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September 23, 2021

VIA EMAIL

Mr. Mike Simon
Stationary Source Bureau Chief
Air Quality Division
Idaho Department of Environmental Quality
1410 North Hilton
Boise, ID 83706
Email: michael.simon@deq.idaho.gov

**Subject: Facility ID No. 085-00011, Perpetua Resources Idaho, Inc., Stibnite
Permit to Construct Request for Additional Information, Stibnite mine**

Dear Mr. Simon:

On August 27, 2021, the Idaho Department of Environmental Quality Air Quality Division requested additional information from Perpetua Resources, the applicant for Facility ID No. 085-00011 Permit to Construct. Perpetua Resources submits the attached information regarding comments received through the public comment process associated with Permit No. P-2019.0047 Project 62288.

If you have any questions, please contact me.

Sincerely,

Perpetua Resources

Alan D. Haslam
Vice President- Permitting
cc. Darrin Pampaian and Kelli Wetzell - IDEQ



Critical Resources. Responsible Mining. Environmental Restoration.



Comment Topic: Lime Plant Source Status Determination

Commentors correctly pointed out that the lime plant within the Stibnite Gold Project (SGP) facility is a listed source category for New Source Review (NSR). As such, both fugitive and non-fugitive emissions from the lime plant must be counted toward a determination of (NSR) major source status for the lime plant itself with the threshold of 100 tons per year (TPY). Consistent with commentors' observations, fugitive emissions were included in the emission inventory for major source applicability of the lime plant. This inventory, provided in Table 3 of the Idaho Department of Environmental Quality (IDEQ) Statement of Basis (SOB) dated February 18, 2021, shows that total annual emissions (both fugitive and non-fugitive emissions) from the lime plant are well below the NSR major source threshold.

Questions and Answers

Question: What emission units comprise the SGP lime plant listed source category?

Answer: The emission units that comprise the SGP lime plant source category are as follows:

- LS12: Conveyor - Kiln Feed to Parallel Flow Regenerative (PFR) Shaft Lime Kiln, fugitive source
- LK: PFR Shaft Kiln, non-fugitive source
- LCR: Lime Mill Crusher, non-fugitive source
- LS-L: Bucket Elevator - Pebble Lime Silo Loading, non-fugitive source
- LS-U: Pebble Lime Silo discharge to Lime Slaker, non-fugitive source

For a detailed analysis of the NSR, NSPS, and NESHAP definitions of a lime plant, see Perpetua Resources' 4/16/2021 letter to IDEQ.

Question: Are the total annual potential NSR pollutant emissions (fugitive and non-fugitive) from the SGP lime plant below 100 TPY?

Answer: Yes, as shown in Table 3 of the February 18, 2021, SOB, the total annual potential emissions (fugitive and non-fugitive) from the lime plant are below 100 TPY per NSR pollutant:

- 4.60 TPY of total particulates, 4.36 TPY of PM10, 3.75 TPY of PM2.5, 11.79 TPY of CO, 6.29 TPY of NOX, and 0.03 TPY of SO2

Question: Should some portion of mining fugitive emissions be attributed to the SGP lime plant source category?

Answer: No, SGP is a gold mine with a nested lime plant operating within the stationary source. The primary activity of the stationary source is the mining and processing of gold ore. Gold mines are not a listed source category. Emissions from the primary activity, the gold





mining emissions, are not included in the lime plant major source determination, as explained in the United States Environmental Protection Agency's (EPA) March 6, 2003, guidance¹.

Question: Is there a separate limestone (marble) quarry for the SGP lime plant?

Answer: No, the source of marble for the SGP lime plant is overburden excavated from the West End pit.

Question: What percentage of the West End pit overburden will be used as lime plant feed material?

Answer: A small amount of overburden from the West End pit, 0.15percent, will provide the lime plant feed over the life of the mine. As shown in Table 1 of the SOB, the potential throughout rate of limestone (marble) feed to the SGP lime plant is 267 tons per day (TPD) and the potential mining rate of overburden is 180,000 TPD.

Question: If SGP purchases its lime instead of producing it onsite, will the lime plant marble from the West End pit still need to be removed?

Answer: Yes, even if SGP purchases lime from an off-site source, the West End pit overburden must be removed to access the gold ore. The small portion of this overburden that will be used as feed for the lime plant is shown in Figure 1.

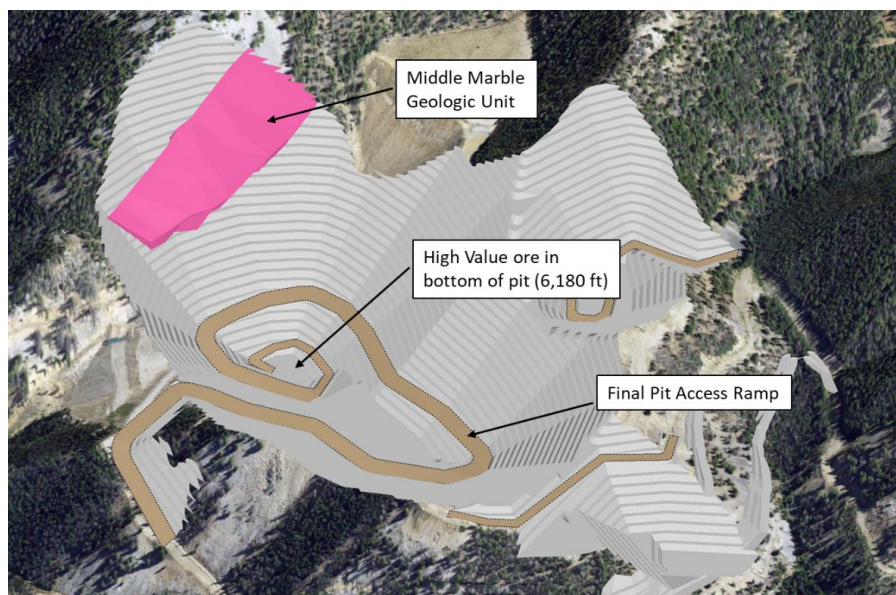


Figure 1. West End Pit Diagram

¹ "A coal mine with an onsite coal cleaning plant with a thermal dryer. The primary activity of the source, in this example, is the mining of coal, and coal mines are not a listed source category. The coal cleaning plant, however, does fall within a listed source category. You include fugitive emissions only from the coal cleaning plant (emphasis added) to determine if the source is a major stationary source" (EPA 2003).





As shown in Figure 1, there is a Middle Marble Geologic Unit (MMGU) in the middle of the north side wall of the West End pit. The marble in this MMGU is of sufficient quality for lime plant feed. The pit side walls can be no steeper than 45 to 47 degrees, so the MMGU must be removed to access the high value gold ore at the final pit depth of 6,180 feet. Therefore, this overburden must be removed even if it were not used for onsite lime production. Figure 1 confirms that the primary activity of the SGP is the mining of gold ore and the use of some overburden in the lime plant is a co-benefit.

Question: If the emissions (fugitive and non-fugitive) from the mining, hauling, and processing of the West End pit overburden used in the lime plant were added to the lime plant emissions, would the total exceed 100 TPY?

Answer: No, as shown in Table 1 below, the total potential emissions (fugitive and non-fugitive) from the lime plant and the additional activities (mining, hauling, processing) are well below 100 TPY.

Table 1. Lime Plant, Marble Processing, and Overburden (Marble) Mining Potential Emissions (TPY)

Source	PM	PM ₁₀	PM _{2.5}	CO	NO _x	VOC	SO ₂
Lime Plant (Listed Source Category Emission Units) [1]							
LS12	0.12	0.05	0.01	-	-	-	-
LS-L	0.02	0.02	0.02	-	-	-	-
LS-U	0.002	0.002	0.002	-	-	-	-
LK	3.40	3.40	3.40	11.79	6.29	-	0.03
LCR	1.06	0.89	0.32	-	-	-	-
Subtotal	4.60	4.36	3.75	11.79	6.29	-	0.03
Marble Processing Equipment (Unlisted Source Category Emission Units) [1]							
LS1	0.48	0.18	0.03	-	-	-	-
LS2	0.86	0.38	0.06	-	-	-	-
LS3	3.97	1.38	0.21	-	-	-	-
LS4	0.86	0.38	0.06	-	-	-	-
LS5	3.97	1.38	0.21	-	-	-	-
LS6	0.48	0.18	0.03	-	-	-	-
LSBM	6.42	5.39	1.92	-	-	-	-
LS7	0.48	0.18	0.03	-	-	-	-
LS8	0.48	0.18	0.03	-	-	-	-
LS9	0.12	0.05	0.01	-	-	-	-
LS10	0.12	0.05	0.01	-	-	-	-
LS11	1.03	0.36	0.06	-	-	-	-





Source	PM	PM ₁₀	PM _{2.5}	CO	NO _x	VOC	SO ₂
Subtotal	19.27	10.09	2.66	-	-	-	-
Marble Overburden Mining (Unlisted Source Category Emission Activities) [2]							
Blasting	0.17	0.09	0.01	0.94	0.03	-	0.00004
Drilling	0.42	0.22	0.01	-	-	-	-
Hauling	4.30	1.06	0.11	-	-	-	-
Material load/unload	0.02	0.01	0.00	-	-	-	-
Dozing	0.15	0.03	0.02	-	-	-	-
Grading	0.05	0.02	0.002	-	-	-	-
Water Truck	0.16	0.04	0.004	-	-	-	-
Access Road	0.01	0.003	0.0003	-	-	-	-
Wind Erosion	0.01	0.004	0.001	-	-	-	-
Surface Exploration	0.002	0.001	0.0001	-	-	-	-
Underground Exploration	0.000003	0.000001	0.0000001	-	-	-	-
Subtotal	5.31	1.47	0.15	0.94	0.03	-	0.00004
Total Potential Emissions	29.18	15.92	6.56	12.73	6.32	-	0.03

Notes:

[1] Potential annual emissions are taken from Table 3 of the SOB.

[2] Potential annual emissions are taken from Table 3 of the SOB and multiplied the percent of overburden used as marble feed (<0.15%) to the SGP lime plant.

Abbreviations:

CO =

NO_x =

PM =

SGP = Stibnite Gold Project

SO₂ =

SOB = Statement of Basis

TPY = tons per year

VOC =

References

United States Environmental Protection Agency, 2003. *Letter from Janet McCabe, Assistant Commissioner, Office of Air Quality, Indiana Department of Environmental Management. (A-18J)*, March 6.

