

## Mining Action Group

Attn: Upper Peninsula Environmental Coalition  
P. O. Box 673  
Houghton MI 49931



## MAG Public Comments

# Eagle Mine Permit to Install

## *Public Comments on Eagle Mine (No. 50-06D)*

- **DEGLE Air Quality Division - Proposed Edits to [PTI No. 50-06D - New Source Review](#)**
- **DEGLE Air Quality Division - Proposed Edits to [PTI No. 405-08A](#)**

**April 3, 2020**

Dear Mr. Drury, et al.,

We are writing to convey our significant concerns with the proposed air permit for the Eagle Mine (No. 50-06D).

Please find attached the comments of the Mining Action Group of the Upper Peninsula Environmental Coalition, originally submitted during the initial New Source Review (August 2019). We are re-submitting our comments, as we have received no written response, and our concerns are unresolved by the proposed permit.

**The requested Permit to Install (No. 50-06D) should not be approved without a rigorous review of Eagle Mine's Main Vent Air Raise (MVAR), including additional data collection and analysis that should have been required during the New Source Review.** Lacking new data collection, we are concerned that emissions from the Eagle Mine MVAR are seriously underestimated. See our comments on this, for more details.

The MVAR emissions release sulfides and numerous toxic metals to the surrounding environment, including headwaters of the Salmon Trout and Yellow Dog Rivers. Only one stack test was completed, in the fall of 2014 — prior to the mine's full operation. While Eagle Mine self-monitors the opacity of these emissions, the MVAR remains unfiltered, and the real emissions (PM and constituents) are unquantified. The operation's potential to emit has changed significantly since the PTI was issued in 2014, due to the addition of the Eagle East orebody, and extensive new underground development. Modeling is insufficient. We urgently request that a stack test be performed on the Eagle's MVAR, during a period of full operation in both orebodies, in order to accurately capture particulate matter as well as geochemical analysis of emissions.

Additional concerns raised in our comments include a common-sense request for walls surrounding the proposed open-air rock crusher within the Temporary Development Rock Storage Area (TDRSA), to limit fugitive dust from crushing, as the TDRSA has grown into a massive pile of waste rock, much higher than the surrounding terrain. We

also request PM sampling and geochemical air monitoring stations in the surrounding area, especially the adjacent Salmon Trout River headwaters, in order to confirm whether the applicant's early depositional modeling was accurate. Emissions falling onto these sensitive headwaters include metals known to be toxic to aquatic life.

The burden of proof remains on the applicant. The New Source Review was completed based on modeling, without new data. The applicant fails to factually demonstrate that the proposed changes to the Eagle Mine operation will "not pollute, impair, or destroy the air water, or other natural resources or the public trust in those resources" as required under NREPA.

**Please deny Permit to Install (No. 50-06D).**

We appreciate your consideration.

A handwritten signature in black ink that reads "K. Heideman". The signature is written in a cursive style and ends with a long, horizontal flourish.

Submitted by Kathleen Heideman on behalf of –  
Mining Action Group of the Upper Peninsula Environmental Coalition  
Superior Watershed Partnership  
Cedar Tree Institute  
Interfaith Great Lakes Water Stewards  
Yellow Dog Watershed Preserve

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## Interest in Application

The Mining Action Group (MAG) of the Upper Peninsula Environmental Coalition (UPEC), previously known as Save the Wild U.P., is a 100% volunteer grassroots effort to defend the clean water and wild places of Michigan's Upper Peninsula from the dangers of sulfide mining. As environmental stakeholders, we participate in a broad citizen-led effort to raise awareness about the dangers of sulfide mining.

The Upper Peninsula is witnessing a resurgence in mining and mineral exploration which threatens watersheds of both Lake Michigan and Lake Superior basins, and the treaty-protected natural and cultural resources of federally-recognized tribal nations. Playing off the area's history of economic boom-and-bust cycles, mining companies arrive promising good jobs and pledging concern for the environment, ignoring the fact that mining and milling bring short-term profits at the expense of long-term contamination.

The Eagle Mine project perfectly illustrates the problem of permitting-incrementalism, one of the environmental hazards of mining:

- In June 2013 Eagle mine was issued a Part 55 Air Permit to Install (PTI 50-06B) authorizing activities related to the above ground backfill operation, including an aggregate storage building and a cemented

rock fill (CRF) plant with an unloading bay. In 2017 the Eagle East expansion was included under PTI 50-06B with no modifications<sup>1</sup>, even though it meant that the amount of aggregate material processed and transported during the life of the mine would increase substantially.

- In 2013, prior to operation of the mine, Eagle Mine applied for an air emissions permit based on a design that included a baghouse filter on the Main Air Raise Vent (MVAR). After receiving their permit, plans for an MVAR baghouse were dropped. This decision should be revisited if a valid stack test shows that MVAR emissions exceed air quality standards.

#### ➤ **DEGLE Air Quality Division - Proposed Edits to PTI No. 50-06B - New Source Review**

Eagle Mine is requesting significant changes related to air quality at the mine site. These changes include open-air screening (for backfill) atop their Temporary Development Rock Storage Area (TDRSA), expansion of open air aggregate storage, and increased particulate emissions resulting from the storage, handling, and transport of additional quantities of aggregate and sand. Adding a new aggregate and sand storage area north of the TDRSA will lead to additional fugitive emissions. Emissions would be harder to control in winter due to the inability to use water spray to control fugitive dust. We previously contacted the State of Michigan and the EPA regarding the concerns about the TDRSA (increasing volumes of waste rock due to Eagle East tunneling) and concerns about emissions.

#### ➤ **DEGLE Air Quality Division - Proposed Edits to PTI No. 405-08A**

The applicant is also requesting to modify a special permit condition that limits the number of ore trucks hauling between Eagle Mine and Humboldt Mill. Increased truck traffic on certain days — to make up for reduced-traffic days — has the potential to increase levels of particulate matter to unsafe levels. Furthermore, it is unclear whether this permit condition (limited number of ore trucks) is currently being enforced, or how truck traffic from the mine is monitored. Anecdotally, 8-10 ore trucks per hour are routinely seen departing the mine site during evening hours, leading to the concern that the “special permit condition” was a paper tiger, left unenforced.

## **Eagle Mine Air Quality and PTI Concerns**

### **New Stack Test Urgently Requested**

It is clear that the sole stack test of the Eagle Mine MVAR was completed prematurely, while the mine was still operating at well below production levels. Eagle Mine’s June 2013 permit includes the following condition:

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<sup>1</sup> [https://www.michigan.gov/documents/deq/deq-oogm-mining-R-Eagle\\_East\\_MPA\\_Amendment\\_556090\\_7.pdf](https://www.michigan.gov/documents/deq/deq-oogm-mining-R-Eagle_East_MPA_Amendment_556090_7.pdf)

**V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. Within 60 days after commencement of ore production, the permittee shall verify the PM, nickel, and copper emission rates from EUMVAR by testing at owner's expense, in accordance with Department requirements. The permittee shall use 40 CFR Part 60, Appendix A, Method 5 or an equivalent method approved by the AQD, to verify the PM emission rate. No less than 45 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. (R 336.1224, R 336.1225, R 336.1331, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804)

According to permit 50-06B, the required stack testing event should have taken place “within 60 days of ore production” to “verify the PM, nickel and copper emission rates from EUMVAR.” **However, the stack testing event took place on September 16, 2014 (Q3), before ore production began.**<sup>2</sup>

According to a front-page Marquette Mining Journal story<sup>3</sup>, Lundin Mining Corp. told local media that “ore production” at Eagle Mine began on September 24, 2014. The story also quotes Lundin officials as stating that “**full production of 2,205 tons daily is expected to be reached by the second quarter of 2015.**” Eagle Mine’s “commercial production” did not commence until late November 2014 (Q4), as widely reported internationally, and confirmed in Lundin’s most recent Technical Report NI 43-101<sup>4</sup>. As stated on page 1-14 of that report,

Construction of the Eagle Mine, an underground nickel and copper mine, commenced in April 2010 and underground development began in September 2011. The Humboldt Mill was refurbished and the Eagle Mine achieved commercial production in November 2014.

A Lundin Mining financial document from 2015<sup>5</sup> clearly shows that production was very low during fall 2014, when the MVAR Stack Test occurred.

During Q3, only 72,000 tonnes of ore were milled; during Q4, that increased to only 126,000 tonnes. A year later, Eagle’s commercial mining production hit 190,000 tonnes in both Q3 and Q4. Lundin’s Operating Statistics show that the grade of nickel during Q3 2014 was only 1.3% and the grade of copper was 1.0%. It was likely even lower during the stack test. By comparison, once ore production had

<sup>2</sup> Derenzo and Associates. November 3, 2014. Stack test report for compliance testing of the Main Vent Air Raise operated at the Eagle Mine, LLC located in Michigamme Township, MI. Stack test report for compliance testing of the Main Ventilation Air Raise operated at the Eagle Mine... [https://drive.google.com/open?id=17uEX3JxoYrBTAGnz-PtR\\_uFxm6oQqrOB](https://drive.google.com/open?id=17uEX3JxoYrBTAGnz-PtR_uFxm6oQqrOB)

<sup>3</sup> Pepin, John. September 24, 2014. Eagle Mine producing ore. Marquette Mining Journal, page 1.

<https://www.miningjournal.net/news/front-page-news/2014/09/eagle-mine-producing-ore/> (Accessed 08-18-2019).

<sup>4</sup> Lundin Mining Corporation – Eagle Mine, Project #2714 Technical Report NI 43-101 – April 26, 2017

<sup>5</sup> Lundin Mining’s Management’s Discussion and Analysis For the year ended December 31, 2015  
<https://www.lundinmining.com/site/assets/files/3752/2015ye.pdf>

commenced commercial operation in Q1 2015, the nickel and copper grades skyrocketed to 4.7% and 3.6% respectively.<sup>6</sup>

## Eagle Mine

The Eagle Mine consists of the Eagle underground mine, located approximately 55 km northwest of Marquette, Michigan, U.S.A. and the Humboldt mill, located 45 km west of Marquette in Champion, Michigan. The mill has a processing capacity of 0.7 mtpa, producing nickel and copper in concentrates. The primary metal is nickel, with copper, cobalt, gold, and platinum-group metals as by-product metals.

### Operating Statistics

	2015					2014				
	Total	Q4	Q3	Q2	Q1	Total	Q4	Q3	Q2	Q1
Ore mined (000s tonnes)	740	190	191	175	184	198	126	72	nil	nil
Ore milled (000s tonnes)	746	183	193	184	186	174	138	36	nil	nil
Grade										
Nickel (%)	4.3	4.3	3.9	4.2	4.7	3.2	3.6	1.3	nil	nil
Copper (%)	3.4	3.4	3.5	3.1	3.6	2.4	2.8	1.0	nil	nil
Recovery										
Nickel (%)	84.2	83.8	85.0	84.4	83.5	78.5	81.8	43.7	nil	nil
Copper (%)	97.0	97.9	97.3	96.4	96.4	93.9	94.9	83.2	nil	nil
Production (contained metal)										
Nickel (tonnes)	27,167	7,074	6,438	6,349	7,306	4,300	4,093	207	nil	nil
Copper (tonnes)	24,331	5,996	6,514	5,403	6,418	3,905	3,606	299	nil	nil
Sales (\$000s)	284,015	50,611	59,981	85,032	88,391	47,280	47,280	nil	nil	nil
Operating earnings / (loss) (\$000s)	128,595	13,676	18,489	40,297	56,133	28,484	28,597	(32)	(43)	(38)
Cash cost (\$ per pound)	2.02	2.06	2.38	2.15	1.45	2.79	2.79	nil	nil	nil

### Operating Earnings

Sales for the year ended December 31, 2015 were \$284.0 million; \$160.5 million from nickel, \$106.4 million from copper, and \$17.1 million from other metals compared to sales of \$47.3 million for 2014.

Operating earnings for the year ended December 31, 2015 of \$128.6 million were \$100.1 million higher than 2014. The increase was due to a full year of operations at Eagle in the current year, compared to only a partial year of operations in the prior year as the **start of commercial production began in November 2014**.

### Production

Nickel production for the year ended December 31, 2015 was 27,167 tonnes compared to 4,300 tonnes in the prior year, while copper production was 24,331 tonnes compared to 3,905 tonnes in the prior year. The increase in both metals was again due to a full year of operations at Eagle in the current year. Production for both metals also exceeded full year guidance primarily due to higher recoveries, with the mill performing above expectations.

According to the mine's 2013 Permit to Install 50-06B, "**permittee SHALL VERIFY THE PM, NICKEL , AND COPPER EMISSIONS FROM EUMVAR** (using Method 5 or equivalent)." The purpose of the stack test is to show compliance with air quality standards **during production**. According to the Stack Test report<sup>7</sup>

<sup>6</sup> Lundin Mining's Management's Discussion and Analysis For the year ended December 31, 2015 <https://www.lundinmining.com/site/assets/files/3752/2015ye.pdf>, p. 19.

<sup>7</sup> Derenzo and Associates. November 3, 2014. Test report for the verification of particulate matter, copper, and nickel emission rates. Appendix B: Process data.

PM, copper, and nickel exhaust gas emission rates (pounds per hour) were calculated for each two-hour test period then converted to pounds per day (PPD) emission rates for comparison to the emission limits specified in PTI No. 50-06B.

But the mine's premature Stack Testing completed in September 2014 failed to accurately quantify MVAR emissions during a full operational scenario. According to the protocol in place<sup>8</sup>, the test was inadequate in multiple ways: duration of stack test, timing of stack test, lowered grade of ore, low quantity of mined materials, and failure to demonstrate waste rock emissions:

**SUBJECT:** Eagle Mine, EUMVAR, Emission Testing, Permit: 50-06B, SRN: N7581

The Department of Environmental Quality (DEQ), Air Quality Division (AQD), has reviewed the protocol for testing EUMVAR at Eagle Mine. EUMVAR is the outlet of the main ventilation system for the mine. The EUMVAR stack will be tested for particulate, nickel and copper emissions. This testing is required by permit 50-06B.

Testing will be performed in accordance with Title 40 of the Code of Federal Regulations, Part 60, Appendix A, Methods 1, 2, 3, 4, 5, and 29, and State of Michigan Part 10 rules. Three 120-minute runs will be performed. One sample will be taken during drilling operations. One sample will be taken during blasting and rock removal. One sample will be taken during rock removal and development. Testing will begin during the drilling prior to the first blast of the day. Testing will be used to develop an emission factor to determine compliance with the pounds per day limits.

All requirements and specifications of the above methods apply; any modifications of the test methods onsite must be approved by the Air Quality Division.

The following process data will be recorded during testing:

- fan amperage and fan percent load will be recorded once during each run
- drilling and blasting times will be recorded during testing
- the production rate, the estimated tonnes of ore and waste removed, will be recorded for the day of testing

Likewise, the stack test took place at a time when the total production rate was uncharacteristically low ("estimated tonnes of ore and waste removed").

**Eagle Mine also failed to report the amount of waste rock produced during testing, as required by DEQ protocol.** According to the DEQ's review of the testing protocol, "the production rate, the estimated tonnes of ore and waste removed, will be recorded for the day of testing". But the stack test report shows only "ore" tonnage under "Process Data"<sup>9</sup>:

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<sup>8</sup> Michigan DEQ. July 30, 2014. Eagle Mine, EUMVAR, Emissions Testing, Permit 50-06B, SRN: N7581. Memo from Tom Gasloli, MI DEQ, to Jennifer Nutini, Eagle Mine.

<sup>9</sup> Derenzo and Associates. November 3, 2014. Test report for the verification of particulate matter, copper, and nickel emission rates. Appendix B: Process data.

Activity	Start	End	Duration	Tonnes	Rock Type
<b>Drill</b>					
	1:30 PM	3:30 PM	2 hrs	296	Ore
<b>Material Handling U/G</b>					
<b>Total</b>				572	Ore
<b>Material Removed to Surface</b>					
<b>Total</b>				736	Ore
<b>Blast</b>					
265 Level	5:00 PM	-	-	445.4	Ore

**Where were the totals for waste rock removed?** Waste rock totals clearly were not included as required by the DEQ.

Given the addition of waste rock in the TDRSA from Eagle East tunneling, additional ore from Eagle East of somewhat different composition than the ore from Eagle, and changing grades of ore within the higher levels of Eagle Mine, additional stack testing should be required. **It is critical that the applicant provide updated, actual PM and TAC data for its PTI application, rather than models based on estimates, or on outdated and inadequate data.**

### Duration of Stack Testing

In order to accurately measure the emission levels actually occurring during current mining operations, new stack testing should be required of greater duration, and better timed/bracketed to capture both the blasting (underground PM production) and the full venting of the MVAR:

<b>Company</b>	Eagle Mine		
<b>Source Designation</b>	MVAR		
<b>Test Date</b>	9/16/2014	9/16/2014	9/16/2014
<b>Test Start Time</b>	11:55	15:00	17:59
<b>Meter/Nozzle Information</b>	MVAR-1	MVAR-2	MVAR-3

Did the original plan for the MVAR stack test inadequately define the time for each stack-test? Each test run of a PM stack test (including stack tests conducted under Method 5) should be generally one to two hours, according to industry experts. **We request that 3 new stack tests of at least 2 hours duration each be conducted, while the mine is conducting normal drilling, blasting, and rock removal and development operations, as specified by the DEQ for the original permit.**

## Continuous Air Quality Monitoring Requested

Modeling of emissions has been essentially unverified, as the mining company has been operating on the basis of one premature and unrepresentative stack-testing event done in September 2014.

- We request continuous air quality monitoring (portable unit or other) for PM, Copper and Nickel. Monitoring points are needed at the mine site (Eagle Rock) and at the nearby Main Vent Air Raise site.
- The nearest monitoring site has been Big Bay, 9.5 miles northeast of mine site (straight-line distance). We request that additional monitoring sites should be set up between Big Bay and the mine.
- **What are Eagle Mine’s data for Nickel, Copper and PM emissions, as required by the 2013 Permit to Install 50-06B?** We believe that the permittee has not verified their operational “PM, NICKEL, AND COPPER EMISSIONS” for the Main Vent Air Raise as required by their 2013 PTI. Now that Eagle East ore will soon be mined, we expect that emissions will be increased— Eagle East ore is higher grade for Nickel and Copper.

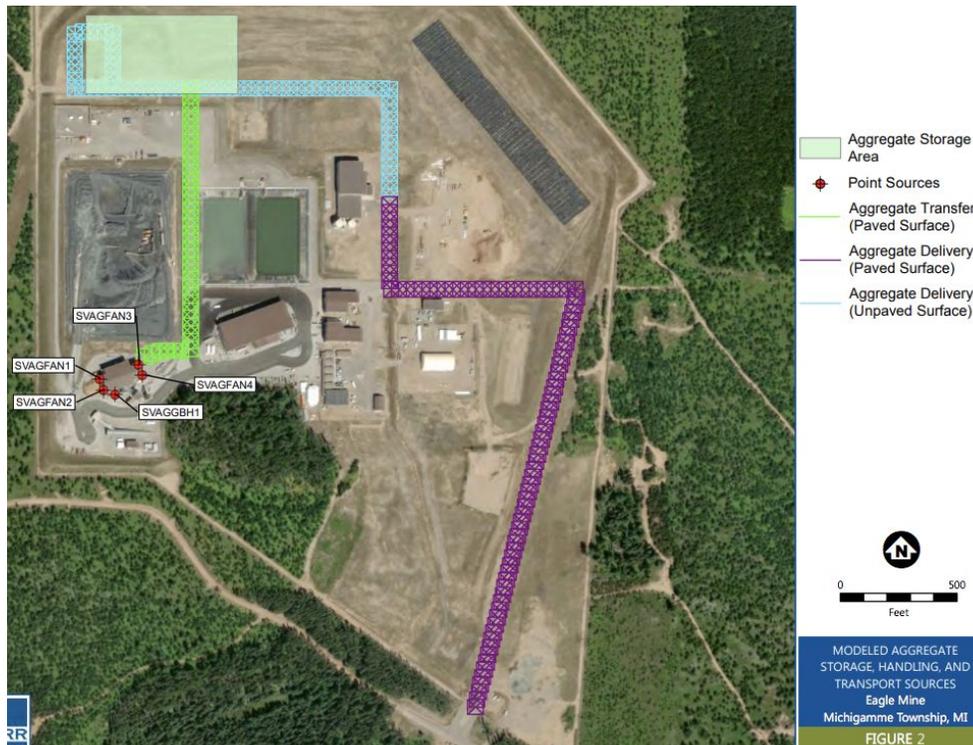
## Presence of Uranium in TDRSA

We request that dosimeter testing be performed to confirm any radiological impacts of rock crushing in the Temporary Development Rock Storage Area (TDRSA).

- Uranium and other heavy metals have been confirmed the [CEMP’s Berry and Plant Tissue Monitoring](#):
  - **“One unexpected metal detected during 2017 sampling events was uranium... (detected in) wintergreen sampled at the mine site (0.0035 mg/kg).**
  - **“Parameters whose measured values (in one or more sampling events) were sufficient to surpass TDI values by ingesting less than one cup of blueberries, raspberries, and/or blackberries per day over a lifetime. Parameters included: antimony, cadmium, chromium, manganese, selenium sulfur, and vanadium.”**
- What is the current concentration of uranium in the development rock? Previous information was based on rock removed prior to the discovery of Eagle East and extensive underground tunneling activities. Additional information is needed to confirm the geochemistry of the waste rock and other characteristics including uranium concentration, moisture content and porosity.

## New Point Sources

In the applicant’s discussion of *point sources (Aggregate Storage Area)*, we believe the TDRSA should also be re-reviewed as a point source, due to the greatly increased quantity of material stored in the TDRSA, concerns about the inadequately geochemical analysis of this material, and the potential for uncontrolled emissions from TDRSA crushing and screening. New analysis of the waste rock should explicitly examine the potential for TAC emissions and the potential presence of uranium. Open-air crushing would release these contaminants.



## TDRSA - Geochemistry of Development Rock

We are concerned that the geochemistry of development (waste) rock in the TDRSA is inadequately understood. The applicant’s assumption has been that if the Eagle East rock is not substantially different from the Eagle Mine rock, then the Temporary Development Rock Storage Area (TDRSA) would be able to accept development rock from Eagle East. “To test their assumption, **four discrete locations in the vicinity of the proposed ramp were selected; from those four locations twenty samples were submitted for static geochemical testing (...)** This analysis indicates that the Eagle East development rock falls within the empirical distribution of values observed from country rock during the Eagle Mine development phase.<sup>10</sup>

We are concerned that the TDRSA now contains hundreds of tonnes of waste rock which is poised to be crushed and screened in the open air — waste rock material from miles of tunnels that descend through two thousand vertical feet of complex volcanogenic terrain — and yet the geochemistry of all this waste rock was limited to TWENTY rock samples from FOUR holes in the “vicinity” of the proposed ramp.

*“Eagle Mine is developing Ni-Cu ores of the Eagle project, a magmatic sulfide deposit hosted in ultramafic intrusive body. The ultramafic igneous rock intruded into pre-existing, Precambrian sedimentary rocks called sandstones and siltstone. In standard geological nomenclature, one can distinguish two general rock types, intrusives and “country rock”, the pre-existing rocks into which the peridotite intruded. In the course of developing the main Eagle intrusive ore zones and advanced exploration activities, **Eagle identified potentially economic zones of mineralization***

<sup>10</sup>Mining Permit Application Amendment Eagle East Volume I, 4.3 “Geochemical Characterization”

**along the underground access to Eagle, in an extension of the mineralization called East Eagle. In the East Eagle zone, the country rock is overwhelmingly siltstone.**

Country rock at Eagle and East Eagle contains low but discernible concentrations of pyrrhotite ( $Fe(1-x)S$ ) and also the iron disulfide, pyrite ( $FeS_2$ ). If exposed to atmospheric oxygen and fluxes of water, these iron sulfides can oxidize and dissolve, releasing sulfate and metals into solution and generating acidity. Unless there is adequate, available neutralization potential in the rocks, the net effluent from surficial weathering could become acidic. Under low-pH conditions, most metals (e.g., Fe, Cu and Ni) are soluble, and so subject to leaching and transport as dissolved species. Thus, the acidity generated by oxidation of primary sulfides also may leach metals and metalloids from mineral sources.

The Eagle and East Eagle projects are being developed as an underground mine. To reach the ore zones of the main ore body, Eagle advanced a tunnel from the surface at East Eagle toward the ore zones. The predominant rock type along the access route to the Eagle zone, and in the East Eagle mineralized zone, is siltstone, identified in the original characterization studies as being located in the footwall section of the country rock. The siltstone country rock removed along the route of the tunnel is called "development rock" to recognize that it is not ore, but rather the economically unmineralized rock that must be developed to reach the ore. In its operations to date, **Eagle has placed the development rock, which has to be removed for access tunnels prior to any mining of ore, on a permitted, engineered pad called the Temporary Development Rock Storage Area (TDRSA) to allow active physical control and water management during operations and into closure. This process is proposed for the East Eagle expansion, also. Development rock stored at the surface will be returned to the underground workings to backfill mined voids, basically in the inverse sequence of its mining."**

**The time for geochemical estimation has passed; Eagle East access tunnels have been completed. We ask that thorough geochemical characterization be completed using 100 representative core-samples gathered from a net grid of points throughout the TDRSA.**

Rio Tinto Eagle Mine LLC (N7581)  
Permit No. 50-06B

June 28, 2013  
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**The following conditions apply to: EUCOSA**

**DESCRIPTION:** The Coarse Ore Storage Area (COSA) is an enclosed building with short-term capacity to store production ore. Trucks from underground unload through plastic curtains in a partially enclosed unloading bay on the south side of the building. Road trucks are loaded by a front end loader on the north side of the building, with the building doors closed during truck loading. The COSA contains a mobile rockbreaker.

**Flexible Group ID:** NA

**POLLUTION CONTROL EQUIPMENT:** Plastic curtains and partially enclosed unloading bay and enclosed storage building and truck loading.

**I. EMISSION LIMITS**

1. Visible emissions from EUCOSA shall not exceed a six-minute average of 5 percent opacity. (R 336.1301, R 336.1331)

**II. MATERIAL LIMITS**

NA

According to the application, no “additional rock crushing” will be done in the TDRSA. But TDRSA rock crushing (“campaign crushing”) is a permitted activity, according to the Eagle East Mining Permit Amendment<sup>11</sup>:

*“Run of mine (ROM) waste rock is hauled to the TDRSA and dumped by underground haul vehicles into the lowest open elevation. A dozer is used periodically to level the ROM rock as needed and evenly distribute it over the working floor of the TDRSA. At the first available opportunity and at any point within the year, ROM rock is excavated from higher elevations within the TDRSA and used as fill in secondary stopes. ROM rock that is not used throughout the winter months as secondary stope fill is scheduled to be crushed to a size of under three inches during the summer months.*

***Eagle subcontracts a local firm to place a portable crushing unit in the TDRSA during the warm season and campaign crush based on the succeeding 12 months requirement for CRF, taking into account storage constraints of the TDRSA. The engineer of record for the TDRSA conducted slope stability analysis for storage of crushed development rock on the TDRSA, in order to determine the stockpile geometry that would be both safe and not cause shear failure within the TDRSA liner system. Eagle manages the crushed rock within the design parameters for the crushed rock stockpile (2 horizontal [H]:1 vertical [V] or 1.75H:1V if a buttress is used). This is accomplished by using a telestacker that will not place material above a specified height.”***

## Source of Waste Rock, Height of Waste Rock

In a Sept. 13, 2016 letter from the EPA to Save the Wild U.P. (now merged with the Upper Peninsula Environmental Coalition), on behalf of Administrator Gina McCarthy and Acting Region 5 Administrator Robert Kapblan, Tinka Hyde stated “We understand that all of the debris from tunnel construction will be deposited in the cavity of Eagle Mine and will not be brought to the surface.” By “debris”, Ms. Hyde meant **waste rock**.

Eagle Mine clearly told the EPA and the State of Michigan that **all waste rock** removed during the construction of the Eagle East access ramps would “stay underground” and be placed in the Eagle Mine cavity as backfill for secondary stope voids.

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<sup>11</sup> [https://www.michigan.gov/documents/deq/deq-oogm-mining-R-Eagle\\_East\\_MPA\\_Amendment\\_556090\\_7.pdf](https://www.michigan.gov/documents/deq/deq-oogm-mining-R-Eagle_East_MPA_Amendment_556090_7.pdf)

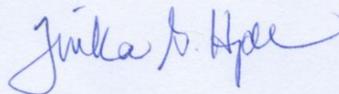
Discharge to surface waters due to the expansion of the tunnel are not proposed or predicted. We understand that all of the debris from tunnel construction will be deposited in the cavity of the Eagle Mine, and will not be brought to the surface. If any surface impacts are anticipated or proposed due to the construction of the access ramp, we expect that the MDEQ will evaluate those impacts regarding the need for an NPDES permit or a wetlands permit. MDEQ has informed us that the company did not request authorizations for NPDES permit coverage nor have any proposals been made for discharge of dredged fill or material into a water of the United States related to this project.

Ms. Hyde's assertion that "all debris from tunnel construction will be deposited in the cavity of the Eagle Mine and will not be brought to the surface" appears, in hindsight, to be false. The amount of waste rock stored in the open air TDRSA is now at an all-time high, and an unknown quantity of this waste rock obviously came from Eagle East access tunnel development.

Michigan is also authorized to implement the air permitting program as the permitting authority under the Clean Air Act and its state rules. It is our understanding that the construction of the access ramp does not involve any new air pollution emitting sources. It is also our understanding that there is no change to the method of operation, and there will not be any new ventilation stacks. If these circumstances change, or if the actions are beyond the scope of the currently issued air permits, we would expect the company to apply for new authorizations to MDEQ's air permits program.

Please be assured that EPA shares your concern about the importance of protecting the environment of the people living in the Upper Peninsula. If you wish to further discuss any of these issues after reviewing this letter, please contact Wilonda Quinn at (312) 886-0956 or at [quinn.wilonda@epa.gov](mailto:quinn.wilonda@epa.gov).

Sincerely,



Tinka G. Hyde  
Director, Water Division



*Photographs showing the growing height of waste rock in the TDRSA facility, by Chauncey J. Moran.*

In the first image, only a tiny portion of the TDRSA was used for waste rock storage. In the newest image, Spring 2019, the TDRSA is covered by an enormous quantity of waste rock, higher than the berm fence-line and the adjacent landmark and sacred site, Eagle Rock.

**We ask that the TDRSA waste rock be independently analyzed before proceeding. The geochemistry of all waste rock should be verified against the predicted modeling, prior to any consideration of changes to the mine's Clean Air Act permit.**

## **TDRSA - Capacity Concerns**

According to Figure 5-1 of "Mining Permit Application Amendment, Eagle East, Volume I" (March 2017) the TDRSA is not yet at full load....the peak load will come soon, however: the TDRSA will contain more than 300,000 tons of waste rock in April 2020.

## **TDRSA - Enclosure Requested**

The waste rock stockpiled on the TDRSA is now higher than the earthen berms surrounding the mine site. **We further request that the TDRSA be partially enclosed: applicant should be required to build concrete wind barriers higher than the TDRSA stockpiles, ensuring that all waste rock is safely “enclosed within at least a 3-sided structure” with walls on the west, north and east that are higher than the stockpiled material.**

## **TAC Emissions - Rule 226**

*“Rule 225(1) requires new or modified sources of TAC emissions to demonstrate that the ambient impact of each emitted TAC is less than its corresponding initial threshold screening level (ITSL), initial risk screening level (IRSL), or both, if applicable. Pursuant to Rule 226(a), the health-based screening level requirement does not apply to emissions of a TAC that meet both of the following:*

- *The emission rate is less than 10 pounds per month and 0.14 pounds per hour.*
- *The TAC is not a carcinogen or a high concern TAC listed in Table 20 of the Michigan Air Rules.*

*Potential TAC emissions associated with the aggregate storage, handling, and transport operations, and screening plant, are summarized in Attachment C. **As shown in the attachment, 9 of the 16 potentially emitted TACs meet the Rule 226(a) conditions and are not subject to the screening level requirement.** For the remaining seven TACs, compliance with the screening level requirement may be demonstrated by following the Rule 227(1)(a) allowable emission rate analysis methodology, whereby an allowable emission rate is estimated on a per-TAC basis, based on the TAC-specific screening level and averaging period associated with that TAC. If the potential to emit of a TAC emitted from the affected emission units using the Rule 227(1)(a) methodology is less than the allowable emission rate, then the source is in compliance with the screening level requirement of Rule 225 for that TAC.”<sup>12</sup>*

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<sup>12</sup> Permit to Install application, p. 7-8.

We are concerned that all TAC emission rates are estimated – based on a single long-ago stack test, which was conducted prior to the full operation of Eagle Mine. The applicant’s optimistic modeling must be verified by real data.

## TAC Emissions - Cobalt

*“Potential TAC emissions from the aggregate storage, handling, and transport operations, and the screening plant, have been entered into the AQD-developed table, which is included in Table 6, Attachment E. As shown in the table, all but one (cobalt) of the TACs potentially emitted from the aggregate storage, handling, and transport operations, and the screening plant, complies with the health-based screening level requirement through the allowable emission rate methodology. Utilizing AERMOD, modeling of potential cobalt emissions associated with the proposed operations was conducted over one year of meteorology (2017 Sawyer/Green Bay). The current AQD-published initial threshold screening level (ITSL) for cobalt is 0.2 µg/m<sup>3</sup> (8-hour average). However, the AQD is expected to soon issue a more restrictive cobalt initial risk screening level (IRSL) of 0.00031 µg/m<sup>3</sup>. Though the IRSL has not yet been officially published, the modeling demonstration focused on the more restrictive health-based screening level. The maximum AERMOD-predicted annual average cobalt concentration of 0.0001 µg/m<sup>3</sup> is less than the soon-to-be published IRSL. Therefore, as demonstrated through the Rule 226(a) screen, Rule 227(1)(a) table analysis, and AERMOD simulation, the proposed changes to the Eagle Mine comply with the health-based screening level requirement of Michigan’s air toxics rules.”*

Cobalt compounds are listed as Federal hazardous air pollutants and in Section 8(d) of the Toxic Substances Control Act (TSCA). The American Conference of Governmental Industrial Hygienists (ACGIH) has established a concentration of 0.05 mg Co/m<sup>3</sup> for cobalt metal dust and fume as the eight hour time-weighted average (TWA) threshold limit value (TLV); the Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit (PEL) of 0.1 mg Co/m<sup>3</sup> for cobalt metal dust and fume as the TWA for general industry, the shipyard industry, and the construction industry; and the National Institute of Occupational Safety and Health (NIOSH) has recommended an exposure limit of 0.05 mg/m<sup>3</sup> as cobalt for the metal, dust, and fumes as the ten-hour TWA.<sup>13</sup>

We ask that total cobalt emissions are reconsidered, in terms of cumulative air impacts from Eagle Mine, Eagle East, the MVAR, etc.:

- Are Eagle Mine’s Proposed Cobalt Emissions based on accurate, updated, cumulative emissions from all sources (Ore, Native Soil, Tailings, Mine Vent Emissions from Underground Source)?
- Are the proposed PM, PM10, PM2.5 emissions based on MODELING or on-site DATA?
- Is real data from the mine site used – or is the potential to emit reliant on modeling?
- Aren’t the Eagle East assays for Cobalt significantly higher, suggesting Cobalt emissions will be a greater concern?

## Stack Test (MVAR) Performed Prior to Full Operations at Eagle Mine

From personal correspondence (Nov. 13, 2014):

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<sup>13</sup> Haneke, K. E. 2002. Cobalt dust. [7440-48-4] Review of Toxicological Literature. [https://ntp.niehs.nih.gov/ntp/htdocs/chem\\_background/exsumpdf/cobaltdust\\_508.pdf](https://ntp.niehs.nih.gov/ntp/htdocs/chem_background/exsumpdf/cobaltdust_508.pdf)

*“There were three Eagle MVAR tests on 9-16 (2014), w/staggered start times and durations. Each test lasted roughly 2 hours. MDEQ-AQD approved their testing plan in advance. Eagle's 24-hour emissions (page 8) are being guesstimated based on the data collected during three tests totaling 6 hours. **No test ran for 24 hours straight, as I'd expected.** Is that adequate?”*

*According to page 19, Eagle's afternoon blast took place at 5pm (444.5 Tonnes of Ore). On page 13, it states the afternoon blast took place at “~17:00.” Does “~” mean approximately, and if so, how approximate?*

*According to page 20, the MVAR1 test concluded at 14:10, and MVAR 2 test concluded at 17:11. No data was collected until MVAR3 test started at 17:59. I was hoping to see emissions data for a solid hour before, and following a blast. I'd expect that “after” data set should not end within 10 minutes of the event. I would expect vented emissions to be highest for perhaps a half-hour following a blast. Do the timings of their tests raise seem best-practice? If I were a cynical person, I'd worry whether the gap between test 2 and 3 allowed Eagle to vent their heaviest emissions without measurement...*

The original stack tests of the MVAR at Eagle Mine were of short duration, and they were timed in such a way that we believe dust from the day's second blasting event had already been exhausted (or significantly water-suppressed) prior to Test 3. The blasting event, due to the premature date of the stack test, did not capture a full-operation blasting event. We note, too, that industry experts recommend much longer duration stack tests be conducted for accurate capture of PM emissions.

## Fugitive Dust - Track Out

The PTI omits discussion of TRACK OUT. Fugitive emissions from industrial haul road “track out” are taking place outside the mine site. This includes track-out spread onto the pavement of the Triple A highway from the gate of Eagle Mine, from an unpaved parking area across the road from Eagle Mine where semi-trucks frequently park, from activity in the Eagle East area on unpaved roads adjacent to the mine site, and from the nearby VanDamme ore truck maintenance facility. The VanDamme site is run by the mine's trucking contractor – a separate facility on nearby private forest land, down the road from the Eagle Mine. This facility is a cautionary tale: it effectively expands the industrial footprint of the mine by several miles, creating a trail of light pollution, noise pollution, transportation emissions, and related air pollution, with track out routinely spread on the paved highway between the truck facility and the mine.

Eagle Mine's “track out” is an uncalculated fugitive emission source. Track out poses a risk to public safety and public health. We see no evidence of water misting, road-cleaning or dust suppression. According to the AQD's “Managing Fugitive Dust: A Guide for Compliance with the Air Regulatory Requirements for Particulate Matter Generation”<sup>14</sup>, the **proper management of track out must not be limited to the fenceline of an industrial property**. In the case of the Breckenridge Sand Mine, an example cited by AQD, the facility includes “a sweeper (vehicle) which regularly cleans track out from the apron and paved area of the north access road. This sweeper also travels onto Poplar Road and cleans portions of that road which may be subject to track out. The sweeper operates at these locations every time it rains.”

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<sup>14</sup> “Managing Fugitive Dust - State of Michigan.”

[https://www.michigan.gov/documents/deq/deq-ead-caap-genpub-FugDustMan\\_313656\\_7.pdf](https://www.michigan.gov/documents/deq/deq-ead-caap-genpub-FugDustMan_313656_7.pdf). Accessed 22 Jul. 2019.

Track out fugitive emissions and track out management plan should be a required component of Eagle Mine's modified Air PTI.

## Previously Raised Concerns that Remain Unresolved

The following concerns relating to the expansion of the Eagle Mine to include "Eagle East" are pertinent to the new proposed PTI, and the fact that the air emissions data currently being relied upon do not include Eagle East. Please refer to our Previous Comments to EPA and MDEQ (August 2016) concerning unregulated activity at Eagle Mine, pertaining to the Eagle East orebody and Air Quality: [Eagle East - Regulatory Failure](#).

## New Mining Activities Change the Potential to Emit

Eagle Mine's original mining permit application (Volume I) detailed the "Volumes and types of development rock to be excavated" as well as the "Volumes and types of development rock or tailings to be temporarily stored on the surface." These calculations were strictly limited to the waste rock and minerals encountered in the Eagle orebody or "the Eagle deposit ore zone", described under "3.1 Eagle Deposit General Lithology" as follows: "The Eagle deposit ore zone is composed of two semi-massive (SMS) and one massive sulphide (MS) bodies, hosted in a peridotite intrusive as illustrated on Figures A1 to A12 in Appendix A." None of these calculations or figures include the new "Eagle East" orebody. None of the facility diagrams show plans for an "Eagle East access ramp" or any tunnel descending beyond the bottom stopes of the Eagle orebody.

Calculations in Eagle Mine's original mine permit show that construction of Eagle Mine's existing access ramp (4 km long, to the base of the Eagle orebody) produced 320,000 metric tons (tonnes) of waste rock ("development rock") in the first two years.<sup>15</sup> Eagle Mine's permit calculated that a total of 675,000 tonnes of waste rock would be produced during Eagle Mine's life, and the excess waste rock (not needed for backfilling) stored in the TDRSA for seven years. Extrapolating, it is clear that construction of the new unpermitted Eagle East access ramp (8 km long) will produce approximately 640,000 tonnes of waste rock ("development rock") during three years of construction – approximately 213,000 tonnes of waste rock each year.

**Eagle Mine's original mining permit did not include adequate geological information related to the Eagle East orebody and development tunnels.** The "Surficial Geology" report for Eagle Mine, also completed by Golder Associates, defined a study area in which surface sampling and geochemical analysis was conducted in order to determine soil pH, concentration of heavy metals and other contaminants of concern, including aluminum, arsenic, barium, chromium, cobalt, iron, mercury, lithium, manganese, selenium, zinc and others.<sup>16</sup> Eagle Mine's Surficial Geology report failed to include the Eagle East site. Similarly, the Company's Mine Permit application (Appendix C, "Geologic and Geotechnical Reports for the Eagle Project") mentions the "East Eagle" target (now called "Eagle East"

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<sup>15</sup> Eagle Mine permit, Table 4-4, "Annual Development Rock Balance - Tonnes"

<sup>16</sup> Baseline Environmental Study for Eagle Mine, "Surficial Geology" report by Golder Associates.

orebody) only four times. Kennecott identified it as follows: "The eastern intrusion forms a prominent outcropping that rises above the Yellow Dog Plains..." (Eagle Rock). In fact, Lundin's "Eagle East deposit" was found outside the Eagle Mine property boundary, further east, at a depth of 3,000 feet.

- **GEOCHEMICAL ANALYSIS DATA FOR NEW OREBODY, HOST ROCK** — Eagle Mine staff have asserted that Eagle East geology is "identical to that of the nearby Eagle orebody," and that waste rock or "development rock" removed during construction of the "Eagle East access ramp" will be identical to waste rock that was removed during the construction of the existing "access ramp" to the Eagle orebody. This assertion is false, according to a technical report from Lundin Mining:
  - "One of the last deep holes to basement was drilled on the east end of Eagle East. **Significant differences were noted.** The basement in this area consists of a partial re-melt of Archean basement granites and gneiss in a mafic to ultramafic fine grained host. Alteration in the basement in this area consists of a magnetite/hematite overprint with trace fine disseminated chalcopyrite."<sup>17</sup>
  - While the deposits are closely situated, Eagle Mine's head geologist also stated in a recent article that the orebodies were created by different volcanogenic events: "Eagle and the new Eagle East zone are **hosted by separate** 1Ga Midcontinent Rift-related **ultramafic intrusions.**" As a result, the orebodies are geochemically different.
  - Lundin's Eagle orebody is described as containing "3.5% Ni, 2.9% Cu, 1.5 g/t PGE + Au" while the new Eagle East deposit is described as containing "5.23% Ni, 8.74% Cu" as well as "9.49 g/T combined Pt-Pd-Au" and therefore of significantly "higher grade" than Eagle.<sup>18</sup> While higher grade mineralization is profitable, it is associated with massive sulfides (MSU) and increased contaminants of environmental concern. "Semi-massive sulphides continued to be intersected for over a 250 meter strike length to where thicker SMSU and high-grade MSU were encountered."<sup>19</sup>
- **GEOCHEMICAL ANALYSIS OF WASTE ROCK AND PARTICULATE MATTER IN AIR EMISSIONS** — Under Part 632, mining activities require "(iv) A description of the geochemistry of the ore, waste rock, overburden, peripheral rock, and tailings, including characterization of leachability and reactivity."<sup>20</sup>
  - **GEOCHEMICAL ANALYSIS DATA** — Where is the geochemical analysis of the approximately 640,000 tonnes of waste rock that will be produced by new mining activity? According to Eagle Mine's Part 632 permit, "development rock" was determined to contain heavy metals, uranium, and numerous other contaminants of concern. Thorough equivalent geochemical analysis is required for the new waste rock, host rock, and "Eagle East" orebody, since waste rock will be stored at the surface (fugitive dust, contact water, air emissions of particulate matter from MVAR, etc).
  - **GEOCHEMICAL ANALYSIS AT DEPTH** – We are concerned that geochemical data included in Eagle Mine's original mining permit application was limited to the depth and

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<sup>17</sup> "NI 43-101 Technical Report on the Eagle Mine located in Upper Peninsula of Michigan, USA" prepared for Lundin Mining in 2013 by Wardell Armstrong. Note: file name was updated in 2015 but it is unclear whether the technical report was actually revised. See: [Eagle-Mine-Technical-Report-2015.pdf](#)

<sup>18</sup> "The high grade mineralization from Eagle East will be blended with the lower grade from Eagle significantly increasing nickel and copper production and extending the mine life."

<sup>19</sup> Robert A. Mahin and Steven T. Beach, 2016, "The Eagle East Magmatic Nickel-Copper Discovery." 62nd Institute on Lake Superior Geology Proceedings v. 62, Part 1-Program and Abstracts, p. 91.

<sup>20</sup> Part 632, Sec. 63205, [https://www.michigan.gov/documents/deq/DEQ-OGS-metallic-mining-Part632\\_308856\\_7.pdf](https://www.michigan.gov/documents/deq/DEQ-OGS-metallic-mining-Part632_308856_7.pdf)

location of the Eagle orebody. The rock that must be tunneled through to reach Eagle East orebody is located another 2,000 feet below the Eagle orebody. What is the composition of this rock, and how will it affect and impact Eagle Mine's existing air and water treatment processes and ultimately, the surrounding environment?

- **WASTE ROCK CONCERNS — Construction of the new access ramp will dramatically (94.8% increase by our calculations) the total amount of “waste rock” or “development rock” produced during the life of the Eagle Mine facility.**
  - According to Eagle Mine's permit, the TDRSA capacity (weight of rock, maximum height of storage pile), and the strength of the TDRSA membrane liner was described as “sufficient” given the “short life of mine.” Has this been reconsidered in light of the two-fold increase in waste rock? Has the capacity of the TDRSA been recalculated?
  - According to the Mine Permit, **“If additional volume is required the final surface slopes can be steepened without compromising the stability of the facility.** The capacity of the TDRSA is the volume derived from the difference between the base grades, Figure 5-1, and the final grades, Figure 5-2.” **We are concerned about the current (extremely steep) slope of the TDRSA.**
  - **What is the maximum capacity, in tonnes? What is the maximum height of the TDRSA?** The addition of Eagle East waste rock at the TDRSA will nearly double<sup>21</sup> the facility's use.
  - How will the increase in fugitive dust at the TDRSA facility impact Eagle Mine's total emissions under the Clean Air Act? **What is the current status of the “TDRSA covering plan approved under Part 632” which is listed in the Permit to Install as a control measure for fugitive dust emissions?** There does NOT appear to be a cover, or a plan for a cover. Is a cover currently in place? Will a TDRSA cover be used to control emissions related to waste rock produced during the three years of Eagle East access ramp construction?
- **NEW AIR POLLUTION EMISSIONS —** The 3-year construction phase of the Eagle East access ramp will cause a dramatic increase in emissions from the mine's Main Vent Air Raise (MVAR), a 65-foot-tall stack constructed within 150 feet of the Salmon Trout River. MVAR emissions include particulate matter from underground rock blasting, fugitive dust emissions from the transportation of waste rock to Eagle Mine's TDRSA, VOCs and exhaust emissions from increased vehicle use both underground and at the surface, contaminants linked to the increased use of explosives, additional quantities of heavy metals and sulfides, etc.
  - **EMISSION LIMITS —** How will the new pollution be regulated in accordance with the Clean Air Act? Eagle Mine's air quality permit includes the following emission limits: Particulate Matter (PM) at 232 pounds per 24 hour day; Nickel at 0.21 pounds per 24 hour day; Copper at 0.18 pounds per 24 hour day. How is compliance with current limits verified? Is air monitoring equipment in the area capable of monitoring copper and nickel emissions, or only PM? Eagle Mine's current air quality permit does not include calculations for additional emissions related to Eagle East access ramp development.
  - **AIRBORNE DEPOSITION OF POLLUTION —** In 2013, Eagle Mine requested and received permission to remove planned process controls (a baghouse air filtration system) from mine's Main Vent Air Raise. **Air pollution dispersal maps** shown during a 2013 hearing illustrated Eagle Mine's MVAR-related air quality impacts, and the range airborne

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<sup>21</sup> Usage of TDRSA would increase from 675,000 tonnes of waste rock (total over life of Eagle Mine) to approximately 1,315,000 tonnes, if Eagle East waste rock is added. Environmental impacts should be expected to double as well.

deposition. Airborne-pollution dispersal maps need to be updated to include significant increases due to Eagle East emissions; the permit should be revised in accordance with the Clean Air Act.

- **VENTILATION OF EMISSIONS** — Eagle Mine staff claim that the MVAR will be able to accommodate ventilation needs during construction of the new Eagle East access ramp. What data supports the Company's claim that the existing stack can safely handle mine emissions from workings located > 2 miles from the vent stack?
- In 2014, before mining was in full production, Eagle Mine conducted a single "stack test" to confirm their modeling of airborne particulate emissions. Tests looked at particulate matter; *geochemical analysis of the emissions was not conducted*, and no additional stack tests have been undertaken to analyze the *geochemical content* of Eagle Mine's emissions. Will a new "stack test" be required? Since Eagle East construction will dramatically increase the production of waste rock through blasting, a new "stack test" should be undertaken, with additional localized sampling for particulate matter, and a complete analysis of the existing and proposed emissions. Since there is no air filter on the MVAR stack, geochemical analysis of Eagle's airborne emissions must be required, and the results published.
- **MINE SAFETY AND CONTINGENCY PLANNING** — The Permit to Install includes a contingency plan addressing mine ventilation, the safety of underground mine workings, fire, escape routes, etc. How has the contingency plan been revised to reflect the additional construction of 8 km (5 miles) of underground tunnels? Will an additional fresh air supply (currently the Mine Portal) be required? Will an additional emergency escape route (currently at the MVAR site, approximately 1.5 miles from the Eagle East orebody) be constructed? Will an additional MVAR need to be constructed to ensure safe ventilation?
- **FINANCIAL ASSURANCES** — In light of unregulated new mining activities – including **5 miles of additional underground tunneling at depths not previously explored, without an approved design, without modeling concerning geological stability, and with significant increases (94.8%) in total waste rock production**, with corresponding increases in hauling and storage of waste rock, uncertain environmental impacts, increased mine life, heightened risks to mine worker health and safety and other risks), Financial Assurances for this project must be substantially increased.

These and many other serious questions must be addressed in accordance with federal and state law. The nature of the unregulated mining activity taking place at Eagle Mine is especially critical, since nonferrous metallic mineral mining involves the development of orebodies with extremely high (massive and semi-massive) sulfide content; the ore and waste rock are reactive, creating acid rock drainage (ARD) if exposed to air and water, with devastating environmental consequences.

## REQUESTED RELIEF

We request that the DEGLE and the U.S. Environmental Protection Agency (EPA) undertake a formal permitting process related to these permit requests, ensuring public participation and input from environmental stakeholders, upholding environmental safeguards as intended by state and federal law, and ensuring protections for clean air, clean water and treaty-protected natural resources as required by Michigan's delegated authority, state law and federal trust responsibilities. We request that the EPA

provide appropriate oversight to ensure compliance with the Clean Air Act, and all other applicable federal laws.

Michigan's Part 632 states, "(b) An environmental impact assessment for the proposed mining operation that describes the natural and human-made features, including, but not limited to, flora, fauna, hydrology, geology, and geochemistry, and baseline conditions in the proposed mining area and the affected area that may be impacted by the mining, and the potential impacts on those features from the proposed mining operation. The environmental impact assessment shall define the affected area and shall address feasible and prudent alternatives. (c) A mining, reclamation, and environmental protection plan for the proposed mining operation, including beneficiation operations, that will reasonably minimize the actual and potential adverse impacts on natural resources, the environment, and public health and safety within the mining area and the affected area." **The baseline data must be collected for two years, in accordance with Part 632, 425.202 Environmental impact assessment,** "(3) For the conditions and features listed in subrule (2)(d), (e), (g), and (gg) of this rule, the required characterization of seasonal or long-term variations in the condition or feature shall be satisfied by a combination of documented observations of pertinent data over a period of at least 2 years at the monitoring site..."<sup>22</sup>

There are inadequate data to determine emissions at this time. The proposed new and modified emissions include impacts from (new) open-air aggregate storage, (increased) TDRSA storage, (increased) TDRSA crushing/screening campaign, (new) development rock from approximately eight miles of additional access tunnels (between Eagle Mine and Eagle East) and (increased) emissions due to the mining of the Eagle East orebody.

Total emission sources have expanded, and we have significant concerns about the geochemical content of the emissions. The addition of Eagle East ore and waste rock were never adequately characterized; the applicant's potential to emit appears to be based on modeling and one premature stack test.

It is urgent that a new stack test be completed, timed carefully to capture blasting events in both orebodies, tunneling development, underground hauling, underground crushing and mucking etc. Due to the expanded activities at two orebodies, blasting events staggered at the sites, and the greater distance between orebodies, we request that stack tests times be expanded to at least 2 hours each, to capture a complete window for each test.

- The previous Stack Test requirement stated that "permittee SHALL VERIFY THE PM, NICKEL , AND COPPER EMISSIONS FROM EUMVAR"
- We request that the applicant now VERIFY all TAC constituents, as well as PM, PM10, and PM2.5.

Additionally, we ask that AQD and EPA independently verify that MVAR and TDRSA "opacity testing" is effective, and review the track-out emissions at the gate of Eagle Mine, and at the nearby Eagle Mine ore truck facility.

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<sup>22</sup> [https://www.michigan.gov/documents/deq/DEQ-OGS-metallic-mining-Part632\\_308856\\_7.pdf](https://www.michigan.gov/documents/deq/DEQ-OGS-metallic-mining-Part632_308856_7.pdf)

We remain concerned that emissions from Eagle Mine’s mining activities will cause significant and unacceptable degradations of clean water, wetlands and air quality.

We ask that the EPA exercise their oversight authority to ensure that Eagle Mine’s Main Vent Air Raise (MVAR) is properly tested, prior to any regulatory action authorizing increased emissions at the facility. We request that geochemical analysis be conducted for all waste rock produced by the new “Eagle East access ramp” development, with re-analysis of the TDRSA’s capacity to safely store additional Eagle East waste rock, and other issues raised by construction of this major underground mine expansion. We request public hearings on the proposed changes.

Because these problematic requests are currently under review by Air Quality Division staff at the Michigan DEGLE, we request your response in writing within 28 days.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Garske". The signature is fluid and cursive, with a large initial "S" and a long, sweeping underline.

Steven Garske

Submitted on behalf of the Mining Action Group of the Upper Peninsula Environmental Coalition