Specific problems with the proposed mining rules and suggestions for changing them

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1. The rules allow perpetual treatment of wastewater. The rules should require that mining companies complete post-closure wastewater treatment within 10 years after mine closure. DEP should not grant a permit to any mine that cannot demonstrate it can complete wastewater treatment within 10 years of closure.

Allowing wastewater treatment forever, as these rules would (Section 20(G)(2)), increases the risk that a mine operator will run out of money for treatment—shifting costs to Maine taxpayers and increasing the risk of contamination of Maine waters. It also increases the risk of a catastrophic spill, because all treatment plants fail periodically over time.

A recent study of 40 mines in the U.S. shows that all 40 of them will require treatment of wastewater in perpetuity, literally for hundreds or even thousands of years. Because this time span is likely to exceed the life of any mining company, taxpayers will probably pay the bulk of the long-term treatment costs, which the study estimates at $57-$67 billion per year in total[1]. Maine's rules must prevent mines that would require wastewater treatment forever.

Despite this, the rules allow perpetual wastewater treatment for wet mine waste units. This could simply be a tailings pond, something nearly all mines have. If a mining company cannot demonstrate that it will be able to clean up a site in 10 years, DEP should not grant it a permit to mine that site. Mines that will require active wastewater treatment for longer than 10 years are too dangerous, both in terms of risk to the environment and risk to the taxpayer. The Legislature should not allow such mines.

2. The rules should keep groundwater contamination to a minimum. Once groundwater pollution spreads over a large area, it is almost impossible to collect and treat. In Maine, it will also quickly flow into surface water.

The rules specifically allow unlimited pollution of groundwater in "mining areas" (Section 2(GGG)), a term which is still not clearly defined despite overwhelming public testimony requesting clarification. In its basis statement for the rules, DEP admits that: "such groundwater will almost inevitably leave the area where the discharge occurs (Basis Statement, Part I, P. 129, available at http://www.maine.gov/dep/bep/2014/01-10-14/Master%20Supplemental%20Basis%20Statement1%208%2014%20reformatted.pdf)."

The rules define mining area as follows:

> "Mining area," or "metallic mineral mining area" means an area of land described in a permit application and approved by the Department, including, but not limited to, land from which earth material is removed in connection with mining, the lands on which material from that mining is stored or deposited, the lands on which beneficiating or

[1] 2013. Polluting the Future: How Mining Companies are Contaminating Our Nations Waters in Perpetuity. Earthworks. Accessed at http://www.earthworksaction.org/files/publications/PollutingTheFuture-FINAL.pdf. P. 4.

treatment facilities, including groundwater and surface water management treatment systems, are located, or the lands on which water reservoirs used in a mining operation are located[2].

We believe this definition is not clear and could encompass very large areas of land.
To clarify this language and limit groundwater contamination as much as possible, we urge the Legislature to use language from LD 1302, which passed the House in 2013, to define a term the rules do not use -- "activity unit" -- and alter the definition of mining area. Specifically:

Activity unit. "Activity unit" means an area of land within a mining area where a particular mining activity takes place, including, but not limited to, an area from which earth material is removed; an area where overburden, waste rock and ore are stored; a tailings impoundment or other tailings storage area; an area where ore is processed; an area where groundwater and surface water management treatment systems are located; a waste disposal area; and an area where any other activity associated with mining occurs

Mining area. "Mining area" means an area of land described in a permit application and approved by the department, including but not limited to land from which earth material is removed in connection with mining, the lands on which material from that mining is stored or deposited, the lands on which beneficiating or treatment facilities, including groundwater and surface water management treatment systems, are located or the lands on which water reservoirs used in a mining operation are located. A mining area may include more than one activity unit.

Then, as in LD 1302, the rules should state:

Minimizing groundwater contamination**.** A permittee shall minimize the contamination of groundwater to the greatest extent practicable. The department shall require that compliance monitoring wells be located as close as physically practicable to, but not more than 100 feet from, the activity unit being monitored for groundwater contamination. The department may approve an alternative water monitoring location only if the operator demonstrates the location is protective of the environment and public health and safety and a closer location is not feasible or effective.

3. The rules should require mining applicants to pay enough money up front to cover an environmental catastrophe.

Mining companies often go bankrupt when faced with significant cleanup costs, and typically do not put up enough financial assurance to cover major environmental damage. This is what happened at the Beal Mountain Mine in Montana. The liner underneath a part of this relatively small, modern mine leaked cyanide for years[3]. The mine began operation in the late 1980s and closed in 1998 when its Canadian owner went bankrupt. So far, the federal government has spent about $10 million in taxpayer dollars cleaning up this site. The company's $6.6 million reclamation bond is also gone. Estimated additional cleanup costs range from $25 million to

[2] DEP Rules, 2013/08/16 Draft Chapter 200, Subchapter 1 (2)(BBB), P.6.
[3] See the articles at http://mtstandard.com/news/local/beal-mountain-mine-reclamation-ongoing/article_4d60df92-5b1b-5a07-9d5f-deb0aceb9928.html and http://helenair.com/news/state-and-regional/cleanup-costs-mount-at-beal-mountain-mine-site/article_99b32fbe-351b-5fe6-9651-caeb10c14260.html.

$200 million.[4] The public will pay all of this. To prevent taxpayers from having to pay cleanup costs for mining messes in Maine, these rules need to require an applicant to verify estimated worst-case cleanup costs through an independent third party assessment and pay complete financial assurance up front. Instead, the rules require a complicated annual recalculation of financial assurance as if mine cleanup would occur the following year (Section 17(D)(1)(A)). Recalculating the financial assurance on an annual basis invites errors and does not assure that sufficient funds will be available to deal with a worst case scenario, such as a tailings dam collapse, which no mining company will ever predict will happen in the following year.

4. The requirements for baseline monitoring are insufficient. The 1991 rules required an exhaustive list of substances to test for and stated the following:

> (3) Technical Standards for Baseline Monitoring Plan
>
> (a) Testing is required for (1) metallic elements for which maximum contaminant levels (MCLs) have been established by the U.S. Environmental Protection Agency (EPA) under the Safe Drinking Water Act, or for which applicable New Source Performance Standards for Ore Mining and Dressing Point Source Categories have been established pursuant to 40 CFR 440; and (2) for any toxics for which criteria have been developed by EPA under Section 304(a) of the Clean Water Act or by the Department under 38 M.R.S.A. §420, and other indicators that could adversely impact water quality. In addition, the Department and/or Commission may require testing which includes, but is not limited to, the following:
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> acidity
> alkalinity
> aluminum
> ammonia
> antimony
> arsenic
> barium
> beryllium
> biochemical oxygen demand
> boron
> bicarbonates
> cadmium
> calcium
> carbonates
> cation-anion balance
> chemical oxygen demand
> chloride
> chromium
> magnesium
> manganese
> mercury
> molybdenum
> nickel
> nitrates-nitrite
> pH
> phenols
> potassium
> radium 226 and 228
> selenium
> silver
> silica
> sodium
> sulfate
> sulfide
> temperature
> thallium

[4] See http://www.waterboards.ca.gov/academy/courses/ard/day4/day4_sec2a_i_iii_bealmt_stillwater_phoenix_jk.pdf

conductivity
copper
cyanide
dissolved oxygen
fluoride
hardness
iron
lead
total dissolved solids
total Kjeldahl nitrogen
total organic carbon
total petroleum hydrocarbons
total phosphorus
total suspended solids
vanadium
volatile organic compounds
zinc

The new draft rules should include at least these same requirements in order to ensure compliance with both state and federal drinking water standards and federal performance standards for mining.

The fact that the proposed rules have no requirements to test for any radioactive elements is particularly alarming. For example, if uranium and thorium are present in an ore body, removing them would likely constitute a violation of Maine statutory ban on mining for these metals, a ban referenced in these new draft rules. In addition, discovering after the fact that tailings and waste rock have high radioactivity content could result in serious environmental problems, such as the spreading of radioactive dust and the contamination of ground and surface water with radioactive material.

The proposed rules require only two years of baseline testing. NRCM agrees with Matt Scott's oral testimony at the October 17, 2014 BEP hearing that at least three years of baseline data are necessary for surface water, groundwater and aquatic macroinvertebrates. Sampling should be weekly for surface and groundwater and take place during all seasons. Macroinvertebrate sampling could be done in summer months using DEP's existing methodology.

5. The groundwater, surface water, and sediment compliance monitoring frequencies are insufficient.

The rules require only quarterly groundwater compliance monitoring (Section 22(B)(1)(h)). This is not frequent enough sampling. It means that a mine could be contaminating groundwater for three months before anyone even knows about it. This is a recipe for very large scale groundwater contamination.

In addition, once monitoring wells are established, sampling groundwater is easy. A company could easily monitor acidity daily at multiple wells with a pH probe – or even install continuous pH monitors -- with little cost or effort. Analysis of weekly samples for metals of concern would cost several hundred dollars per metal, so weekly sampling and analysis should be required.

Similarly, Section 22 (B)(2)(c) only requires that surface water monitoring occur monthly. Just as with groundwater an operator could easily monitor pH on a daily or continuous basis. The rules should require this, not just make it optional for DEP. Sampling and analysis of metals should be required weekly, just as with groundwater.

6. The rules should clarify that no discharge from a mine, either direct or indirect via groundwater, can violate any of Maine's surface water quality standards. The rules should make clear that meeting a "performance requirement" promulgated under these rules does not absolve a mine operator from water quality violations and that these rules do not create a "permit as shield". To this end, Section 22(2)(a) should read:

> The Applicant shall establish a surface water monitoring system that is capable of detecting direct or indirect discharges to surface waters from mining operations, including, but not limited to, discharges licensed under 38 M.R.S. § 413, of any parameter for which a performance requirement or license limit has been established or indicator parameters as determined to be necessary by the Department. This system must be capable of detecting any exceedance of performance requirements and violations of water quality standards and criteria pursuant to 38 MRSA §§ 464-469.

7. The rules only allow municipal intervenors to conduct mining site visits as part of the permit review process, not citizen intervenors (Section 10 (G)(9). This severely limits the ability of the public to participate meaningfully in mining decisions. Citizens should be able to conduct site visits as part of the permit review process.

8. The rules allow injection of drilling chemicals into soil, rock, and groundwater during exploratory mining (Section 3 D). The Legislature should clarify that this not allowed.

9. There is no standard for either approval of a mining permit or for mine closure that requires that mining sites be restored so that geologic conditions (including reactivity of mining wastes and groundwater quality) are restored to approximate the pre-mining baseline.

The Criteria for Approval (Section 11) have no requirement for a demonstration that the applicant can restore the mine site to a condition that approximates pre-mining geology and hydrology. The rules should have approval criteria requiring this. In particular, DEP must certify before issuing a permit that an applicant will dispose of all mining wastes in a way that they will not contaminate ground and surface water or generate acid rock drainage above the baseline conditions. Similarly, Closure and Post-Closure Maintenance Standards in the proposed rules (Section 24) do not include a requirement to restore the mine site to hydrologically and geologically stable conditions consistent with pre-mining baseline conditions. Section 24 should require restoration of the mine site to pre-mining baseline hydrologic and geologic conditions and should ensure mining wastes will not contaminate ground and surface water or cause acid mine drainage above baseline conditions.

10. These rules are poorly organized and too long. They need to be clearer and shorter. For example, consider groundwater. If I were an applicant or a regulator, I would not be able to tell easily what substances and parameters I would need to collect data for, how many years of data I would need, at what frequency I should collect the data, and what range of flow conditions I would need to ensure that I could calculate representative baseline concentrations of contaminants. I would later need these data to prove compliance, but would compliance be based on comparing samples downstream from a mine with long-term average background concentrations, instantaneous background concentrations obtained at the same time as the

downstream sample, or some other scheme entirely? The rules are unclear on these points and should not be.

Similarly, in many cases the required Performance Standards are vague and/or circular. General performance standards are identified in Section 20(A), but specific performance standards and methods to determine compliance or non-compliance are not provided in some instances. For example:

- Standards for Underground Mine Openings (Section 20(D)) the standard is "To the extent feasible and practical . . . . (1) Minimize the risk of unacceptable settling, subsidence, voids, or caving." No guidance is given on what is "feasible", "practical" or "unacceptable".
- Requirements for Monitoring and Reporting of Groundwater (Section 22(B)) require that "Parameters for which the Applicant must monitor include, but are not limited to, those for which groundwater performance requirements are established." There is no section of the rule establishing the parameters for which monitoring is required, nor a clear process for how such parameters would be identified on a site-specific basis.

11. The rules do not exclude mining from important public lands (Section 20(B)(3)).
Mining should not be allowed "in, on or under" the following list of public lands. Please note that the current rules do not allow mining "in or on" the lands in plain text below. We suggest amending that language to "*Mining Excluded. Except as allowed under state and federal laws, no mining shall be conducted in, on or under the following*:", and adding the lands below that are underlined. For state-owned public reserved lands, we believe all public reserved lands should be protected, and would delete the following language in the current rule: *"but not including public reserved lots described in 12 M.R.S. § 1801(8)(A)"*

(a) National and state parks;
(b) National wilderness areas;
(c) National wildlife refuges;
(e) State-owned wildlife management areas pursuant to 12 M.R.S. § 10109(1);
(f) Public reserved lands; *(note deleted language discussed above)*
(g) State or national historic sites;
(h) The Allagash Wilderness Waterway;
(k) Lands under great ponds and other state-owned submerged lands;

12. The rules do not exclude mining from important waterbodies. Mining should not be allowed in, on or under the waterbodies listed below. This would be an addition to Section 20 (B).

(a) Rivers designated as "outstanding river segments" under the NRPA and/or under 12 MRSA Section 403;
(b) Class AA and Class A rivers and streams; and
(c) Any river or stream designated pursuant to the federal Endangered Species Act as critical habitat for Atlantic salmon;

13. Buffers established in the rules are too small, limited only to surface mines, and do not protect important public resources (Section 20(B)(4)). The buffer around important public resources should be one mile, not ¼ mile, and should apply to all mines, not just surface mines.

For state-owned public reserved lands, buffers should apply to all public reserved lands, and we would delete the following language in the current rule: *"but not including public reserved lots described in 12 M.R.S. § 1801(8)(A)"*. We would also buffer great ponds classified as having outstanding or significant scenic, fisheries or wildlife resources by formal state assessments. The current rules buffer only great ponds with outstanding or significant scenic resources. The list of buffered resources should add the items underlined below:

(a) National and state parks;
(b) National wilderness areas;
(c) National wildlife refuges;
(d) State-owned wildlife management areas pursuant to 12 M.R.S. § 10109(1);
(e) Public reserved lands; *(note deleted language discussed above)*
(f) State or national historic sites;
(g) The Allagash Wilderness Waterway;
(h) Any river <u>or stream</u> designated pursuant to the federal Endangered Species Act as critical habitat for Atlantic salmon;
(i) One of the great ponds located in the State's organized area identified as having outstanding or significant scenic, <u>fisheries, or wildlife</u> quality in the "Maine's Finest Lakes" study published by the Executive Department, State Planning Office in October 1989;
(j) One of the great ponds in the State's unorganized or de-organized areas designated as outstanding or significant from a scenic, <u>fisheries, or wildlife</u> perspective in the "Maine Wildlands Lakes Assessment" published by the Maine Land Use Regulation Commission in June 1987.
(k) <u>Rivers designated as "outstanding river segments" under the NRPA and/or under 12 MRSA Section 403;</u>
(l) <u>Any river or stream with water quality classified by the DEP as Class AA or A.</u>