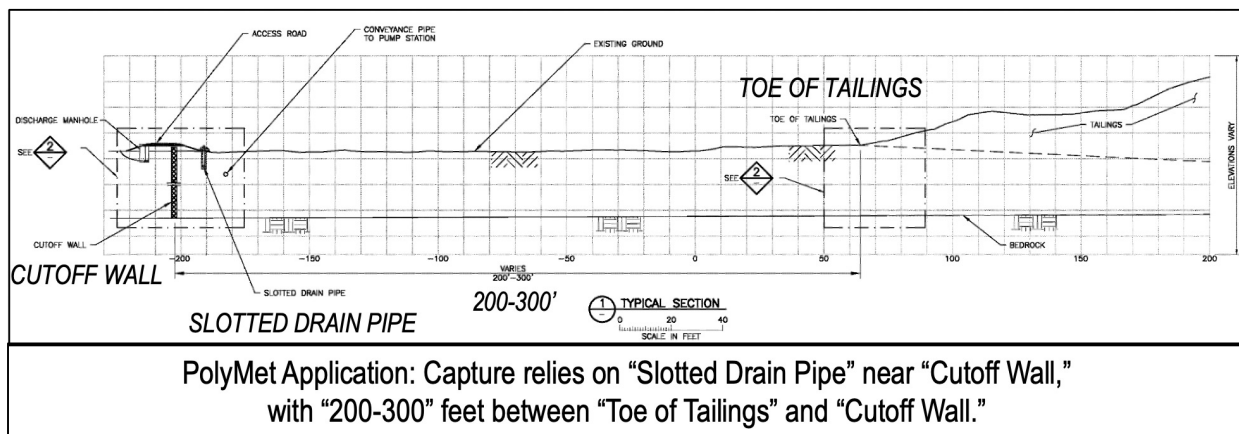
Even if the text were ambiguous—which it is not—DNR’s reasonable interpretation when the rule was adopted confirms that seepage collection cannot substitute either for Subpart 2(B)(1) requirements to prevent formation of unacceptable substances or Subpart 2(B)(2) requirements to prevent substantially all water infiltration. DNR stated that the rule:

[P]rovides two requirements for dealing with reactive mine waste. **To meet the first requirement, measures would have to be taken to prevent substances, that adversely impact natural resources, from forming within the mine waste.** If no such substances are allowed to form, it can reasonably be expected that no impact will occur. **In the event it is not be [sic] possible to prevent the formation of unacceptable substances,** a design must be presented that: 1) prevents substantially all water from contacting unacceptable substances within the mine waste; and 2) provides for the collection and treatment of water that is contaminated, because it can not be kept away . . . **Another method, that consists of merely collecting contact water and treating it in order the meet water quality discharge standards, without a substantial effort to minimize the amount of water contacting the waste, has been rejected.**

Ex. 336 at 22, R.0730374 (Rule SONAR) (emphasis added).

Despite the unambiguous Rule language and the clear intention of the Rule when adopted, PolyMet and DNR’s Hearing Team argue that seepage capture can be used as a “different way” to satisfy Subpart 2(B)(1), since the bentonite amendment will not eliminate oxidation of the tailings and will generate “sulfate and metals.” Hearing Team Pre-Hr’g Br. at 18–19, OAH Record at pp. 8016–8017. The most recent version of this argument suggests that the “storage environment” for tailings includes not only the tailings basin, but pollution recapture from groundwater and surface water beyond the toe of the basin and wastewater treatment. Hearing Team Exceptions Br. at 12–13. NorthMet tailings have no liner and

seepage capture and treatment are wholly separate from tailings basin storage. The illustration below from Ex. 210, R.0066325 (Application) (captions enlarged) shows the proposed pollution capture features 200 to 300 feet from the toe of the tailings basin.



Extraneous features cannot stand in for missing evidence that the bentonite amendment would store waste so it is no longer reactive or prevent substantially all water from moving through or over the waste to satisfy the Reactive Mine Waste Rule.

C. NorthMet Tailings Storage Was Not Designed to and Would Not Satisfy Subpart 2(B)(1) because Tailings Will Remain Reactive.

It is not disputed that NorthMet flotation tailings are “reactive mine waste.” Ex. 220, ¶¶ 28b, 55c, R.0115742, .0115748 (Permit); *NorthMet*, 959 N.W.2d at 754. The ALJ correctly concluded that the bentonite amendment would not satisfy Subpart 2(B)(1) of the Reactive Mine Waste Rule, which requires that waste storage must “[m]odify the physical or chemical characteristics of the mine waste, or store it in an environment, such that the waste is no longer reactive.” ALJ Report at 33, OAH Record at p. 39.

1. Violation of Environmental Standards is Not Necessary to Demonstrate Waste Remains Reactive.

The Reactive Mine Waste Rule defines “reactive mine waste” as “waste that is shown through characterization studies to release substances that adversely impact natural

resources.” Minn. R. 6132.0100, subp. 28. The Rule defines “adversely impact natural resources” as “an unacceptable level of impact on natural resources as determined by the commissioner.” *Id.* at subp. 3. WaterLegacy agrees with the ALJ that the plain text of the Rule does not require that seepage violate environmental standards to have an unacceptable adverse impact on natural resources. ALJ Report at 34, OAH Record at p. 40. Waste is reactive if it releases substances that “adversely impact natural resources.” Minn. R. 6132.0100, subp. 28. And “natural resources” are defined to include “all mineral, animal, botanical, air, water, land, timber, soil, quietude, recreational, historical, scenic, and aesthetic resources in accordance with Minnesota Statutes section 116B.02, subdivision 4.” *Id.* at subp. 21.⁵ Thus, Subpart 2(B)(1) refers to the Minnesota Environmental Rights Act (“MERA”) to define “natural resources,” not to water quality standards. In contrast, as noted previously, Subpart 2(B)(2) refers to “compliance with federal and state standards.” Neither the DNR nor the courts can add or rearrange words to suit a preferred interpretation. *Premier Bank*, 785 N.W.2d at 760; *Royston*, 990 N.W.2d at 736.

The ALJ correctly determined that “a waste is no longer reactive if, as a result of its storage, it ceases to release the substances that made it reactive in the first place.” ALJ Report at 34, OAH Record at p. 40. The goal of the Reactive Mine Waste Rule is not merely to follow regulations set by other agencies, but “to prevent the release of substances that result in the adverse impacts on natural resources.” Minn. R. 6132.2200, subp. 1. The DNR also has an independent obligation to protect water resources from adverse effects. *See White Bear Lake*

⁵ Reactive mine waste seepage could have unacceptable adverse effects on recreation, scenic, or aesthetic resources due to unpleasant odors, discolored waters, or increased algae blooms. Minnesota also lacks numeric standards for some chemicals known to adversely impact aquatic life such as ionic pollutants (specific conductance, hardness), sulfate, and nitrates.

Restoration Ass'n ex rel. State v. Minn. Dep't of Nat. Res., 946 N.W.2d 373, 379–380 (Minn. 2020).

Even if the text of Subpart 2(B)(1) were ambiguous—which it is not—the DNR must give no deference to the Hearing Team’s new argument that the ALJ’s interpretation of Subpart 2(B)(1) overly restricts reactive waste storage by requiring that the storage prevent formation and release of substances that made it reactive. Hearing Team Exceptions Br. at 16. This new position is unreasonable and inconsistent with the DNR’s longstanding interpretation of the Rule. *Donovan*, 878 N.W.2d at 9 n.7. In proposing the Rule, DNR interpreted Subpart 2(B)(1) to require measures “to prevent substances that adversely impact natural resources from forming within the mine waste,” and to require compliance with Subpart 2(B)(2) if “it is not possible to prevent the formation of unacceptable substances.” Ex. 336 at 22, R.0730374 (SONAR). DNR testified when the Rule was adopted that underwater disposal could satisfy Subpart 2(B)(1) only if it “eliminates the oxidation,” thus changing the “chemical characteristic of the waste.” Ex. 107, Hr’g Tr., at 190:3–6. The DNR similarly stated in approving the NorthMet permit: “Put simply [t]he operator must either modify the waste or contain it.” Ex. 219 at 109 ¶ 583, R.0115634 (DNR Permit Findings).

DNR’s longstanding and reasonable interpretation of the Rule is consistent with that of the ALJ and Petitioners. If an operator cannot modify waste so that it no longer releases substances that adversely impact natural resources, the operator cannot merely modify the phrase “no longer reactive.” Either violation of standards or other release of substances that adversely impact natural resources will demonstrate failure to satisfy Subpart 2(B)(1).

2. PolyMet Cannot Demonstrate that NorthMet Tailings Storage Would Comply with Environmental Standards.

WaterLegacy agrees with the ALJ’s conclusion that, even if nothing more than compliance with environmental standards were required under Subpart 2(B)(1), recent

decisions by federal agencies and the Minnesota Supreme Court demonstrate that PolyMet has not met and could not meet even that narrower standard. ALJ Report at 34–36, OAH Record at pp. 40–42.

The DNR Hearing Team has admitted that if tailings storage allowed “a substance to flow out from somewhere” that “results in a failure to meet environmental standards,” that impact would be “too bad to be accepted” and would violate the Reactive Mine Waste Rule. Hearing Team Post-Hr’g Br., May 26, 2023 at 18, OAH Record at p. 1331; Hearing Team Proposed Findings and Recommendations at 30, ¶ 213, OAH Record at p. 1366. The DNR lacks jurisdiction to determine if water quality standards are violated. Ex. 219, at 158, ¶ 784, R.0115683–0115684 (DNR Permit Findings). However, it is undisputed that violation of water quality standards—if determined by an appropriate authority—is sufficient to establish that reactive waste has remained reactive. That has occurred in this case.

The U.S. Army Corps of Engineers (“Corps”) revoked PolyMet’s Clean Water Act Section 404 permit for the NorthMet project on June 6, 2023, concurring with the U.S. Environmental Protection Agency (“EPA”) and the Fond du Lac Band of Lake Superior Chippewa (the “Band”) that “existing permit conditions . . . are not sufficient to ensure that there will be no violation of the Band’s downstream water quality requirements.” OAH Record at p. 1298 (Revocation). Although reactive tailings waste was not the sole cause of violations, the Band raised concerns about the “plume of contaminants” that would result from tailings seepage. *Id.* at 1289–1290. The Corps explained that the NorthMet project’s failure to comply with the Band’s standards also resulted in a violation of the criteria of federal law, so that the Corps “must revoke the permit.” *Id.* at OAH Record p. 1299.

In August 2023, the Minnesota Supreme Court determined on appeal of the NorthMet

NPDES/SDS water pollution permit that “the tailings basin will discharge pollutants to groundwater” in violation of Minnesota groundwater standards in Rule 7060.0300, subp. 2. *In re Denial of Contested Case Hearing Requests and Issuance of the NPDES/SDS Permit (“NorthMet NPDES/SDS II”)*, 993 N.W.2d 627, 663–665 (Minn. 2023). The Court also reversed the water permit because a “combination of danger signals in the permitting process renders the permit decision arbitrary and capricious.” *Id.* at 649.⁶ Applying the DNR’s own criteria, tailings waste would remain reactive and would fail to satisfy Subpart 2(B)(1).

The ALJ concluded that, “regardless of whether Subpart 2(B)(1) is accorded a broad interpretation or a narrower reading, the PolyMet application fails to meet the regulatory standard.” ALJ Report at 35, OAH Record at p. 41. The Hearing Team argued that agencies with jurisdiction over water quality and Minnesota courts should not constrain the DNR’s role in issuing permits. Hearing Team Exceptions Br. at 22–24. However, as the DNR admitted in issuing its NorthMet permit, this is precisely what the law requires. Ex. 219 at 88 ¶ 464, R.0115613 (DNR Permit Findings) (PolyMet’s mining activities “must comply with all applicable state and federal environmental protection standards, including . . . the requirements of the USACE’s Section 404 Permit [and] the requirements of an NPDES/SDS permit under the regulatory authority of the MPCA”). Mining laws only allow a permit to issue if reclamation “complies with lawful requirements.” Minn. Stat. § 93.481, subd. 2. And

⁶ PolyMet also lost in court on its claim that the tailings basin and other waste storage would prevent discharge to surface water via groundwater so analysis of potential violations of surface water standards and the Clean Water Act was “unnecessary.” *In re Contested Case Hearing Requests and Issuance of the NPDES/SDS Permit (“NorthMet NPDES/SDS I”)*, No. A19-0112, 2022 WL 200338 at *8 (Minn. Ct. App. Jan. 24, 2022), *aff’d in part, rev’d in part*, 993 N.W.2d 627 (Minn. 2023). The Court of Appeals reversed PolyMet’s permit, ruling the Minnesota Pollution Control Agency (“MPCA”) had erred by failing to consider that tailings seepage could be regulated under the Clean Water Act. *Id.* at *9 (requiring a “functional equivalent” test under *Cnty. of Maui v. Hawaii Wildlife Fund*, 140 S. Ct. 1462 (2020)).

environmental laws allow legal action against the state for issuing a permit that fails to protect Minnesota's natural resources from "pollution, impairment, or destruction," including a permit for conduct that "is likely to violate any environmental quality standard." Minn. Stat. §§ 116B.02, subd. 5, 116B.10, subd. 1. The DNR must deny PolyMet's bentonite plan and its permit application to comply with law and protect natural resources.

3. PolyMet's Bentonite Amendment Was Not Designed to and Would Not Store NorthMet Tailings so They are No Longer Reactive.

On the above analysis alone, the bentonite amendment must be rejected. However, there is also a robust record demonstrating that the bentonite amendment was not designed to nor would it store NorthMet tailings so they are no longer reactive. WaterLegacy requests that this evidence be included in the agency decisionmaker's findings in this case.

To begin, PolyMet's data shows that, even if the bentonite plan were to perform as modeled, tailings seepage will be a major source of pollutants that are regulated due to their adverse effects on natural resources, including sulfate, arsenic, lead, copper, nickel, and manganese. At closure, PolyMet predicts that tailings seepage would contain levels far higher than applicable environmental standards for the following pollutants: sulfate (424 milligrams per liter ("mg/L")) 80% higher than Minnesota's groundwater standard and 42 times the wild rice standard; arsenic (56 micrograms per liter ("µg/L")) 28 times the standard; lead (58 µg/L) 18 times the standard; copper (650 µg/L) 70 times the standard; and nickel (893 µg/L) 17 times the standard.⁷ Ex. 210, R.0066845 (Application). Four decades after closure, copper

⁷ The sulfate groundwater standard is 250 mg/L in Minn. R. 7050.0221 adopting 40 C.F.R. § 143.3; the sulfate standard for wild rice waters 10 mg/L, Minn. R. 7050.0224; surface water standards for arsenic (2 µg/L) and lead (3.2 µg/L) are in Minn. R. 7050.0222; those for copper (9.3 µg/L) and nickel (52 µg/L) are in Minn. R. 7052.0100, subp. 6; and the health-based limit for manganese (100 µg/L), is in Minn. R. 4717.7860.

(515 µg/L) would still be 55 times the standard, arsenic (29 µg/L) almost 15 times the standard, and manganese (927 µg/L) more than 9 times the standard. *Id.*

Many of these contaminants—including arsenic, copper, nickel, and lead—are solely attributable to reactive NorthMet tailings and are present at much lower concentrations in existing LTV tailings seepage. *See* Ex. 210, R.0066845 (Application) (NorthMet seepage concentrations) and Ex. 216, R.0741381–0741413 (Water Modeling Data) (Existing LTV seepage concentrations). NorthMet tailings would remain reactive and would release unacceptable substances even if the bentonite amendment performed as PolyMet predicted.

However, these projections based on PolyMet’s model understate sulfate and metals levels in tailings seepage since they assume an unrealistically high level of water saturation for the bentonite amendment. It is undisputed that sulfate and metals levels in seepage depend on whether the bentonite prevents oxygen diffusion due to water saturation. The bentonite amendment is intended to provide “a high degree of saturation to limit oxygen diffusion through the sides and beaches into the underlying tailings.” Ex. 74 at 21:298–300 (Radue); Ex. 78 at 19:297–99 (Diedrich); Ex. 206, 23:22–24:1 (Benson). The more oxygen that gets into the tailings, “the more oxidation of the tailings and the more sulfide will be released.” Tr. Vol. 4, 108:2–5 (Malusis); Ex. 105 at 3:15–17 (Wenz). Bentonite would only be effective in preventing reactivity if swelling of bentonite achieved and maintained water saturation of the pore spaces. *See* illustrations in Ex. 206 at 11 (Benson) and Ex. 74 at 18 (Radue).

DNR’s previous consultants provided similar analysis. Ex. 235, R.0774702 (ERM 2010) (the percentage of saturation is the “key parameter and the results are very sensitive to this number”); Ex. 261, R.0735730 (Houston Kempton 2012) (bentonite is a “technical fix” for the problem that oxidation through tailings beaches and dams “will be a significant source

of sulfate (and some metals)"). In fact, DNR's consultants and Petitioners' experts agreed that bentonite would need to permanently maintain 85–90% saturation with water in tailings pore spaces to prevent oxygen diffusion. Ex. 261, R.0735730 (Kempton); Ex. 200 at 7:11–15 (Malusis). There was no contrary evidence.

DNR's team of experts who audited PolyMet's modeling of tailings basin seepage found that PolyMet's model assumed very high rates of saturation of the entire bentonite layer on the tailing basin beaches (93.6%) and dam sides (95.6%). Ex. 264, R.0723352, R.0723356. Based on these very high assumptions of water saturation, PolyMet's model predicted "close to zero" oxygen infiltration of the tailings. Ex. 267, R.0735737. However, DNR and PolyMet were advised that it had not been shown that bentonite on the tailings dams and beaches "will remain at a high enough saturation level to permanently inhibit oxygen diffusion into the tailings" and that the sole study done of this approach achieved "only 65% saturation." Ex. 261, R.0735730 (Kempton).

That sole study—the field test of a sand-bentonite cover for the Whistle Mine—set a target of 85% water saturation, but only achieved an average water saturation of 65%. Ex. 200.24, R.0735845 (Song & Yanful 2008); Ex. 200.06 at 501 (Adu-Wusu & Yanful 2007) Ex. 200 at 13:20–14:3, 21:1–2 (Malusis). Most of the oxygen data in the study were "comparable to the atmospheric oxygen content," making the results meaningless. Ex. 206 at 29:5–8 (Benson). Although Song and Yanful predicted that oxygen *could* have been reduced more if their field tests had succeeded, Ex. 200.24, R.0735837, their model was not validated and the paper showed a poor fit between modeled and measured data. Tr. Vol. 4, 102:2–17 (Malusis). The study authors concluded their bentonite cover system was not ready for implementation without field data to "demonstrate the workability." Ex. 200.06 at 505 (Adu-Wusu & Yanful

2007). No evidence in this record showed that any bentonite-sand or bentonite-tailings cover has achieved 85–90% water saturation, let alone the 93.6–96% saturation and near zero oxygen diffusion assumed in PolyMet’s modeling.

Dr. Malusis analyzed the consequences for oxygen diffusion into NorthMet tailings if water saturation does not match the assumptions in PolyMet’s model. He concluded that “if the high saturations assumed in [PolyMet’s] Gold/Sim model are not achieved/maintained” bentonite performance would be “much worse than predicted.” Ex. 351. With water saturation of the bentonite amendment of 65%—the level Song and Yanful demonstrated—rather than the 93.6–96% PolyMet assumed, oxygen diffusion would be more than a hundred times the predictions in PolyMet’s model. Tr. Vol. 4 at 105:22–106:7 (Malusis). Dr. Malusis’ analysis was not challenged, and there is no evidence in the record validating PolyMet’s assumptions regarding water saturation and “near zero” oxygen diffusion. NorthMet tailings will be even more reactive and release greater concentrations of sulfates and toxic metals than PolyMet predicted in its application, *supra* at 16–17. The bentonite amendment was not designed to and would not satisfy Subpart 2(B)(1) of the Reactive Mine Waste Rule.

D. PolyMet’s Bentonite Amendment Was Not Designed to and Would Not Prevent Substantially All Water from Moving Through or Over Tailings Wastes to Satisfy Subpart 2(B)(2).

1. The Bentonite Amendment Was Not Designed to and Would Not Prevent Substantially All Water from Infiltrating NorthMet Tailings.

WaterLegacy agrees with the ALJ’s conclusion that the bentonite amendment would not satisfy the requirement of Minn. R. 6132.2200, subp. 2(B)(2) to permanently prevent “substantially all water from moving through or over the tailings.” ALJ Report at 27 ¶ 3, OAH Record at p. 33. The phrase “substantially all” is not defined in the Rule and is critical to understanding what is required for compliance with Subpart 2(B)(2). When a rule does not

contain a definition the “common dictionary definition of the word or phrase” can provide its unambiguous “plain and ordinary meaning.” *Jaeger v. Palladium Holdings, LLC*, 884 N.W.2d 601, 605 (Minn. 2016) (quotations omitted). *See also* Ex. 336 at 4, R.730356 (SONAR) (stating that when a word in the proposed rules is not defined in the rules “it shall be assumed to have the definition that is found in commonly used dictionaries”).

The ordinary meaning of “all” is not disputed. It means “[b]eing or representing the total number, amount or quantity,” *Am. Heritage Dictionary*.⁸ “Substantially,” as the adverbial form of “substantial,” means “being largely but not wholly that which is specified”⁹ or “almost completely: mostly.” *The Britannica Dictionary*.¹⁰ Subpart 2(B)(2) thus requires that, if waste remains reactive, the mine operator must prevent largely all or almost completely all water from moving through or over the waste. Based on a similar dictionary reading, one court has explained that “‘excluding a practically insignificant number’ sufficiently equates to the common and ordinary meaning of ‘substantially all.’” *Vita Zahnfabrik H. Rauter GMBH & Co. KG v. Dentsply Int’l, Inc.*, No. SACV 04-729, 2005 WL 6220491 (C.D. Cal., May 4, 2005); *see also DepoMed, Inc. v. Ivax Corp.*, No. C06-00100, 2006 WL 3782829 at *4 (N.D. Cal. Dec. 20, 2006) (“Common sense indicates that ‘substantially all’ of a substance refers to some percentage approaching 100% of the relevant material—in other words, some measure just short of all of it.”)

It is undisputed that NorthMet tailings storage is designed so that the following amounts of water will seep through the bentonite amendment each year at closure:

160 million gallons per year will seep from the pond.
73 million gallons per year will seep through the beaches.

⁸ <https://www.ahdictionary.com/word/search.html?q=all>.

⁹ <https://www.merriam-webster.com/dictionary/substantially>.

¹⁰ <https://www.britannica.com/dictionary/substantially>.

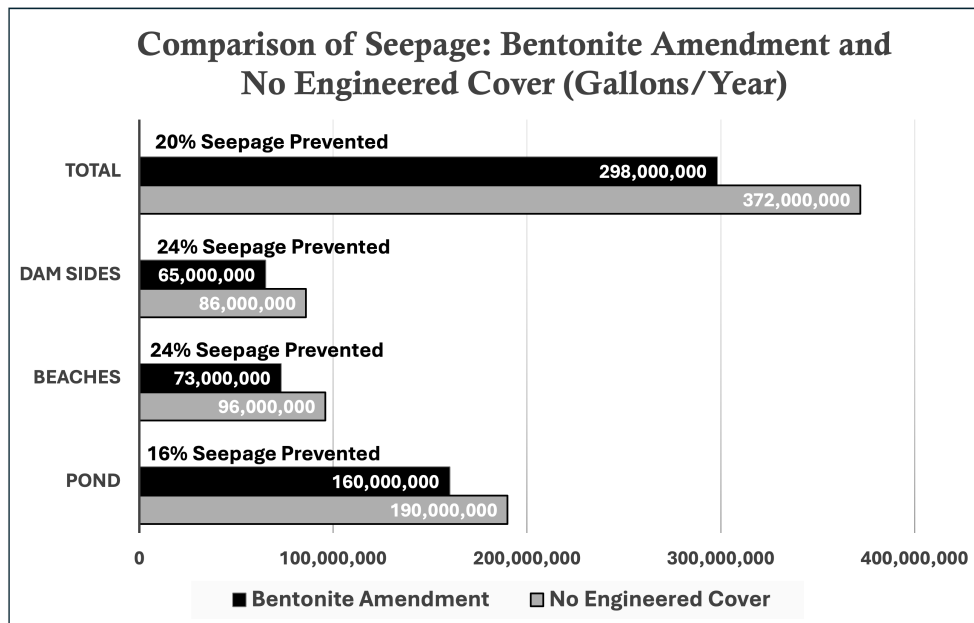
65 million gallons per year will seep from the dams.

ALJ Report at 36, OAH Record at p. 42; Hearing Team Exceptions Br. at 25–26; PolyMet Exceptions Br. at 34, n. 149. This means that, by design, 298 million gallons of water will move through or over NorthMet tailings every year. The ALJ Report illustrates, as commonly understood, that 298 million gallons of water per year is a substantial, rather than a practically insignificant, amount of water moving through and over tailings waste. ALJ Report at 37–38, OAH Record at pp. 43–44. In fact, during the modeled period of 475 years after the bentonite amendment is applied, 141.55 billion gallons of water would seep through reactive flotation tailings. Band Post-Hr’g Br., OAH Record at p. 1507.

Both PolyMet and the DNR Hearing Team proposed that this substantial amount of seepage infiltrating the tailings should be compared to the amount “stored” in the tailings basin. Hearing Team Exceptions Br. at 26; PolyMet Exceptions Br. at 34–35. The ALJ properly dismissed this argument. Even if a comparison is intended by the requirement in Subpart 2(B)(2) to prevent “substantially all” water from infiltrating reactive mine waste, the construct proposed by PolyMet and the Hearing Team must be rejected. NorthMet flotation tailings and the LTV tailings beneath them are unlined, *supra* at 3, and range in consistency from silt to sand and fine gravel. Ex. 74 at 11:141–48 (Radue). As with any other unlined pile of sand, silt, and gravel, over time water infiltrating the tailings will seep either to the surface or to groundwater. The NorthMet tailings basin would not “store” any amount of water in the sense of keeping it contained.

Second, the meaning of language must be analyzed “in context.” *Nelson v. Schlener*, 859 N.W.2d 288, 293 (Minn. 2015). Subpart 2(B)(2) was adopted to prevent substantially all water from contacting reactive wastes. Ex. 338 Hr’g Tr. at 74:1-2 (“Water must be kept away

from the reactive mine waste.”). Thus, any comparison must use the amount that would infiltrate the waste with no bentonite amendment (*i.e.*, if the pond were drained and no bentonite applied).¹¹ PolyMet concluded that the average infiltration rate net of precipitation and evapotranspiration at the NorthMet tailings basin is 7.7 inches per year. Ex. 216, R.0741677. With no engineered cover on the 1,712 acres on the top or sides of flotation tailings, about 372 million gallons per year would infiltrate the tailings. By reducing seepage through NorthMet tailings to 298 million gallons per year, the bentonite amendment would prevent only about 20% of the infiltration that would take place with no bentonite cover.



Courts interpreting dissimilar statutes using the phrase “substantially all” have sometimes applied a specific percentage, such as more than 85%, 90%, or 95%.¹² Whatever

¹¹ This is what was done at the existing LTV Cell 2W. Tr. Vol. 2 at 109:10–12 (Radue); *see also* Ex. 207 at 29 ¶ 100 (DNR Admissions).

¹² *Pozen Inc. v. Par Pharm., Inc.*, 696 F.3d 1151, 1158 (Fed. Cir. 2012) (“substantially all” means “[a]t least 90%, and preferably greater than 95%”); *Cont’l Can Co. v. Chicago Truck Drivers Union Pension Fund*, 916 F.2d 1154, 1158–1159 (7th Cir.1990) (“substantially all” in various federal statutes means 85% or more).

percentage approaching 100% is interpreted to mean “substantially all,” the bentonite amendment’s modest 20% reduction in “all” water that would otherwise flow through or over tailings without the bentonite does not come close. Even if one were to accept the use of a comparison in interpreting Subpart 2(B)(2), the bentonite amendment was not designed to and would not prevent “substantially all” water from infiltrating NorthMet tailings.

2. The Bentonite Amendment Was Not Designed to and Would Not Prevent Water from Moving Through or Over NorthMet Tailings.

The ALJ properly found that “water will move within the reactive mine waste in the Basin, becoming impaired. Water that seeps through the Basin pond bottom, beaches, and dams will move through or over those reactive tailings and then out of these areas to emerge at the Basin dam toe.” ALJ Report at 38, OAH Record at p. 44. It is not disputed that water infiltrating the proposed bentonite amendment of the pond, beaches, and dam sides would move over, within, and through flotation tailings and LTV tailings unimpeded and would be released to surface water and shallow groundwater. Ex. 210, R.0066804 (Figure 2-1) (Application); *see also* Ex. 216, R.0741106 (Figure 5-1) (Water Modeling Data).

In other specific ways, PolyMet’s closure plan was not designed to and will not meet the requirements of Subpart 2(B)(2). For the first 10 years of closure, PolyMet would neither amend the tailings pond with bentonite nor drain and treat ponded water. Tr. Vol. 2 at 62:15–24 (Radue). PolyMet predicts that the seepage rate from the pond during that decade after closure will be 15.2 inches per year, Ex. 216, R.0741807 (Table 1-31) (Water Modeling Data), flushing pollutants through NorthMet tailings and LTV taconite tailings below. In addition, PolyMet plans to cover its bentonite amendment of the beaches not with soil, but with 30 inches of flotation tailings. *All* precipitation will move over and through these exposed

tailings—nearly a million cubic yards of reactive mine waste. Ex. 204 at 6:17–7:5 (Thyne); Ex. 200 at 10:15–16 (Malusis).

The final argument made by DNR’s Hearing Team was that they were “unsure as to what facilities” could comply with Minn. R. 6132.2200, subp. 2(B)(2) as interpreted by the ALJ. Hearing Team Exceptions Br. at 31. That argument is absurd. The DNR testified at the 1992 Rule hearing that compliance with Subpart 2(B)(2) could be accomplished by “placing a plastic liner” beneath mine wastes, covering it with sand to protect the liner, storing reactive mine waste on top of the liner, and then at closure placing “another liner . . . over that mine waste” so that the “waste was encapsulated.” Ex. 338, Hr’g Tr. at 78:7–18. Testimony in these proceedings identified similar options to prevent substantially all water from moving through or over reactive waste. Ex. 75 at 66:1261–62 (Radue) (“Use of geomembrane and geosynthetic systems is an effective and efficient approach for incremental construction of a double liner system”); Ex. 104, at 2:10–14 (Ulrich) (“both GCLs and composite liners have performed extremely well at controlling leakage in field applications for a couple of decades”); Ex. 206 at 42:18–43:6, 43:21–44:2 (Benson); Ex. 200 at 7:18–8:5. (Malusis). The ALJ properly concluded that PolyMet’s proposed bentonite plan was not designed to and would not comply with either Subpart 2(B)(1) or Subpart 2(B)(2) of the Reactive Mine Waste Rule.

E. PolyMet’s Proposed Bentonite Amendment is not “Practical and Workable” to Satisfy the Reactive Mine Waste Rule.

WaterLegacy agrees with the ALJ that the terms “practical and workable” in Minn. Stat. § 93.481, subd. 2 are unambiguous because they have a common and approved usage. ALJ Report at 33, OAH Record at p. 39. As the ALJ found, the ordinary meaning of “practical” is “relating to, or manifested in practice or action: not theoretical or ideal,”

Merriam-Webster Dictionary,¹³ and the ordinary meaning of “workable” is “practicable, feasible,” *Merriam-Webster Dictionary*,¹⁴ or “likely to do or achieve what is intended.” *Cambridge Dictionary*.¹⁵ The bentonite amendment is “practical” and “workable” only if it is likely to achieve what is intended in the real-world for the NorthMet tailings basin. ALJ Report at 25, Conclusions of Law (“COL”) ¶ 5, OAH Record at p. 30. The bentonite amendment is intended to prevent oxygen diffusion and water infiltration into flotation tailings, *supra* at 3–4, and to allow the DNR to issue a lawful permit to mine. To be “practical and workable,” thus, the bentonite amendment must “satisfy the DNR’s reactive waste rule.” *NorthMet*, 959 N.W.2d at 754. Since the evidence did not demonstrate the proposed bentonite amendment would satisfy the Reactive Mine Waste Rule, it is not a “practical and workable” reclamation technique under Minn. Stat. § 93.481, subd. 2. ALJ Report at 25, COL ¶ 9, and at 27, Recommendation ¶ 1(e); OAH Record at pp. 31, 33.

The commissioner can only issue a permit for a reclamation technique that is “practical and workable” to comply with the Rule at the time when the permit is issued. Minn. Stat. § 93.481, subd. 2. Special conditions that propose to allow PolyMet to show compliance with this statute through future testing are not “an effective substitute for the substantial evidence required to support the DNR’s decision.” *NorthMet*, 959 N.W.2d at 754. The outcome of future testing is unknown, so such testing cannot make PolyMet’s bentonite plan “practical and workable” prior to permitting. And the DNR lacks statutory authority to permit an unproven NorthMet bentonite plan that might “theoretically” or “ideally” achieve compliance with the Reactive Mine Waste Rule.

¹³ <https://www.merriam-webster.com/dictionary/practical>.

¹⁴ <https://www.merriam-webster.com/dictionary/workable>.

¹⁵ <https://dictionary.cambridge.org/us/dictionary/english/workable>.

II. WATERLEGACY’S EXCEPTIONS TO THE HEARING TEAM’S AMENDED NOTICE AND THE ALJ’S REPORT REQUIRE CHANGES BASED ON APPLICABLE LAW AND THE WEIGHT OF THE EVIDENCE.

A. The Amended Notice Exceeded the Hearing Team’s Authority and Blocked Analysis to Protect Water Resources from Tailings Seepage.

On or about April 15, 2020, DNR Commissioner Sarah Strommen granted Director Grant Wilson “all authority delegated to the commissioner” in contested case proceedings “as required by Minnesota Statute §§ 14.57–14.62” for the NorthMet matter. OAH Record at p. 14304. (Notice of Appointment). On September 28, 2020, Commissioner Strommen directed that Director Wilson have “no communication with any DNR personnel or any party acting on DNR’s behalf” regarding the “above-referenced permitting processes.” *Id.* The division of authority was clear. Others at DNR would be responsible for permitting, and the authority to act under contested case statutes was delegated to Director Wilson.

On September 24, 2021, the DNR issued a Notice and Order for Hearing defining the contested case issue: “Is the proposed bentonite amendment a ‘practical and workable’ reclamation technique . . . that will, in conjunction with other engineering controls, collection and treatment, monitoring, and inspection requirements in the Permit to Mine issued November 1, 2018, reduce oxygen and water infiltration and satisfy the reactive mine waste rule?” Notice and Order ¶ 26, OAH Record at p. 14972. (citations omitted). As authorized by the ALJ, WaterLegacy and other Petitioners filed motions to include evidence on “other engineering controls.” OAH Record at pp. 14558–14584, 14662–14689. WaterLegacy submitted a report from geologist J.D. Lehr¹⁶ in January 2022. This was the first time any

¹⁶ Petitioners’ Exhibits, 3. Lehr Report and References, Ex. 10, J.D. Lehr, Report on PolyMet Tailings Basin Geology and Proposed Engineering Controls (Jan. 4, 2022) (“Lehr 2022”).

expert could analyze the DNR’s new requirement that the bentonite “cutoff” wall for tailings seepage be “keyed to bedrock.” Ex. 219, at 41 ¶¶ 168–169, R.0115566 (DNR Permit Findings).

Mr. Lehr reviewed PolyMet’s drill cores and rock quality data and concluded that site geology “will prevent construction of a continuous slurry wall that is keyed into competent bedrock” and “will cause the seepage capture system to fail to control water pollution as predicted.” Lehr 2022 at 26. He found “a significant number of fractures extending as deeply into the granite bedrock as they decided to drill,” *id.* at 11; a gap “nearly 1.5 miles long where the depth to competent granite bedrock has not been established,” *id.* at 17; and artesian flow conditions that would make construction of the proposed bentonite slurry wall “highly challenging if not impossible to accomplish.” *Id.* at 21–23. Mr. Lehr concluded that the “cumulative effects of adverse subsurface conditions” will “ultimately render the tailings basin seepage collection engineering controls ineffective or impossible to construct.” *Id.* at 25.

Neither the DNR Hearing Team nor PolyMet challenged Mr. Lehr’s data or opinions in opposing inclusion of his evidence. OAH Record at pp. 14370–14391 (Hearing Team Opp. to Mot.); pp. 14493–14511 (PolyMet Opp. to Mot.). Instead, while the motions were pending, the Hearing Team issued an Amended Notice and Order that excluded “other engineering controls” and proposed “five factual disputes” purporting to reflect compliance with the Reactive Mine Waste Rule. OAH Record at pp. 14350 ¶ 17, 14352-14353 ¶ 26 (Amended Notice).¹⁷

¹⁷ These factual disputes can be summarized: a) How would bentonite be applied to ensure its effectiveness in reducing oxygen and water infiltration of the tailings? b) How should bentonite application methods be tested after permitting to ensure effectiveness? c) Would pond bottom bentonite maintain a permanent pond? d) Would conditions in the pond result in cation exchange? e) How would PolyMet ensure the bentonite amendment’s effectiveness over time?

With the ALJ's permission, Petitioners filed a joint motion to vacate or nullify the Amended Order. OAH Record at pp. 14123–14150. However, the ALJ determined that there “are no strictures” on the DNR Hearing Team’s discretion to amend issues in the hearing and denied the motion. OAH Record at pp. 14078–14079 (Order Denying Pet’rs’ Mot., June 27, 2022). The ALJ then denied Petitioners’ motions regarding integrated engineering controls in light of the Amended Notice that had excluded those issues. OAH Record at pp. 14062–14063 (Order on Mot., July 29, 2022).

WaterLegacy takes exception to the Amended Notice and the ALJ’s orders allowing the DNR Hearing Team to curate the evidence in the contested case proceedings. First, the Hearing Team lacked authority to amend the Notice of Hearing, since initiating a contested case when one is required by law, Minn. Stat. § 14.57(a), and “subsequent amendment” of the issues in a case, Minn. Stat. § 14.58, are not “permitting processes,” but contested case authorities delegated by Commissioner Strommen to Director Wilson. The Hearing Team claimed they acted because the Director Wilson and his counsel “are behind a wall and know nothing about the NorthMet Project” and lack “the knowledge necessary to draft a Notice of Hearing in this matter,” Enzler Decl. ¶ 18, OAH Record at p.14300. This assertion is not persuasive. The Minnesota Supreme Court defined the hearing issue when it ordered the contested case. *NorthMet*, 959 N.W. 2d at 754. Adoption of the Court’s issue for hearing by Director Wilson would have reduced confusion in the record, while avoiding the appearance that the Hearing Team—a party to the proceedings—had taken charge of the contested case.

Second, the Hearing Team’s amendment did not meet the statutory requirement that subsequent amendment of the issues must be “necessary.” Minn. Stat. § 14.58. An agency advocate’s interest in preventing the ALJ from deciding evidentiary motions is not a

“necessity” for amending hearing issues. In fact, Minn. R. 1400.7600 states that no motions shall be “decided by the agency subsequent to the assignment of a judge” unless the motion is “certified to the agency by the judge.” If the Hearing Team believed that the DNR should exclude Petitioners’ evidence on collection, treatment, and inspection, they should have asked the ALJ to certify the question to Director Wilson. Although the DNR will eventually make the final decision on the merits, “nothing in the APA [Administrative Procedure Act] allows the Department to simply disregard the detailed procedures in the APA to decide the case on its own.” *Schwanke v. Minn. Dep’t of Admin.*, 851 N.W.2d 591, 597 (Minn. 2014).

Third, the Amended Order prejudiced WaterLegacy and other Petitioners. PolyMet’s and the Hearing Team’s testimony, briefs, and proposed findings regarding collection, treatment, and inspection were allowed by the ALJ, while Petitioners were denied their right under Minn. Stat. § 14.60, subd. 3, to submit contrary rebuttal evidence. *See In re Application of N. States Power Co.*, 440 N.W.2d 138, 140 (Minn. App. 1989) (the right to a hearing embraces “a reasonable opportunity to know the claims of the opposing party and to meet them”) (quoting *Morgan v. United States*, 304 U.S. 1, 18–19 (1989)). The exclusion of their rebuttal evidence affected the record. PolyMet and the Hearing Team relied on seepage recapture to assert that tailings storage would comply with the Reactive Mine Waste Rule. *See e.g.*, OAH Record at pp. 1333, 1382, 1405. PolyMet and the Hearing Team also theorized and the ALJ accepted that inspection would prevent pollution if the bentonite amendment performed poorly, despite clear evidence that inspection of a soil-bentonite cover would *not* reveal increased percolation through wastes or groundwater contamination. Tr. Vol. 5 at 61:3–22 (Benson); *infra* at 39–40. Finally, the “five factual disputes” in the Amended Notice did not reflect the Reactive Mine Waste Rule and served to dilute if not circumvent its requirements.

See WaterLegacy Pre-Hr'g Br. at 17, OAH Record at p. 6959. WaterLegacy's exceptions to conclusions, findings, and recommendations in the ALJ's Report regarding these disputes address discrepancies with the record and discrepancies between findings on the Hearing Team's disputes and the requirements of the Reactive Mine Waste Rule.

B. The Evidence Does not Support the ALJ's Findings and Conclusions on the Hearing Team's Disputes, and the Bentonite Amendment Would Degrade and Fail Over Time.

1. Exceptions to Conclusions of Law.

The ALJ's Summary and his Conclusions of Law ("COL"), ALJ Report at 2, 26; OAH Record at pp. 8, 32, similarly describe the ALJ's conclusions as to the five issues proposed by DNR's Hearing Team. WaterLegacy's exceptions to these conclusions stated below are supported by the specific exceptions to the ALJ's Findings of Fact ("FOF") that follow.¹⁸

- **COL ¶ 10**, OAH Record at p. 32: The ALJ stated, "The bentonite amendment can be successfully applied to the Basin sides, beaches, and pond bottom." This conclusion should also state that no evidence demonstrates application of bentonite would render the stored tailings no longer reactive or prevent substantially all water from moving through or over the tailings. See Exceptions to FOF ¶¶ 17, 35, 44, 45, 46, 48, 54, *infra* at 31–33.
- **COL ¶ 12**, OAH Record at p. 32: The ALJ stated: "If the Permit to Mine is reissued, it should be subject to the special conditions in the original Permit to Mine (Nov. 1, 2018) and the Department's additional or revised special conditions." This conclusion should be rejected. Testing cannot substitute for substantial evidence that the bentonite amendment will satisfy the Reactive Mine Waste Rule. *NorthMet*, 959 N.W.2d at 754. PolyMet's bentonite proposal does not satisfy the Rule and cannot be rescued with special conditions. See Section I, *supra* at 5–25; Exception to FOF ¶ 57, *infra* at 33.
- **COL ¶ 13**, OAH Record at p. 32: The ALJ stated, "Applying the bentonite amendment to the pond bottom would be effective maintaining a permanent pond bottom." This conclusion should be modified, since the evidence shows

¹⁸ WaterLegacy also takes exception to COL ¶ 4, OAH Report at p. 31 assigning the burden of proof to Petitioners as detailed *supra* at 5–7.

that application of bentonite to seal a pond over wastes is unproven and is likely to contain defects rendering the pond more permeable. *See* Exceptions to FOF ¶¶ 35, 44, 45, 46, 48, *infra* at 31-32.

- **COL ¶ 14**, OAH Record at p. 32: The ALJ stated, “The cation exchange would not consequentially impact the effectiveness of the bentonite amendment in reducing the infiltration of oxygen and water into the stored tailings.” This conclusion is contrary to the weight of the evidence and should be rejected or revised. *See* Exceptions to FOF ¶¶ 85, 86, 89, 90 and to the Memorandum, *infra* at 33–34, 36–38. The ALJ’s Report also did not recognize that PolyMet’s model relied on invalid assumptions about water saturation and oxygen infiltration through the bentonite amendment on the dam sides and beaches.¹⁹
- **COL ¶ 15**, OAH Record at p. 32: The ALJ stated, “The bentonite amendment would be effective over the long term and would not suffer degradation to the extent that hydraulic conductivity increases above the modeled values. The bentonite amendment is likely to achieve modeled values for hydraulic conductivity and percolation over time.” This conclusion is contrary to the weight of the evidence and should be rejected or revised. *See* Exceptions to FOF ¶¶ 85, 86, 89, 90, 93, 100, 104, 105 and to the Memorandum, *infra* at 33–41.

2. *Exceptions to Findings of Fact.*

- **FOF ¶ 11**, OAH Record at p. 12: The ALJ incorrectly cited the August 2, 2023 Minnesota Supreme Court’s decision on the NorthMet NPDES/SDS permit as a Court of Appeals ruling. *In re Denial of Contested Case Hearing Requests and Issuance of the NPDES/SDS Permit*, 993 N.W.2d 627 (Minn. 2023).
- **FOF ¶ 17**, OAH Record at pp. 13–14: The ALJ stated that “bentonite has been used in covers of tailings and waste rock at several mining facilities, including in Minnesota.” The record only shows that AquaBlok was used for a small patch of dam sidewall at the Minorca mine. Tr. Vol. 2, 187:6–12, 19–25 (Hull). The 3–4,000 tons used would cover about 500 square feet. Ex. 43 at 8 (Brochure).
- **FOF ¶ 35**, OAH Record at p. 16: The ALJ described methods that PolyMet has proposed to apply bentonite to the pond bottom as follows: “AquaBlok has a proven track record when applied subaqueously through a water column to the bottom of a body of water via the broadcast method.” It should be clarified

¹⁹ WaterLegacy requests that DNR’s final decisionmaker make findings based on evidence in Section I, *supra* at 17–19, that proposed bentonite amendment of the beaches and dam sides would not reduce infiltration of oxygen into stored tailings as modeled by PolyMet.

that no examples pertain to sealing a mine tailings pond or compliance with the Reactive Mine Waste Rule. Tr. Vol. 2 at 76:9–12, 202:7–9 (Hull).

- **FOF ¶ 44**, OAH Record at p. 17: The ALJ quoted Mr. Hull to state that all of the identified subaqueous bentonite applications “satisfied their respective objectives,” that “[s]ome of these examples were designed to cap contaminated sediments and not to reduce seepage through a pond bottom,” and that the “same general principles apply” to capping sediments and sealing a pond bottom. Although Mr. Hull claimed he could apply AquaBlok to achieve very low conductivity, Ex. 77 at 11:206–208, he admitted he has not measured the permeability of any covers or liners he installed and that none of his examples of sealing a pond with AquaBlok measured the rate of percolation either before or after application. Tr. Vol. 2 at 191:5–8, 201:12–202:6. Dr. Benson testified that installing a pond liner through the water column would result in material defects and higher conductivity and water and oxygen ingress, since “what is required to achieve leakage control [is] much more challenging than contaminant reduction.” Ex. 206 at 31:18–20, 32:1–12; Tr. Vol. 5 at 114:4–13.
- **FOF ¶ 45**, OAH Record at pp. 17–18: The ALJ cited the Wyo-Ben brochure to state, “In situations where the water is not removed before application of the bentonite, the product is broadcast or poured across the surface of the water.” This quote is taken out of context. The brochure states broadcast is “not as efficient” as the method that applies bentonite to dry soil, although it is “effective for leaks” in “gravel pockets or dam faces.” Ex. 17 at 3.
- **FOF ¶ 46**, OAH Record at p. 18: The ALJ cited a Texas A&M University article on use of bentonite to seal pond bottoms, referring to the “sprinkle method” of applying bentonite to a pond bottom to form a layer that “reduces the seepage from these areas.” This quote misrepresents the article. The article recommends draining ponds and using a “blanket method” of application, since the “sprinkle method” is “less effective than other methods” and “uniform placement of bentonite is difficult to accomplish.” The “sprinkle method” is only recommended “in emergencies when isolated leaks need to be stopped.” Ex. 202.09 at 3, 6.
- **FOF ¶ 48**, OAH Record at p. 18: The ALJ stated that the “scale of this application does not appear to be problematic.” However, no witness other than Mr. Hull, who has a financial interest in AquaBlok, Tr. Vol. 2 at 123:10–12, 191:12–21, claimed knowledge that AquaBlok could be applied to a 905-acre pond without material defects or could achieve any specific percolation rate. *See* Tr. Vol. 2 at 68:4–69:5 (Radue); Tr. Vol. 4 at 188:21–189:5 (Ulrich).

- **FOF ¶ 54**, OAH Record at p. 19: The ALJ stated, “Bentonite can be applied to the beaches . . . Engineers have worked to apply bentonite in more challenging conditions than those posed by the tailings Basin beaches, including at coal ash facilities.” This statement is inaccurate. Mr. Radue testified that he mixed cement into coal ash and lime into sludge under “challenging conditions” to stabilize these materials. Neither application involved bentonite, neither was used to prevent infiltration of water into the waste, and Mr. Radue was not aware of any examples of bentonite applied to a material with the moisture content of the beaches. Tr. Vol. 1 at 70:1–4, Tr. Vol. 2 at 7:22–8:20 (Radue).
- **FOF ¶ 57**, OAH Record at pp. 19–20: WaterLegacy agrees with the ALJ that the bentonite amendment must satisfy the Reactive Mine Waste Rule “based on available evidence in the record” and not on “future testing.” However, it is premature to find that bentonite testing “could play an important role” in the future, since no practical and workable tailings storage plan that satisfies the Rule has been proposed. *See* Section I, *supra* at 5–25.
- **FOF ¶ 85**, OAH Record at p. 23: The ALJ stated “there is little scientific or technical literature addressing cation exchange” within “low-ionic-strength solutions.” However, the experts agreed that the peer-reviewed literature shows a 10-fold increase in conductivity from cation exchange within low-ionic-strength solutions (no drying cycle) in just a few years. Tr. Vol. 4 at 68:11–25 (Malusis); Ex. 200.14 (Jo, Benson *et al.* 2005); Tr. Vol. 3 at 83:18–84:7 (Diedrich).
- **FOF ¶ 86**, OAH Record at p. 23: The ALJ cited Dr. Diedrich’s pre-filed testimony that, since the pond water would have low ionic strength “it is not anticipated to result in consequential levels of cation exchange.” This statement should be modified to reflect Dr. Diedrich’s admission at the hearing that even low ionic strength solutions like those in the tailings pond water would increase conductivity 10-fold (one order of magnitude). Tr. Vol. 3 at 83:18–84:7; 94:5–95:4 (discussing Ex. 206.03 (Jo, Benson *et al.* 2005)).
- **FOF ¶ 89**, OAH Record at p. 24: The ALJ stated that “annual average precipitation at the tailings Basin exceeds annual average evapotranspiration and runoff, which is also likely to limit wet-dry cycling” and that covering the bentonite amendments “under a 30-inch layer of vegetated tailings . . . will help limit wet-dry cycling.” Neither statement reflects the weight of the evidence. Wet-dry cycling is “controlled by seasonal periodicity” and the mine site seasonal pattern “exacerbates wet-dry cycling.” Ex. 206 at 27:18–28:2 (Benson). Mr. Radue admitted that in the summer months the ground “will dry

to some depth beneath the surface.” Tr. Vol. 2 at 39:8–14. And thirty inches of soil is too shallow protect bentonite layers. Ex. 200 at 34:16–35:4 (Malusis); Ex. 233, R.0735744, .0735746 (DNR/Benson Emails 2010). *See also* Exception to FOF ¶ 100 below.

- **FOF ¶ 90**, OAH Record at p. 24: The ALJ stated, “Although some wet-dry cycling will occur on the beaches and dam sides, the low ionic strength of the water contacting the bentonite in those areas will result in limited cation exchange.” This statement contradicts the record and the experts it cites. Cation exchange with wet-dry cycles and the low ionic strength of ordinary soil and precipitation has increased hydraulic conductivity of bentonite by up to four orders of magnitude, a 10,000-times change in permeability. Tr. Vol. 3 at 87:3–23 (Diedrich); Ex. 200 at 29:15–21 (Malusis); Ex. 206 at 9:2–12 (Benson); Ex. 206.06 (Benson, Thorstad, *et al.* 2007); Ex. 206.02 (Meer and Benson 2007), Ex. 206.10 (Lin, Benson *et al.* 2000). This cation exchange does *not* only happen to bentonite when it is in GCLs. Tr. Vol. 3 at 80:14–17 (Diedrich).
- **FOF ¶ 93**, OAH Record at p. 24: The ALJ stated, “Modeling for the NorthMet Project indicates that water quality standards would be met at an average hydraulic conductivity of 5.56×10^{-6} cm/sec for the dam sides and beaches and an average percolation rate of 6.5 inches per year for the pond bottom.” This statement is incomplete and, thus, inaccurate. Pollutants seeping from the tailings basin would exceed water quality standards. *Supra* at 14–17. Further, PolyMet’s modeling relied on invalid assumptions that seepage into and through groundwater would be unregulated, and that bentonite on the dams and beaches will achieve 93.6–96% water saturation and “almost zero” oxygen infiltration. *Supra* at 15, 17–19.
- **FOF ¶ 100**, OAH Record at pp. 25–26: The ALJ stated that “current vegetative patterns suggest that root penetration is unlikely to be a significant problem on the dam sides and beaches.” However, the current “patterns” pertained to steep winter slopes of LTV tailings that have no bentonite, do not retain moisture, and are not analogous. Ex. 30. The weight of evidence in the record pertaining to root penetration is that root water uptake and drying occurs at depths of at least two meters (about 80 inches) in northeastern Minnesota, Ex. 206 at 26:14–15 (Benson), that the bentonite amendment will “retain more moisture than overlying layers,” and “exacerbate the likelihood of deep root penetration,” and that “roots will extend downward into the bentonite-amended layer” and “induce wet-dry cycling.” *Id.* at 27:1–11; *see also* Ex. 206.09 (NUREG²⁰ 2022)

²⁰ This 2022 study was done by the U.S. Office of Nuclear Regulatory Research (“NUREG”) in collaboration with the U.S. Department of Energy (“DOE”). Ex. 206.09 at xxi. The 2011

at xix (soil structure change “developed in all of the Rn [radium] barriers in response to root growth” and “roots were observed near the bottom of the Rn barrier at each site”).

- **FOF ¶ 104**, OAH Record at p. 26: The ALJ stated, “If necessary, PolyMet could mitigate the impacts of degradation through application of supplemental bentonite.” This statement assumes that some visible flaw in the bentonite cover—Mr. Radue suggests “cracking detrimental to system performance”—could be detected before increased water percolation and groundwater contamination develop. Ex. 74 at 77:1296–1299. The only evidence in this record proves otherwise. DOE inspections in 2021 found that soil-bentonite covers of wastes appeared to be in good condition on their surface, even when the bentonite had degraded and become much more permeable to water or allowed groundwater contamination. Tr. Vol. 5 at 56:6–25, 61:23–62:22, 71:14–72:23, 74:3–18 (Benson), Ex. 82–86 (discussing Canonsburg, Bodo Canyon/Durango, Rifle, Gunnison, and Richmond Hill bentonite-soil covers). *See also* Exceptions to Memorandum, *infra* at 39–40.
- **FOF ¶ 105 (1)**, OAH Record at p. 26: The ALJ explained, “Studies at other facilities have shown that degradation commonly occurs in near-surface earthen soil covers, due to pedogenesis, resulting in hydraulic conductivities above the modeled values for the NorthMet Project. Based on these studies, earthen soil (including bentonite) barriers tend to reach an equilibrium hydraulic conductivity in the range of to 1×10^{-5} cm/sec to 5×10^{-4} cm/sec, which is above the modeled values for the NorthMet Project.” This statement is accurate and pertinent. It should be clarified to explain that the initial installed conductivity for these federal waste covers was 1.0×10^{-7} cm/sec or lower, Ex. 206.09 at 2–3 (NUREG 2022), so conductivities in service were up to a thousand times higher. Tr. Vol. 5 at 17:24–18:3 (Benson).
- **FOF ¶ 105 (2)**, OAH Record at p. 26: After describing the federal studies of earthen covers, the ALJ stated, “This is not, however, a universal rule. Some studies indicate it is possible that a soil cover could provide hydraulic conductivity less than the modeled values for the NorthMet Project. The range of hydraulic conductivities in available studies underscores the importance of considering site-specific factors.” This statement misrepresents the data. Although it is “possible” that an earthen barrier would retain conductivity less

NUREG study was done in collaboration with the U.S. Geological Survey, the National Science Foundation, the EPA, the DOE and various others and was peer reviewed. Ex. 206.05 at xix. Dr. Benson was lead author for the 2011 report and co-author in 2022. NUREG report conductivities in meters/sec are all converted to cm/sec for easier comparison.

than PolyMet's modeled value, it is highly unlikely. In the 2011 NUREG study, 90% of sites (19 of 21) degraded and became more permeable than PolyMet's modeled value of 5.56×10^{-6} cm/sec and, in the 2022 NUREG study, 82% (28 of 34) degraded below this modeled value. Exs. 352; 353; 206.05 at 6-16; 206.09 at 3-7, 3-8. The NUREG study finding one "site specific" result at Shirley Basin is not applicable to the PolyMet project. The Shirley Basin cover was 60 centimeters of native compacted 58-78% clay. Ex. 206.09 at 2-7, 2-20. The NorthMet plan uses no clay native to the site, and PolyMet would mix tailings with 3% commercial bentonite. Ex. 74 at 24:355–56 (Radue).

- **FOF ¶ 125**, OAH Record at p. 30: The ALJ's Report lacks any summary of contested case proceedings. To facilitate review, a summary should be provided:
 - On Sept. 24, 2021, DNR's Hearing Team issued a Notice and Order for Prehearing Conference and Hearing. OAH Record at pp. 14964–14973.
 - On Jan. 11, 2022, Petitioners moved to allow evidence on (1) other engineering controls and (2) dam safety issues or to certify the issues to DNR for decision. OAH Record at pp. 14552–14702; Petitioners' Exhibits, 2. Malusis Report and References; Petitioners' Exhibits, 3. Lehr Report and References; and Petitioners' Exhibits, 4. Emerman Report and References.
 - On Feb. 14, 2022, the Hearing Team filed an Amended Notice and Order for Hearing. OAH Record at pp. 14345–14354. Petitioners objected to the Amended Notice in a letter on Feb. 18, 2022, *id.* at pp. 14332–14334 and in briefing and exhibits filed on Mar. 4, 2022. *Id.* at pp. 14123–14272.
 - On June 27, 2022, the ALJ issued an Order denying Petitioners' motions objecting to the Amended Notice. OAH Record at pp. 14075–14079, and on July 29, 2022, the ALJ issued an Order denying Petitioners' motions to include evidence or certify questions. OAH Record at pp. 14056–14067.
 - On Jan. 4, 2023, Conservation Organizations and WaterLegacy filed and the Band supported a motion for summary disposition based on DNR's and PolyMet's discovery responses. OAH Record at pp. 13445–14033. No order was issued, and a hearing was held from Mar. 27–31, 2023.

3. Exceptions to Statements in the ALJ's Memorandum.

WaterLegacy also submits exceptions to statements in the ALJ's Memorandum. The overwhelming weight of evidence shows that cation exchange and other mechanisms will

consequentially degrade the proposed bentonite amendment. Over time the bentonite will be ineffective, exacerbating deviations from the requirements of the Reactive Mine Waste Rule.

The ALJ cited Dr. Benson and Dr. Diedrich to explain that cation exchange “could lead to increase in hydraulic conductivity,” then stated that “the cation exchange would not meaningfully change the effectiveness of the bentonite amendment in reducing oxygen and water infiltration.” ALJ Report at 40, OAH Record at p. 46. This statement is inconsistent with the cited testimony and the record as a whole. Dr. Benson testified that cation exchange “will occur within the first several years of service,” is “an inevitable process that is well documented in the literature,” and will “initially suppress and ultimately will preclude swelling of the bentonite.” Ex. 206 at 25:17–22. In fact, all parties’ experts agreed that cation exchange is thermodynamically favorable with a “driving force” so that it *will occur* if calcium or magnesium (which are abundant in soil) are in proximity to bentonite. Ex. 206 at 10:3–8, 11:9–10 (Benson); Tr. Vol. 4 at 149:11–23 (Wenz); Tr. Vol. 3 at 34:23–35:1 (Diedrich).

The record establishes that the bentonite amendment of the pond would increase in permeability 10-fold within a couple of years. *See* Exceptions to the ALJ’s FOF ¶¶ 85–86, *supra* at 33. The record also establishes that cation exchange would occur in bentonite exposed to weak ions and wet-dry cycling on the beaches and dams, becoming up to 10,000-times more permeable. *See* Exceptions to the ALJ’s FOF ¶ 90, *supra* at 34. Even if PolyMet’s initial application of the bentonite amendment to the beaches and dam sides could attain a hydraulic conductivity of 2×10^{-7} cm/sec, Ex. 74 at 70:1167–69 (Radue), cation exchange that increases hydraulic conductivity of bentonite 1,000 or 10,000 times after a few years in service is highly likely to increase permeability outside PolyMet’s modeled value of 5.56×10^{-6} cm/sec. That is a meaningful change. Cation exchange on the beaches and dam sides would decrease

bentonite swelling and water saturation, thus, increasing both oxygen and water infiltration of NorthMet tailings and defeating the purpose of the bentonite amendment. *Supra* at 3–4.

A 10-fold increase in permeability in pond bottom bentonite would also be consequential. Mr. Radue predicted that if conductivity of pond bottom bentonite increased 10-fold over its modeled conductivity (to 1×10^{-7} cm/sec), bentonite on the 905-acre pond bottom would have to be almost two *feet* thick, rather than the planned two *inches* thick to keep the seepage rate at 6.5 inches per year. Radue Decl. at Table 1B, rows 2–3, OAH Record at p. 1636. With this predicted 10-fold increase in conductivity and a 5% rate of defects, even a pond bentonite layer more than 8 inches thick (0.697 feet) would have a seepage rate of 15.5 inches per year. *Id.* at Table 1C, row 9, OAH Record at p. 1637. Using DNR’s data that net annual precipitation exceeds evapotranspiration by 4.5 to 5.7 inches, Tr. Vol. 2 at 37:2–11 (Radue), a seepage rate of 15.5 inches would cause the 8-foot deep (96 inch) pond to drain in about a decade. Only pumping additional water—not the bentonite—could maintain the pond.

Although wet-dry cycling will not affect bentonite in the middle of the pond, it will affect the pond’s periphery. Tr. Vol. 5, 121:6–9 (Benson). Plant systems will extend roots down to the clay barrier at the edge of the pond and beaches. *Id.*, 121:10–16. In the summer, “those plants will extract every bit of water they can get out of that profile, causing it to dry, shrink, and crack,” and cation exchange and wet-dry cycling will make bentonite around the edge of the pond more permeable. *Id.*, 121:17–122:2. That process will “slowly move inward into the pond over time, diminishing its capacity to hold water.” *Id.*, 122:2–4.

The ALJ’s Memorandum recognized the following critical evidence:

Evidence in the record establishes that the bentonite-amended tailings layer is likely to degrade over time and that such degradation may result in increased hydraulic conductivity and percolation. The degradation could be caused by

cation exchange, wet-dry cycling, root penetration, freeze-thaw cycling, or animal burrowing.²¹

ALJ Report at 40, OAH Record at p. 46. However, the ALJ understated the likelihood that degradation will result in increased hydraulic conductivity. Federal agencies responsible for storing mine wastes (NRC and DOE) have directed that engineers building barriers from clay and soil predict that “long-term” hydraulic conductivity will be from 1.0×10^{-5} cm/sec to 5.0×10^{-4} cm/sec “regardless of depth or thickness of the cover” even if the barrier meets its 1.0×10^{-7} cm/sec design criterion when installed. Ex. 206.09 at 8-2 (NUREG 2022); Tr. Vol. 5 at 16:8–19 (Benson). This validated long-term conductivity range is tens to hundreds of times more permeable than the conductivity (5.56×10^{-6} cm/sec) assumed by PolyMet’s model.

Further, rather than addressing the adverse consequences of bentonite degradation, the ALJ then cited Mr. Hull and Mr. Radue to state that “PolyMet can mitigate the impacts of degradation by applying supplemental bentonite applications.” ALJ Report at 40, OAH Record at p. 46. To begin, a reclamation plan that would require mitigation of predictable “impacts of degradation” is not “practical and workable” to comply with the Reactive Mine Waste Rule pursuant to Minn. Stat. § 93.481, subd. 2. Moreover, there is no evidence in this record that inspection of a mine waste cover would reveal flaws that could be remedied without harming natural resources—and there is substantial evidence to the contrary. Mr. Radue admitted his experience with bentonite is limited to “using sand-bentonite mixes” for

²¹ DNR consultants expressed the same concerns about factors resulting in bentonite degradation. *See* Ex. 250, R.0735799 (Donald Sutton informing DNR in 2012 that animal burrows were visible in the LTV basin); Ex. 266, R.0735734 (Fred Marinelli stating in 2013 the need to consider “effects of root holes, animal burrows, etc.”); Ex. 276, R.0266951 (Cecilio Olivier stating in 2017, “The permit assumes that roots will probably not penetrate the bentonite layer. Given the bentonite application method proposed, roots will penetrate, and the seal will leak water and air into the tailings. This will happen.”)

“anti-seep collars” or “seepage around pipelines” and that he has not studied bentonite. Tr. Vol. 1 at 52:6–10, 84:19–20 (Radue). Mr. Hull cited no pertinent research or experience.

Recent inspections of soil-bentonite mine waste covers by DOE in 2021 all showed no surface defects, even when the barriers had degraded enough to become highly permeable to water and allow groundwater contamination. Ex. 82-86; Exceptions to FOF ¶ 104, *supra* at 35. The Richmond Hill cover developed a percolation rate of 300 millimeters a year (about 12 inches) and would not be considered a “functioning cover.” Tr. Vol. 5, 47:2–10 (Benson). The Canonsburg facility was “considerably more permeable than expected.” *Id.* at 49:24–50:8, and the Rifle facility looked on the surface “to be in good condition” but had “water buildup within the tailings” and greater “influx of water” than anticipated. *Id.* at 71:14–72:10. The DOE inspection report for Bodo Canyon in Durango found “[t]here was no evidence of erosion, settling, slumping, or other modifying processes on top of the disposal cell.” Ex. 84 at 4–5 (DOE Report). Despite the apparent good condition of the mine waste surface, the Durango facility had elevated selenium and uranium concentrations “above drinking water standards in groundwater.” Tr. Vol. 5 at 61:3–21 (Benson), shown in the graph below from Ex. 84 at 4–11 (Figure 4-5).

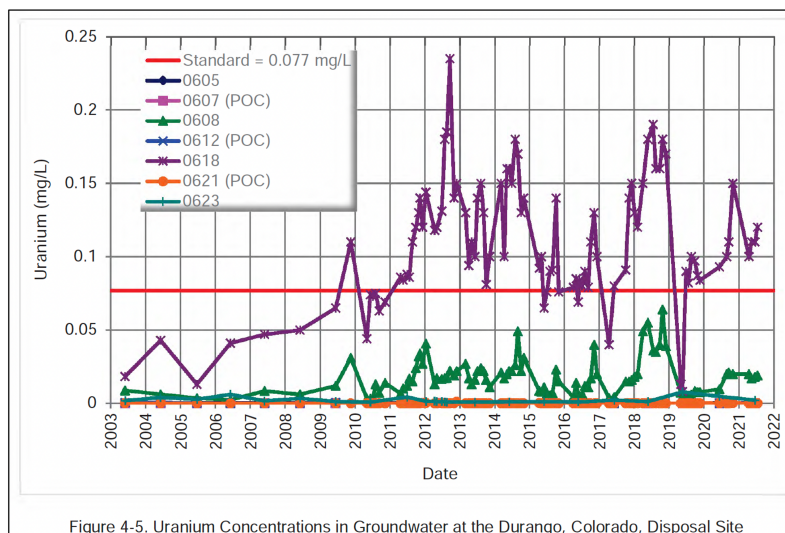


Figure 4-5. Uranium Concentrations in Groundwater at the Durango, Colorado, Disposal Site

The near certainty that PolyMet’s proposed bentonite-tailings barrier will degrade due to cation exchange, wet-dry cycling, root penetration, and other factors demonstrates that it will not be effective even to the modest degree modeled by PolyMet. More significantly, the increased rates of hydraulic conductivity and water percolation found both in the NUREG studies of natural clay covers and the DOE studies of soil-bentonite barriers after just a few years or decades in service underscores that the proposed bentonite amendment would not satisfy Minnesota’s Reactive Mine Waste Rule. The bentonite amendment is intended to maintain high levels of water saturation, prevent oxygen infiltration, and prevent substantially all seepage through tailings. Degradation of the bentonite amendment will exacerbate oxidation, release sulfate and metals, increase seepage of water through NorthMet tailings, and contaminate water resources.

III. POLYMET’S PERMIT TO MINE APPLICATION MUST BE DENIED ON THIS RECORD AND AS A MATTER OF LAW.

A. DNR Should Adopt the ALJ’s Recommendation to Deny PolyMet’s Permit Due to Failure to Satisfy the Reactive Mine Waste Rule.

The DNR should amend the Findings and Conclusions in the ALJ’s Report as described in Sections I and II, *supra*, and take the following position on each of the ALJ’s Recommendations (“REC”):

- REC 1 (a–d), OAH Record at p. 33: The DNR decisionmaker should reject these Recommendations pertaining to the Hearing Team’s “factual disputes” and their underlying Findings of Fact and Conclusions of Law as proposed in Section II, *supra* at 30–41.
- REC 1(e), OAH Record at p. 33: The DNR decisionmaker should adopt this Recommendation finding the bentonite amendment is not a practical and workable reclamation technique.
- REC 2, OAH Record at p. 33: The DNR decisionmaker should adopt this Recommendation. The bentonite amendment does not comply with Minn. R.

6132.2200, subp. 2(B)(1), because it would not satisfy the requirement to modify or store tailings in an environment such that they are not reactive.

- REC 3, OAH Record at p. 33: The DNR decisionmaker should adopt this Recommendation. The bentonite amendment does not comply with Minn. R. 6132.2200, subp. 2(B)(2), because it would not satisfy the requirement at closure to permanently prevent substantially all water from moving through or over the tailings.
- REC 4, OAH Record at p. 33: The DNR decisionmaker should reject this Recommendation. No “confirmatory” testing applies to the bentonite amendment since it is not a practical and workable reclamation technique that will satisfy Minn. R. 6132.2200, subp. 2(B). *See* Sections I and II.B, *supra* at 5–25, 30–41.
- REC 5, OAH Record at p. 34: The DNR decisionmaker should adopt the first part of this Recommendation, which states that “with respect to the bentonite amendment . . . the Administrative Law Judge recommends that PolyMet’s Permit to Mine application be **DENIED.**” The balance of the Recommendation should be rejected.

B. The DNR Lacks Authority to Approve PolyMet’s Permit to Mine Application Because it is Moot and Incomplete as a Matter of Law.

In addition to deficiencies presented by the bentonite amendment, the DNR lacks jurisdiction to approve PolyMet’s permit to mine application and may not grant the NorthMet permit. First, as PolyMet admitted in a letter filed with Director Wilson, the new management team for the NorthMet project is “potentially looking at changing” the tailings basin design and “there is a good chance [NewRange] will propose some changes.” PolyMet Ltr. at 1 (Mar. 26, 2024). PolyMet has admitted its “thorough technical review” is “still in its infancy” and may “result in project changes that implicate the issues in the contested case.” *Id.* at 2. Although PolyMet requested that the DNR issue a decision on the ALJ’s factual findings, *id.* at 2, that decision would be an advisory opinion. PolyMet has rendered this case moot through its own voluntary action, and PolyMet’s interest in a specific reclamation proposal

for the NorthMet tailings basin at the start of this litigation did not “continue throughout its existence.” *Dean v. City of Winona*, 868 N.W.2d 1, 4-5 (Minn. 2015). Lack of mootness is a “constitutional prerequisite to the exercise of jurisdiction.” *In re Schmidt*, 443 N.W.2d 824, 826 (Minn. 1989).

The outcome of the NewRange “technical review” also cannot be predicted. PolyMet’s permit to mine application now describes a potential scenario for mine tailings “with a good chance” of project change. That is not a “plan for the reclamation” describing how reactive mine waste storage facilities will be constructed and operated as required by Minn. Stat. § 93.481, subd.1(1); Minn. R. 6132.2200, subp. 2(C)(1); and 6132.2500, subp. 2(B)(2). PolyMet’s permit to mine application has become contingent and uncertain, so a permit based on that application should not be granted.

The record demonstrates that, even apart from the NewRange “technical review,” PolyMet’s permit to mine application is incomplete. A permit application requires a reclamation plan, and a permit may only be granted on an application the commissioner has “deemed complete.” Minn. Stat. § 93.481, subd. 1(1), subd. 2. A “mining and reclamation plan” must describe “the engineering design, methods, sequence, and schedules of reclamation.” Minn. R. 6132.1100, subp. 6(C). And a reactive waste tailings basin design must describe “all materials, construction, and operating performance specifications and limitations that must be maintained to ensure protection of natural resources.” Minn. R. 6132.2200, subp. 2(C)(1); Minn. R. 6132.2200, subp. 2(B)(2). PolyMet’s does not.

In discovery, PolyMet insisted that its Bentonite Amendment Plan was not limited to its application and that future testing would establish the materials, construction, and operating performance specifications for the bentonite amendment. OAH Record at pp.

13451–13454; Ex. 293, R.0715205–0715223. PolyMet emphasized that how it “executes the Bentonite Amendment Plan depends on results of the lab and field studies that PolyMet will perform.” OAH Record at p. 13623. It became evident that DNR erred in approving PolyMet’s permit to mine on an incomplete application. Further, in these contested case proceedings, the ALJ erred and exceeded his jurisdiction by denying Petitioners’ motion for summary disposition and holding a contested case hearing without a completed application. OAH Record at pp. 13445–14033 (Jan. 4, 2023, Mot., Mem., Exs. 1-16, and Proposed Order); Minn. Stat. § 93.483, subds. 1, 3 (contested case hearing requires a “completed application”); Minn. R.1400.5500(K) (grounds to recommend dismissal), Minn. R. 1400.6600 (orders on motions shall be in writing). In fact, PolyMet’s witness testimony confirmed that PolyMet’s bentonite plan is still not complete. *See e.g.*, Ex. 75 at 5:82 (“construction methods can be adjusted during field testing”) and Tr. Vol. 1 at 46:7-9 (“The maximum allowable hydraulic conductivity from a construction specification standpoint has not been established.”) (Radue). The DNR still lacks authority to grant a permit for an incomplete reclamation plan.

Finally, the DNR lacks authority to approve PolyMet’s permit application because that application was made only on behalf of Poly Met Mining, Inc. and PolyMet Mining Corp. Ex. 210, R.0065337. The application no longer joins “all persons” who “are or will be engaged in a mining operation” as required by Minn. R. 6132.0300, subp. 2. PolyMet US, Inc., NewRange, and Teck American, Inc.—PolyMet’s 50-50 joint venture partner in NewRange—are now “persons” that must be included on any NorthMet permit. *Id.*; Minn. R. 6132.0100, subp. 25 (a “person” includes a “joint venture, or other legal entity”); OAH Record at p. 7 (explaining NewRange joint venture). PolyMet’s application also did not join Glencore, its sole owner and parent company. In fact, its application represented that

Glencore had only a 29.1% ownership and that PolyMet “does not have any partners, joint venture relationships, owners, [or] other principal stockholders.” Ex. 210, R.0065338.

The DNR may assign a permit to mine under certain conditions. Minn. Stat. § 93.481, subd. 5; Minn. R. 6132.4700. But the DNR lacks authority under any statute or rule to approve the assignment of a permit to mine *application* and cannot enlarge its own powers. *In re Hubbard*, 778 N.W.2d 313, 318, 321, 325 (Minn. 2010) (holding that “[a]dministrative agencies are creatures of statute and they have only those powers given to them by the legislature” to deny the DNR’s authority); *In re Qwest’s Wholesale Serv. Quality Standards*, 702 N.W.2d 246, 259 (Minn. 2005) (“[n]either an agency nor the courts may enlarge the agency’s powers beyond that which was contemplated by the legislative body”). PolyMet’s application no longer supports issuance of a permit and must be denied for lack of jurisdiction as well as due to PolyMet’s failure to demonstrate that its bentonite proposal is practical and workable to satisfy the Reactive Mine Waste Rule.

CONCLUSION

On the basis of the files, records, and proceedings herein, WaterLegacy respectfully requests that the PolyMet NorthMet permit to mine be DENIED.

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Respectfully submitted,

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