



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



MELANIE LOYZIM
COMMISSIONER

July 8, 2022

Via Email Only

Gary & Mary Freeman
Freeman Resources, LLC
48 Lovejoy Rd
South Paris, ME 04281

RE: Operations at Plumbago North

Dear Mary and Gary Freeman:

Thank you for inquiring with the Department if the extraction of spodumene from the Plumbago North deposit in Newry, Maine, and sale of this spodumene in recognition of its lithium content, would be regulated under the Maine Metallic Mineral Mining Act (38 M.R.S. §§ 490-LL to 490-TT).

I. Background

As we understand it, you are proposing to expand current quarrying work to include up to 10 acres of extraction activities focused on pegmatitic spodumene minerals found within granite source rocks on your property in Newry, Maine. The operation would consist of surface drilling and blasting to extract material on site, trucking the material to an existing nearby quarry for crushing, and trucking the crushed material to an existing nearby indoor facility for visual sorting of spodumene, bagging, and labeling. The material would not be subject to any chemical processing, flotation separation, or any other processing within Maine aside from visual sorting of crushed material.

II. Applicability of the Maine Metallic Mineral Mining Act

The applicability of the Maine Metallic Mineral Mining Act (MMA) hinges on whether the material to be extracted is a “metallic mineral.” The term “metallic mineral” is defined in the MMA:

"Metallic mineral" means any ore or material to be excavated from the natural deposits on or in the earth for its metallic mineral content to be used for commercial or industrial purposes. "Metallic mineral" does not include thorium or uranium.

38 M.R.S. § 490-MM(8).

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This definition indicates that metallic minerals are a subset of all minerals. With respect to identification of the subset of minerals that are metallic minerals, the definition clarifies that thorium and uranium are not metallic minerals¹ and that metallic minerals must have commercial or industrial purposes. Beyond this, however, as a result of essentially defining metallic mineral as any material excavated for its metallic mineral content – circular use of the term to define itself – the definition requires interpretation by the Department. To aid in this interpretation the Department has looked to common definitions and understandings of terms and to the legislative history of the MMA.

The term “metallic mineral” is not a commonly understood geologic term with an agreed upon meaning. For example, this term is not defined in the American Geological Institute’s Glossary of Geology.² Nor is the term defined in common English language dictionaries the Department has reviewed.³ The terms “metal” and “mineral,” however, have agreed upon meanings in the scientific community that the Department can draw on for context. A metal is an element with certain characteristics when pure, including having a metallic luster, being ductile and malleable, and conducting heat and electricity.⁴ Most of the elements in the periodic table are metals in their pure, elemental form, including lithium. A mineral is an inorganic, naturally occurring, solid, crystalline substance with a specific chemical composition.⁵ The great majority of minerals contain metal elements.

Using these common definitions as a starting point, the Department interprets “metallic mineral” as any mineral containing metal element(s) unless the legislature did not intend that such a mineral be captured by this definition. The plain language of the definition in the MMA and the legislative history shed light on the legislature’s intent.

As noted above, the term “metallic mineral” is defined to not include minerals with thorium and uranium, which are both metal elements. Additionally, the definition establishes that to qualify as a metallic mineral the mineral must be extracted for its metallic mineral content to be used for commercial or industrial purposes. This component of the definition excludes, for example, quarrying for granite. The common rock forming minerals quartz, feldspar and micas are the primary components of granite. Feldspar and micas are silicate minerals that contain metal elements, including potassium, sodium, aluminum, calcium, and iron. Because granite is not extracted for the metal components for commercial or industrial purposes, quarrying for granite is not mining for a metallic mineral.

Also evident, based on the legislative record, is the legislature’s intent to exclude cement manufacturing and the associated extraction of limestone from regulation under the MMA.

¹ Mining for thorium and uranium has long been banned in Maine. 38 M.R.S. § 489-B.

² Glossary of Geology, 4th Edition, J. A. Jackson, Editor, American Geological Institute (1997) (Glossary of Geology)

³ These include Merriam Webster’s Collegiate Dictionary, Tenth Edition (1994) (Webster’s Dictionary); The New Shorter Oxford English Dictionary, Vol. 1 (1993)

⁴ Glossary of Geology; Webster’s Dictionary

⁵ Glossary of Geology; Webster’s Dictionary

Limestone contains the metal element calcium and is used for its calcium content in cement manufacturing. The cement industry has a decades-long history of regulation in Maine. During the debate and discussions that led to the enactment of the MMA and the adoption of the Chapter 200 mining rules, lawmakers, stakeholders, and agency staff did not envision the MMA applying to limestone extraction for use in cement manufacturing. This is evident from the fact that representatives of the cement industry were not involved in testimony or advocacy during the legislative and rulemaking processes. Based on the legislative and rulemaking record, the Department finds it clear that the legislature intended to exclude limestone extraction for cement manufacturing from the MMA, and thus necessarily from the definition of metallic mineral. Therefore, the Department will continue regulating such extraction under the Performance Standards for Quarries as quarrying, consistent with the permits currently in place.

Spodumene is a type of pyroxene, a common rock-forming silicate mineral. In many ways, extraction of spodumene is comparable to extraction of limestone or granite. For example, the environmental risks associated with this type of activity are generally comparable, especially when compared to mining sulfide minerals. Mining sulfide deposits in order to extract metals such as iron, copper, lead, zinc, or nickel, presents much greater environmental risk. Sulfide minerals react with oxygen and water at the earth's surface to produce sulfuric acid runoff (often called acid mine runoff). The legislative discussions that surround the MMA and related Chapter 200 mining rulemaking focused primarily on sulfide-bearing deposits, in particular at Bald Mountain. The restrictions and environmental safeguards included in the MMA are tailored to the risks posed by acid producing sulfide deposits.

While the restriction and regulations contained in the MMA exceed what would be necessary to allow environmentally responsible extraction of spodumene, and effectively prohibit spodumene extraction because of the MMA's ban on open pit mining and the open quarrying approach to spodumene extraction, the Department interprets the MMA as applying to spodumene extraction. This is because there is no clear legislative intent to excluded spodumene and its extraction from the MMA. The extraction, crushing, sorting, and selling of spodumene for its lithium content is different than granite quarrying where the granite is not extracted for any metal element that may be included in one of its mineral components. This distinction is expressly made in the definition of "metallic mineral." Extraction of spodumene also is different than quarrying for limestone in that limestone extraction in support of cement manufacturing has a long history in Maine and long history of regulation. The legislative history is clear that the MMA is not intended to capture this activity.

The extraction of spodumene for use of a metal element component, on the other hand, is new in Maine with no prior history of regulation. The Department does not view the absence of legislative discussion of spodumene extraction as evidence of legislative intent to exclude spodumene from the definition of metallic mineral and its extraction from the MMA. Therefore, confronted with having to interpret the MMA and the definition of metallic mineral, the Department concludes that the better interpretation of the term "metallic mineral" is that it captures any mineral containing metal element(s) that is excavated for the use of the metal element component – regardless of whether the end-product is a pure elemental metal or another chemical compound such as a salt – except where there is clear legislative intent to exclude such

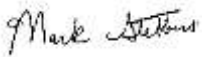
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a mineral. The spodumene being extracted and proposed for further extraction from the Plumbago North deposit falls within this present definition of “metallic mineral” contained in the MMA.

The Department appreciates this is not the interpretation of the MMA that you desire. The Department also recognizes that lithium is an important economic and strategic resource for the United States.⁶ It is a critical component in rechargeable batteries used to store energy produced from renewable sources such as solar and wind and to power a wide range of electronic devices, including cell phones, laptops, and electric vehicles. As we work to mitigate climate change, a shift to renewable energy and electronic vehicles is an important strategy for reducing carbon emissions. Lithium batteries are currently a critical part of this transition.

Should you have any questions or want to discuss any of this further, please don’t hesitate to contact me or Mike Clark who may be reached by calling (207) 441-1136 or by email at Michael.S.Clark@maine.gov.

Sincerely,



Mark Stebbins
Field Services Director
Bureau of Land Resources

Cc Mike Clark, Mining Coordinator, DEP
Juliet Browne, Verrill

⁶ United States Geological Survey 2022 List of Critical Minerals. Lithium is included in this list of resources that are essential to the economic or national security of the U.S. and have a supply chain vulnerable to disruption.