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BEFORE THE STATE OF NEVADA  
STATE ENVIRONMENTAL COMMISSION

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In the Matter of:

Great Basin Resource Watch's Appeal of  
Notice of Decision to Renew Water Pollution  
Control Permit NEV2008106 to Eureka  
Moly, LLC for the Mount Hope Project

OPENING BRIEF

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Appellant, Great Basin Resource Watch, ("GBRW" or "Appellant"), by and through its attorney of record, Cavanaugh-Bill Law Offices, hereby respectfully submits its Opening Brief pursuant to NAC 445B.8925 and the Nevada State Environmental Commission's ("SEC") Order Regarding Briefing Schedule dated February 1<sup>st</sup>, 2019.

STATEMENT OF FACTS

The Mt. Hope Project (the "Project") by Eureka Moly, LLC ("Eureka Moly") is proposed to be one of the country's largest open-pit mines, with direct operations lasting for more than 70 years, permanent alteration of the landscape, and a complete reworking of the surface and ground water hydrology of three separate watersheds, adversely impacting over 200 square miles of public and private land for hundreds of years.

As approved by BLM, "The 80-year project will have an 18- to 24-month construction phase, 44 years of mining and ore processing, 30 years of reclamation, and five years of post-closure monitoring. Concurrent reclamation will not commence until after the first 15 years of the Project." See Exhibit ("Ex.") A (Record of Decision ("ROD")) at 1. "The Project Area ... covers 22,886 acres." *Id.* 8,355 acres will be directly disturbed (8,092 public land acres, 263 acres of Eureka Moly

1 controlled private land). See Ex. B (Mount Hope Project Final Environmental Impact Statement,  
2 U.S. Department of the Interior, Bureau of Land Management 1-1 (October 2012) (“FEIS”)) at 2-3.

3 The Mount Hope ore body contains approximately 966 million tons of molybdenite  
4 (molybdenum disulfide) ore that will produce approximately 1.1 billion pounds of recoverable  
5 molybdenum during the ore processing time frame. Approximately 1.7 billion tons of waste rock will  
6 be produced by the end of the 32-year mine life and approximately 1.0 billion tons of tailings will  
7 be produced by the end of the 44 years of ore processing. Ex. A, at 2.

8 “Mining would be conducted 24 hours per day and seven days per week. The mining rate,  
9 ore and waste rock combined, would average 232,000 tons per day over the life of the mine.” Ex.  
10 B, at 2-17. The excavated mine pit will be one of the deepest mine pits in the country. “The ultimate  
11 pit depth would be approximately 2,600 feet below ground surface.” *Id.* at 2-4.

12 The Project would generate approximately 1.7 billion tons of waste rock that would occupy  
13 a total footprint of approximately 2,246 acres. Waste rock would be placed in two distinct WRDFs  
14 (Waste Rock Disposal Facility) over the life of the mine, which would almost encircle the open pit  
15 Ex. B at Figure 2.1.9. The PAG (Potentially Acid Generating) WRDF would ultimately contain  
16 approximately 0.5 billion tons of waste and the non-potentially acid generating (Non-PAG) WRDF  
17 approximately 1.3 billion tons. ... The total height of the WRDFs would range from 750 feet to 950  
18 feet (Table 2.1-3). Ex. B at 2-23.

19 The Project will also pump and remove massive amounts of water from the regional aquifer  
20 in order to keep the mine pit dry and supply water for mine operations:

21 Dewatering would be required in the open pit during the mining phase of the Project. The  
22 open pit dewatering would be achieved with in-pit sumps and, if necessary, horizontal drains  
23 and perimeter wells would also be used. The average pit inflow rate is estimated to range  
24 between 60 to 460 gpm (100 to 750 afy), commencing in Year 1 of the Project and  
25 continuing through Year 32, as shown in Table 3.2-7. In addition, ground water pumping in  
the KVCWF [Kobeh Valley Central Well Field] area for process-water supply would be  
achieved with high capacity production wells completed in the basin-fill and carbonate  
bedrock aquifers. The average total combined pumping rate of the well field is estimated to  
range between 6,540 to 7,000 gpm (10,550 to 11,300 afy), commencing in Year 1 of the  
Project (2012) and continuing through Year 44 (2055).

26 As shown in Ex. B Table 3.2-7 at 3-74. One acre-foot (afy) of water equals approximately 325,851  
27 gallons.

28 Thus, the “combined pumping rate of the well field,” coupled with the 750 afy of pit

1 pumping, equals over 3.92 billion gallons of water pumped per year. With the predicted pumping  
2 lasting roughly 43 years, this means that up to 168.8 billion gallons of water will be removed from  
3 the Mt. Hope area by the Project's dewatering.

4 The open pit dewatering activities and Kobeh Valley Central Well Field pumping would  
5 lower (draw down) the water table in the vicinity of those facilities. The predicted maximum  
6 drawdown in the bedrock of the open pit area is approximately 2,250 feet, whereas in central Kobeh  
7 Valley, the predicted maximum drawdown is approximately 120 feet near the center of the well field  
8 after 44 years of pumping. Ex. B at 3-74 to-79, *see also*, Figure 3.2.18 (showing drawdown).

9 Regarding the open mine pit, "[m]ining the open pit itself would result in an excavation of  
10 approximately 2,300 feet below the existing water table, which would be approximately 2,640  
11 beneath the natural surface." Ex. B at 2-86. "The pit lake that is anticipated to form in the open pit  
12 is expected to fill slowly (Figure 3.3.12) and would be 900 feet deep at 200 years after the end of  
13 mining." Ex. B at 3- 220. It would eventually be over 1,100 feet deep. Ex. B at Figure 3.3.12.

14 Water quality in the pit lake is predicted to exceed federal and state water quality standards  
15 for a number of pollutants. "As evaporation from the lake surface concentrates the dissolved  
16 minerals, some water quality constituent concentrations would be predicted to increase over time  
17 relative to baseline concentrations and to exceed the present Nevada water quality standards (see  
18 Table 3.3-1)." Ex. B at 3-220, Table 3.3-1. Despite this, "No mitigation is proposed for this impact."  
19 *Id.*

20 Eureka Moly plans to develop the Mount Hope Project to mine molybdenum. *See generally*,  
21 Ex. B. The proposed project is located approximately 23 miles northwest of Eureka, Nevada (*Id.*;  
22 *see also*, NEV2008106 Fact Sheet hereinafter "Fact Sheet" - on record with this appeal), and  
23 straddles three hydrographic water basins: Diamond, Kobeh, and Pine Valleys. Fact Sheet p. 1.

24 The mining will utilize an open pit method. *Id.* A pit lake is expected to form after year 32.  
25 *Id.* at 24. The water entering the pit lake is of good quality. *Id.* However, with the formation of the  
26 pit lake, the resulting water quality of the lake is expected to exceed Profile I reference values. *Id.*  
27 at 25.

28 The NDEP is allowing the pit lake to exceed Profile I reference values because "[t]he pit lake

1 has no established beneficial uses and will have fencing to prevent livestock, and humans, from  
2 accessing it." Notice of Decision, at Division Response 21 (on record with this appeal). However,  
3 Permit N8V2008106 fails to acknowledge that ground water testing indicates that water entering the  
4 pit lake will meet drinking water standards.

## 5 6 ISSUES AND ARGUMENT

### 7 I. Standard of Review

8 When a court reviews the decision of a state agency regarding a question of fact, the court  
9 is limited to a determination of whether substantial evidence in the record supports the decision.  
10 *Town of Eureka v. State Engineer*, 108 Nev. 163, 165 (1992). The decision should be affirmed if the  
11 court finds the ruling supported by substantial evidence. *United States v. Alpine Land & Reservoir*  
12 *Co.*, 919 F.Supp . 1470,1474 (D.Nev. 1996). The Nevada Supreme Court defines "substantial  
13 evidence" as "that which a reasonable mind might accept as adequate to support a conclusion." *State*  
14 *Employment Sec. Dept. v. Hilton Hotels Corp.*, 102 Nev. 606, 608 (1986) (citing *Richardson v.*  
15 *Perales*, 402 U.S. 389 (1971)).

16 The decision of an administrative agency will generally not be reversed unless it is arbitrary  
17 or capricious. *Hilton Hotels*, 102 Nev. at 608. A decision is "arbitrary or capricious" if it is "baseless  
18 or despotic," or "a sudden turn of mind without apparent motive; a freak, whim, mere fancy." *City*  
19 *of Reno v. Estate of Wells*, 110 Nev. 1218, 1222 (1994).

20 Nonetheless, an administrative decision may also be reversed, remanded or set aside if it is  
21 "affected by an error of law ." *Dredge v. State ex rel. Dep't Prisons*, 105 Nev. 39, 43 ( 1 989) (ruling  
22 applied to NRS §233B.135 by *Pricz Tattoo Studio LLC v. Dep't of Employment Training &*  
23 *Rehabilitation-Employment Securities Division*, Slip Copy, 2011 WL 6932405, \*1 (Nev. 2011)). An  
24 error of law is a "clear error in view of the reliable, probative, and substantial evidence of record or  
25 an abuse or clearly unwarranted exercise of discretion." *Dredge*, 105 Nev. at 43 . Further, the  
26 administrative decision may be reversed, remanded or set aside if the decision constitutes an "abuse  
27 of discretion" because the decision maker acted arbitrarily or capriciously. *Id.*

1           II. Arguments

2           A.NDEP Erred in Determining that there is no Degradation of Waters of the State and  
3           Underground Water is being Wasted

4           Under Nevada's Water Pollution Control Law (NRS 445A.300 to 445A.730), it is unlawful  
5 for any person to discharge any pollutant from any point source into any waters of the State. NRS  
6 445A.465(1)(a). A "discharge" is "any addition of a pollutant or pollutants to water." NRS 445A.345.  
7 A "point source" is "any discernible, confined and discrete conveyance, including but not limited to  
8 any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated  
9 animal feeding operation, or vessel or other floating craft, from which pollutants are or may be  
10 discharged." NRS 445A.395. A "pollutant" is dredged soil, solid waste, incinerator residue, sewage,  
11 garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials,  
12 heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and  
13 agricultural waste discharged into water." NRS 445A.400. "Waters of the State" means "all waters  
14 situated wholly or partly within or bordering upon this State, including but not limited to: 1. All  
15 streams, lakes, ponds, impounding reservoirs, marshes, water courses, waterways, wells, springs,  
16 irrigation systems and drainage systems; and 2. All bodies or accumulations of water, surface and  
17 underground, natural or artificial." NRS 445A.415.

18           Degradation is defined by NAC 445A.357: "Degrade" means to alter the physical or  
19 chemical properties of or to cause a change in the concentration of any substance in the waters of the  
20 State in violation of the standards established pursuant to NAC 445A.424. The Final Environmental  
21 Impact Statement makes the following finding: "Initial pit lake water quality is predicted to be good  
22 and would meet Nevada enforceable [drinking water standards]. As evaporation from the lake  
23 surface concentrates the dissolved minerals, some water quality constituent concentrations would  
24 be predicted to increase over time relative to baseline concentrations and to exceed the present  
25 Nevada water quality standards." *See* Ex. B at 3-220. Therefore, NDEP is aware that drinking water  
26 quality groundwater will flow into the open pit mine, creating a pit lake. The groundwater will then  
27 become degraded because of evaporation from the pit, leaving the groundwater contaminants in  
28 higher concentrations. Additionally, pit wall material will influence the degradation of the pit lake.

1 Fact Sheet, pp.24-25 (recognizing a "secondary influence" from pit wall materials). Thus according  
2 to this regulation waters of the State are being degraded, since there is a change to the "physical or  
3 chemical properties" of the water.

4 Pit lakes qualify as polluted water and are "waters of the State." The legislative declaration,  
5 NRS 445A.305 states that it is the policy of this State:

- 6 (a) To maintain the quality of the waters of the State consistent with the public health and  
7 enjoyment, the propagation and protection of terrestrial and aquatic life, the operation of  
8 existing industries, the pursuit of agriculture, and the economic development of the State;  
9 and  
10 (b) To encourage and promote the use of methods of waste collection and pollution control  
11 for all significant sources of water pollution (including point and diffuse sources).

12 The quality of the water flowing into the pit lake will not be maintained consistent with the  
13 "public health and enjoyment, the propagation and protection of terrestrial and aquatic life." Since  
14 there is no beneficial use applied to the water in the pit lake it will no longer serve the public health  
15 and enjoyment. Furthermore there are no methods proposed for "pollution control" in the Mt Hope  
16 plan as proposed by Eureka Moly. The decision by the agency to permit the proposed Mt Hope mine  
17 project in contrary to NRS 445A.305 and thus, illegal.

18 Finally, the pit lake is wasting groundwater. NRS 534.020 declares the intention of the  
19 Legislature to "prevent the waste of underground waters and pollution and contamination thereof."  
20 The groundwater was of use prior to flowing into the pit lake; however, since the pit lake water has  
21 no beneficial use, that use will be eliminated. A fence will be constructed around the pit lake to keep  
22 people out. In contradiction to legislative intent, groundwater will be wasted in the pit lake.

23 B. The Final Decision was clearly erroneous in view of the reliable, probative and substantial  
24 evidence on the whole record due to the long-term pollution issue – the agency cannot ensure  
25 closure due to an inadequate mine plan.

26 GBRW's analysis of the proposed Eureka Moly mine plan concludes that the site will require  
27 active management of polluted water in perpetuity. The data available, despite being sparse, do  
28 indicate a significant potential for acid generation, but with very little neutralizing capacity. For  
example, Ex. B at Figure 3.3.5, Net Acid Generation Versus Net Acid Generation pH, shows that  
29 29% of the samples to be net acid generating and another 16% in the questionable category, so the  
conservative approach would be to assume that 45% or almost half could be acid forming to various  
30 extents.

1           Thus, GBRW foresees significant acid drainage from and a potentially larger footprint for  
2 the PAG WRDF. A larger footprint could be very problematic, since the existing footprint is  
3 dangerously close to two springs, SP-4 and SP-3. Cleary, Eureka Moly is also anticipating some acid  
4 drainage by installing a drainage system at the bottom of the PAG WRDF to collect substandard  
5 water. What is not in the management plan is a discussion of the possibility of long-term treatment  
6 (possibly in perpetuity) of acidic drainage. This scenario needs to be addressed in the renewal  
7 application. Eureka Moly needs to amend the management plan to evaluate long-term treatment of  
8 acid mine drainage including a credible estimation of the timeframe for treatment and potential  
9 increased treatment costs (current bonding model does not include this possibility to our knowledge).

10           By its design, the PAG WRDF will contain ~0.45 billion tons of net-acid generating rock  
11 where the “PAG” classification is based on material containing >0.3 % sulfur and the demonstrated  
12 production of acidic leachate in empirical oxidative weathering tests (i.e., the rock produced a  
13 leachate with pH <4.5, and leached > 10 kg H<sub>2</sub>SO<sub>4</sub> / ton rock). In addition, this formation of acidic  
14 conditions is associated with increased concentrations of dissolved heavy metals, including  
15 cadmium, copper, lead, nickel, and zinc. The problem is that the design for the PAG WRDF will  
16 not prevent atmospheric oxygen from diffusing into the facility, and will not prevent water from  
17 percolating through the cover and the underlying PAG waste. As a result, the PAG WRDF will  
18 discharge acidic metal-laden leachate to groundwater and/or surface seeps for centuries to millennia  
19 as it weathers into the future. Ex. C (GBRW comment letter to NDEP, June 23, 2018).

20           GBRW is not alone in this conclusion as the US EPA stated in their comment letter of March  
21 12, 2012:

22           Our objections to the project, as it is currently proposed, are based on the likelihood that  
23 surface water and groundwater resources would be significantly and adversely affected.

24           Recommendation: We recommend BLM consider the following approaches to help ensure  
25 that the Mount Hope LTFM [Long Term Funding Mechanism] covers the costs of all  
26 necessary post-closure monitoring and operation and at least several hundred years. Ex. E  
(EPA Comments on Mt. Hope EIS).

26           And, Eureka County:

27           Language should be included to make it clear that adequate funding would also need to be  
28 in place for continued monitoring far into the future, especially related to water resources and  
the centuries of potential impacts after mining and reclamation.” – Ex. F (Eureka County

1 Comments on Mt. Hope EIS –p 8).

2 Nevada regulation (NAC 445A.446) states, “Permanent closure is complete when the  
3 requirements contained in NAC 445A.429, 445A.430 and 445A.431 have been achieved.” NAC  
4 445A.429 requires that, “The holder of the permit must institute appropriate procedures to ensure  
5 that all mined areas do not release contaminants that have the potential to degrade the waters of  
6 the State.” Eureka Moly cannot “ensure” that there will be no release of contaminants when there  
7 is no end-date for active treatment. It is likely at some point in the future that there will be a  
8 failure of the treatment system given that active treatment would be needed for hundreds of years  
9 and there is no example of any such operation with that longevity. Therefore, this mine is  
10 expected to eventually degrade waters of the State, and thus illegal.

11 C. Final decision was arbitrary or capricious or characterized by abuse of discretion - there  
12 has been no exemption to Eureka Moly LLC. for degradation of groundwater

13 A facility "may not degrade the waters of the State to the extent that... [t]he quality is  
14 lowered below a state or federal regulation prescribing standards for drinking water." NAC  
15 445A.424(1)(b). For waters of the State that already exceed the state or federal drinking water  
16 standards, the facility cannot lower the water quality "to a level that the Department finds would  
17 render those waters unsuitable for the existing or potential municipal, industrial, domestic or  
18 agricultural use." NAC 445A.424(1)(c). In sum, the SEC imposed a mandate that a mining  
19 facility cannot degrade groundwater below drinking water standards. If the groundwater source  
20 already fails to meet drinking water standards, the mining facility cannot degrade the  
21 groundwater quality to levels rendering the waters unsuitable for existing or potential beneficial  
22 uses of the water.

23 The term "groundwater" means "all subsurface water comprising the zone of saturation,  
24 including perched zones of saturation, which could produce usable water." NAC 445A.361.  
25 Here, the Fact Sheet states that groundwater inflow will be the primary source of water for  
26 formation of the pit lake. Fact Sheet, p.25. Thus, the pit lake is composed of groundwater.

27 Eureka Moly's application materials state: "A comparison of the maximum concentrations  
28 for groundwater to Nevada beneficial use standards, reveals that the groundwater within the area

1 demonstrates a wide range of beneficial uses. The majority of the groundwater locations can be  
2 used for municipal or domestic supply, watering of livestock and industrial uses." Mount Hope  
3 Project - Baseline Surface Water and Groundwater Report, p. 48. "Domestic use" means  
4 "culinary and household purposes." NRS 534.013. Culinary purposes include drinking water.

5 Nothing in Nevada law states that groundwater ceases to be groundwater once it flows  
6 into the pit mine. Moreover, NDEP has not granted any exemption to Eureka Moly under NAC  
7 445A.424 that would allow Eureka Moly to create a facility that will degrade groundwater. Good  
8 quality groundwater that meets drinking water quality standards will flow into the pit mine,  
9 creating a pit lake. Due to the mine facilities, that groundwater will then become degraded below  
10 applicable drinking water quality standards. That degradation is prohibited by Nevada's Water  
11 Pollution Control Law. NDEP's issuance of the Permit, which allows Eureka Moly to create the  
12 pit lake, was an error of law, clearly erroneous, arbitrary and capricious, and an abuse of  
13 discretion.

14 D. Final decision was arbitrary or capricious or characterized by abuse of discretion - The  
15 agency arbitrarily determined that the Pit Lake will cause no harm. - NAC 445A.429

16 Under its statutory authority, the SEC passed NAC 445A.429(3), which states: "Bodies  
17 of water which are a result of mine pits penetrating the water table must not create an  
18 impoundment which: (a) Has the potential to degrade the groundwaters of the State; or (b) Has  
19 the potential to affect adversely the health of human, terrestrial or avian life." Therefore, under  
20 the Nevada Water Pollution Control Law, mine operations must not create pit lakes that have the  
21 potential to adversely affect human, terrestrial, or avian life.

22 The potential to adversely affect human, terrestrial, or avian life hinges on the  
23 Screening-Level Ecological Risk Assessment ("SLERA"), which was prepared using the results of  
24 the pit lake study for water quality. However, the SLERA as currently determined is most certainly  
25 incorrect and greatly underestimates the risk of adverse effects of terrestrial or avian life. Upon  
26 examination of the pit lake model study there are several errors as outlined in Great Basin Resource  
27 Watch comment letter dated June 23, 2018:

- 28 1. The assumed thickness of the "Damaged Rock Zone" (DRZ) in the pit walls in the pit lake  
model (1.8 m) is lower than measured in other hard-rock metal mines by a factor of ~360%

1 to 850%.

2 The Mt. Hope Mine pit lake model estimates the volume of rock available to oxidize and then  
3 leach into to the lake as the product of the area exposed in the pit by mining and the assumed  
4 thickness of the “Damaged Rock Zone” (DRZ). This DRZ thickness was assumed to be 1.8 m (~5.9  
5 ft), which was drawn from a study of measured fracturing in the blast face of a granite mine. But  
6 the Mt. Hope mine is not granite, and this assumed depth of reactive wall rock of 5.9 ft is several  
7 times smaller than has been measured in the wall rock of open-pit metal mines.

8 Specifically, an EPA study that measured permeability in blast-face wall rock at the Golden  
9 Sunlight Mine (Montana) found iron staining (indicative of active oxidation) to a depth of ~10 ft,  
10 a rind of high-permeability rock to a depth of ~20 ft, and propagation of blast fracturing to a depth  
11 of 54 ft from the face. A horizontal well study of the Betze Screamer Pit in Nevada, USA estimated  
12 pit-wall reaction-zone depth by measuring pore-space oxygen concentrations in the first 49 ft from  
13 sulfide pit-wall faces. Oxygen measurements were made in ten horizontal holes in pit faces. The  
14 holes were completed as gas wells (casing collar annular space was packed with inert wadding to  
15 seal out oxygen), equilibrated for 5 months, then sampled for oxygen by pulling gas from perforated  
16 intervals after isolation with packers. The core indicated an average fracture spacing of 0.1 m, and  
17 evidence of oxidation at 10 to 20 ft from the face. Further, results found some oxygen gas remained  
18 in wall rock fractures to a depth of 49 ft in most holes, suggesting active oxygen flux to at least this  
19 depth. Collectively, these studies indicated that the thickness of enhanced permeable in metal-mine  
20 wall rock can be 20 ft, and that oxygen can penetrate to a depth of at least 49 ft into sulfide-bearing  
21 wall rock.

22 Thus, the Mount Hope pit lake water quality model has almost certainly underestimated the  
23 thickness of the enhanced-permeability wall rock, and thus the mass of wall rock available to leach  
24 solutes to the pit lake, by a factor of ~3.4 (i.e., 20 ft / 5.9 ft), and possibly by a factor as high as 8.3  
25 (i.e., 49 ft/5.9 ft).

26 2. The pit-lake water quality model algorithm contains an error that produces a systematic  
27 underestimate in the calculated load of solutes released from sulfide-bearing wall rock and  
28 to the lake.

In overview, the error can be explained thus: Sulfide minerals present in the exposed mine

1 wall rock (both PAG and NAG material) will oxidize over time. To a first approximation, the  
2 amount of oxidation that occurs in a wall rock zone, and thus the mass of associated pollutants  
3 (sulfate, acidity, and solubilized metals) is approximately proportional to the duration that the rock  
4 is exposed to the atmosphere. Longer duration of wall-rock exposure to air = more pollutants  
5 released. In semi-arid climates like Mt. Hope, solutes build up in pore water between rain and snow  
6 events. These solute concentrations in acidic pore water (i.e., the conditions expected in the PAG  
7 rock) can become very high—thousands to tens-of-thousands of mg/L - until it is flushed by  
8 meteoric water into the lake. The mass of pollutants released from sulfide wall rock thus depends  
9 on the duration over which the rock is exposed to the atmosphere; but at which this accumulated  
10 pollutant mass is loaded to pit lake depends on when the wall rock is flushed with meteoric water.

11 The error in the Slumberger 2010 pit lake model arises because it does not consider the  
12 duration over which the wall rock is exposed to the atmosphere when calculating wall rock loads to  
13 the pit lake. Instead, it assumes that the concentration of solutes in leachate from sulfide-bearing  
14 wall rock is constant, regardless of how long the wall rock has been oxidizing since the previous  
15 flushing event.

16 The following is a more detailed description of this error, tied to the text in the pit lake water  
17 quality report, Ex. D (Final Pit Lake Geochemistry Report, Mt. Hope Project 2010):

18 “Various methods exist for correlating weathering/oxidation time in an HCT test (in weeks)  
19 to actual weathering rates in the field (on the order of several to 100s of years).” *Id.*

20 This identifies the problem of linking short-duration kinetic tests to estimate pollutant  
21 released over much longer durations of time.

22 “Phase I Mount Hope HCTs were run for 57-70 cycles (weeks), and Phase II HCT data  
23 through 67 weeks were available.” *Id.*

24 The duration of kinetic tests was much less than the duration of oxidation under field  
25 conditions.

26 “HCT leachate chemistry, averaged throughout the duration of the testing cycles, was used  
27 for modeling and the data are presented in appendix C.” *Id.*

28 The above sentence describes the disconnect: the model does not consider the rate component

1 of the kinetic test, such as to calculate the average rate of release over time [e.g., mg  
2 SO<sub>4</sub>/kg-rock/week], which could then be multiplied by the duration of wall rock exposure to  
3 indicated total release of a solute over a model time step, (e.g., [weeks] × [mg SO<sub>4</sub>/kg-rock/week]  
4 = [mg SO<sub>4</sub>/kg-rock]). Instead, the model assumes that the concentration in leachate is independent  
5 of the duration over which the wall rock has been exposed to the atmosphere. See Ex. C.

6 The authors of the Pit Lake Geochemistry report are aware of this disconnect at some level,  
7 e.g.:

8 Humidity cells are not designed to predict field chemistry, but rather to optimize the rates of  
9 oxidation reactions and to compare the relative kinetics of acid generation and neutralizing  
process. Ex. D.

10 But the pit lake model then contradicts directly the above statement, and applies directly the  
11 laboratory humidity cell leachate composition to calculate the “field chemistry,” in this case, the  
12 leachate concentration in effluent from wall rock.

13 Finally, although the pit lake model report does acknowledge the effect of solute  
14 accumulation in pore water, the description of how the pore-water accumulation effect into the lake  
15 water quality model contains three “red flags” that suggest strongly the conceptual errors in the  
16 model design. From the description of how the pit-lake model developers attempted to incorporate  
17 the effect of higher solute release from PAG rock: “Weekly HCT [concentration] data were  
18 averaged (arithmetic) over the entire testing cycles, and were used to estimate runoff and flushing  
19 chemistry . . . This approach accounts for the higher concentrations associated with first flush (early  
20 time), as well as the potential of high concentrations in the late time for some acid-generating  
21 material types.” Ex. D.

22 Red flag #1: The model prediction for the pit lake composition thus depends on the “first  
23 flush” composition measured in humidity cells. But in a sulfide-bearing rock, the first flush  
24 humidity cell composition is an entirely arbitrary parameter that depends on the duration that the  
25 sample happened to be stored, the conditions of storage before humidity cell testing began, and the  
26 water-to-rock ratio used in the humidity cell test. Thus, the model solute load depends on the  
27 arbitrary and quantified storage history of samples prior to a laboratory test.

28 Red flag #2: The model does not explicitly incorporate the duration that wall rock is exposed

1 to the atmosphere and associated amount of sulfide that oxidized when it estimates solute leaching  
2 from wall rock. Instead, the model relies on this arbitrary “first flush” composition from a  
3 laboratory test to provide a quantitative estimate for the amount of acid solute that built up in rock  
4 in model simulation steps that ranged from 5 to 50 years in duration.

5 Red flag #3: There is no indication that the model tracks mass balance of sulfide minerals  
6 in wall rock (e.g., the initial mass of sulfur in each wall rock zone before mining, and the mass lost  
7 during the model simulation).

8 The net effect of using an average concentration measured in 1-week duration laboratory  
9 humidity cell tests to estimate the solute release from multi-year exposure of wall rock to field  
10 oxidation has very probably introduced a systematic underestimate of pollutant loading to the Mt.  
11 Hope mine pit lake.

12 NDEP needed to investigate examples of existing molybdenum mines that have pit lakes  
13 to further evaluate whether the results of the pit lake model for the proposed Mt Hope mine seems  
14 reasonable. It is generally accepted that predictions of pit lake water quality are difficult and exhibit  
15 considerable uncertainty. Given, the reality of the complexity of natural systems such as pit lakes  
16 sound scientific analysis seeks to explore examples of pit lakes water quality at existing  
17 molybdenum mines. Some existing molybdenum mines due to geochemical and other  
18 environmental differences may not be comparable. However, the agency must do its very best to  
19 evaluate the validity of the results presented by the proponent, which requires the agency to  
20 acknowledge real world data. NDEP in rendering its decision on the validity of the predicted pit  
21 lake water quality ignored any data, including the Liberty Project, which is a molybdenum mine in  
22 Nevada.

23 The Pit Lake Model Study is seriously flawed and does not represent a good faith effort by  
24 Eureka Moly, LLC to the best of the available science predict the water quality in the pit lake. As  
25 a result the SLERA is also invalid and the determination of the potential to adversely affect human,  
26 terrestrial, or avian life as required by NAC 445A.229 is not satisfied. The Pit Lake Model Study  
27 and subsequent pit lake water quality determination must be redone correcting the errors.

28 Even based on the existing pit lake water quality prediction and SLERA the project will

1 violate NAC 445A.229.

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The Mount Hope Project Final Environmental Impact Statement, released in October, 2012, found that the initial pit lake water quality is predicted to meet Nevada water quality standards. See, Ex. B at Section 3.3.3.3.3, p. 3-220. However, as evaporation from the pit lake concentrates dissolved materials, some water quality constituent concentrations are predicted to increase relative to baseline concentrations and to exceed the present Nevada water quality standards. *Id.* Similarly, the Fact Sheet for NEV2008106, created in November, 2012, states that "concentrations of antimony, cadmium, and manganese are predicted to be above the Profile I reference values." Fact Sheet, p.25.

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Fact Sheet, p.25. The Fact Sheet finds: "The SLERA results indicate the overall ecological risk to livestock and wildlife that might inhabit the site or could use the pit lake as a drinking water source is considered to be low. Given the low risks identified, mitigation of the Mount Hope Project pit lake does not appear to be necessary at this time." *Id.*

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Permit NEV2008106, therefore, allows a "low risk" of ecological harm to livestock and wildlife as a result of drinking pit lake water. Any risk, albeit low, indicates a potential of adverse effects on terrestrial or avian life, contrary to NAC 445A.429(3). The Fact Sheet, the SLERA, and the FEIS all conclude that terrestrial or avian life may be affected by the concentration of toxic materials or ecological risks presented by the pit lake. Nevada Administrative Code 445A.429(3) prescribes a mandate that mine operations "must not" create impoundments of water that have "the potential to affect adversely the health of human, terrestrial or avian life."

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Despite NDEP's finding that there is a risk of adverse effects to the health of terrestrial or avian life, NDEP issued WPCP N8V2008106 without requiring any monitoring or mitigation to ensure that no adverse effects occur. NDEP's issuance of the WPCP was an error of law, clearly erroneous, arbitrary and capricious, and an abuse of discretion. NDEP cannot permit Eureka Moly to create an open pit mine that creates an ecological risk, no matter how low the risk. Nevada Administrative Code 445A.429 imposes a mandatory standard, and NDEP has no discretion to issue permits that do not fully comply with that standard.

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CONCLUSION

The Division's issuance of NEV2008106 is error. The record demonstrates an unacceptable risk of degradation to waters of the State that the Division has failed to heed. The Permit was issued despite a demonstrable potential to adversely affect terrestrial or avian life. In addition, NEV2008106 improperly allows ground water degradation in a manner contrary to NAC 445A.424 and NAC 445A.429. By degrading waters of the State that will result in a pit lake with no beneficial use is a waste of groundwater that violates the legislative declaration that groundwater is not to be wasted and there must be an effort to avoid degrading waters of the State. Finally, the agency did not conduct its due diligence in evaluating the potential for perpetual management and the expected water quality in the mine pit lake.

DATED this 28<sup>th</sup> day of February, 2019.

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**CERTIFICATE OF SERVICE**

Pursuant to Rule 5(b) of the Rules of Civil Procedure, I certify under penalty of perjury that I am an employee of CAVANAUGH-BILL LAW OFFICES, LLC, and on this date, I caused the foregoing documents to be served on all parties to this action by delivering a true copy thereof as follows:

Dan Nubel, Esq.  
Dnubel@ag.nv.gov

Henna Rasul  
hrasul@ag.nv.gov

DATED this 28<sup>th</sup> day of February 2019.

  
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