State of Oregon
Department of
Environmental
Quality

STANDARD AIR CONTAMINANT DISCHARGE PERMIT

REVIEW REPORT

Calico Resources USA Corp
665 Anderson Street
Winnemuca, NV 89445

Source Information:

SIC	1041
NAICS	212220
EPA ICIS-Air ID	

Source Categories (Table 1 Part, Code)	B, 68
Public Notice Category	III

Compliance and Emissions Monitoring Requirements:

FCE	Yes
Compliance schedule	No
Unassigned emissions	No
Emission credits	No
Special Conditions	Yes

Source test	Annual Hg Test
COMS	No
CEMS	Hg sorbent trap
PEMS	No
Ambient monitoring	No

Reporting Requirements:

Annual report (due date)	February 15
Semiannual report (due date)	No
Quarterly report (due dates)	No

Monthly report (due dates)	No
Excess emissions report	Yes
Other (specify)	

Air Programs:

Synthetic Minor (SM)	No
NSPS (list subparts)	A, LL, IIII
NESHAP (list subparts)	A, ZZZZ, CCCCCC, EEEEEEE
CAO	Yes

NSR (by pollutant)	No
PSD (by pollutant)	No
Type B State NSR	PM, PM_{10}
GHG	Yes
RACT	No

TACT	No

State of Oregon
Department of
Environmental
Quality

TABLE OF CONTENTS

PERMITTING

PERMITTEE IDENTIFICATION

1. Calico Resources USA Corp. plans to construct and operate an underground gold and silver mine and ore processing facility at the Grassy Mountain Mine Site in Malheur County (43.67N -117.36W, T21S R44E).

PERMITTING ACTION

2. The proposed permit is a new Standard Air Contaminant Discharge Permit (ACDP) for a new source. Regulations require this facility obtain a Title V Operating Permit. In accordance with OAR 340-218-0040(1) the facility must submit a timely and complete permit application for a Title V Permit within 12 months after the source becomes subject to the Oregon Title V Operating Permit program. In other words, a Title V Permit application must be submitted within one year of start of operations. This Standard ACDP will allow construction and operation of the facility until the Title V Permit is issued.

3. Calico Resources has been determined to be a new source for the purposes of Cleaner Air Oregon in accordance with OAR 340-245-0020 because construction will commence on this facility after November 16, 2018. As a new source the permittee is required to perform a risk assessment in accordance with OAR 340-245-0050, and demonstrate compliance with the Risk Action Levels for a "New and Reconstructed Source" in OAR 340-245-8010 Table 1.

OTHER PERMITS

4. Other permits required by the DEQ for this source include a Water Pollution Control Facility (WPCF) water quality permit.

ATTAINMENT STATUS

5. The source is located in an attainment area for all pollutants.

6. The source is not located within 100 kilometers of any Class I Air Quality Protection Area but is approximately 120 kilometers from the Strawberry Mountain Wilderness, and 150 km from the Eagle Cap wilderness areas. The nearest affected state is Idaho, which is approximately 17 miles away.

SOURCE DESCRIPTION

OVERVIEW

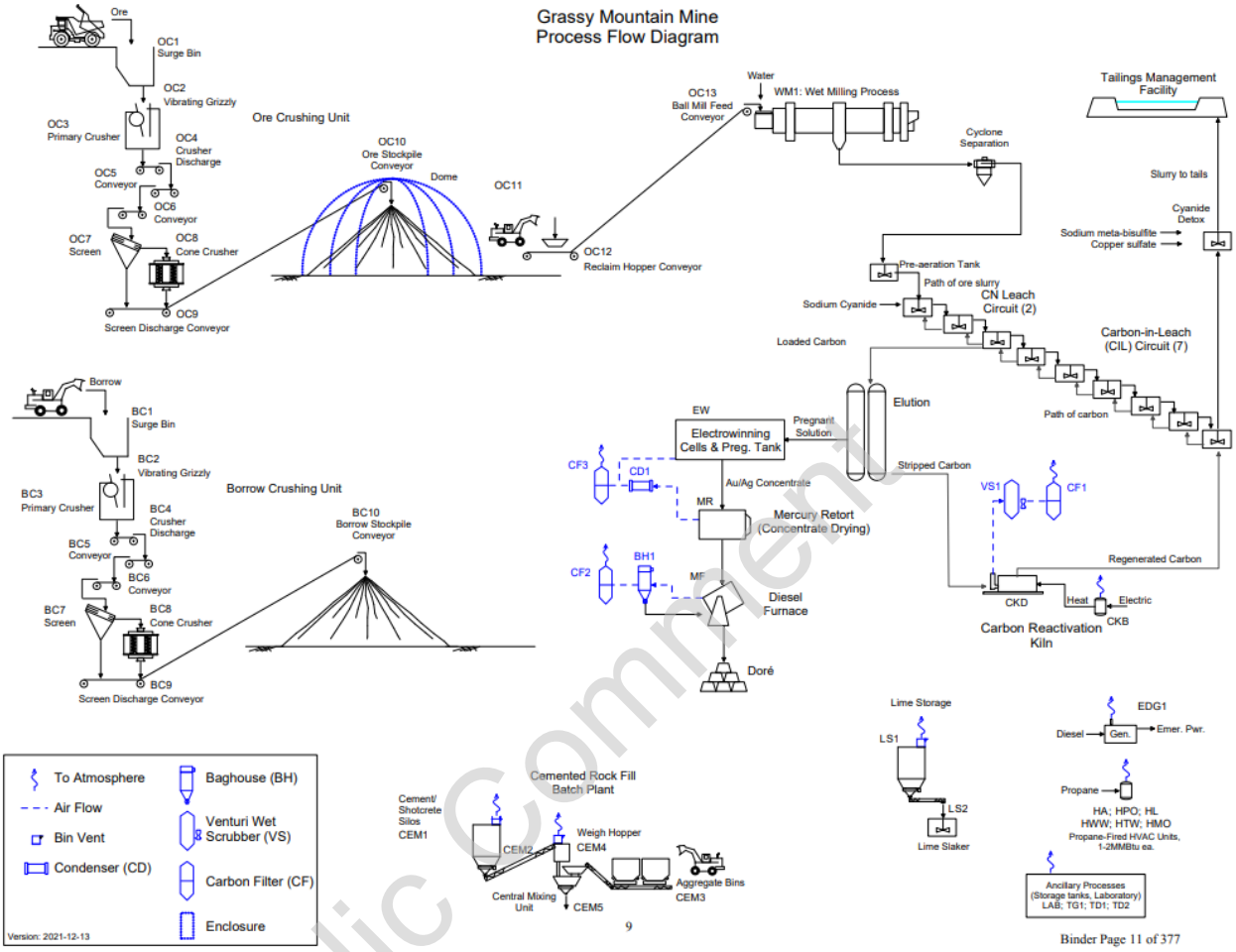
7. The Drift and Fill method will be used to mine ore, and an adjacent processing facility will mill, refine and melt gold and silver ore into doré bars for further processing off-site.

   The underground mine will be developed by blasting, using a level access tunnel and then mining drifts off of the main tunnel. As ore is removed, backfill from a nearby borrow pit will be hauled in to fill the drifts. Cemented rock fill (CRF) will be used for a portion of the backfill, requiring a batch cement plant at the surface. A mobile crushing unit will crush borrow material in the borrow pit, and the material will be loaded and hauled to the waste rock storage facility, the CRF plant, or directly underground.

   Ore removed from the mine is dumped by haul trucks directly into a mobile crushing unit that consists of a primary jaw crusher and a secondary screening/cone crusher unit. Crushed ore is then conveyed to a covered ore stockpile. A front-end loader transfers stockpiled ore to the mill via a feed conveyor; from here, the process is a closed, wet process. The ore slurry is sent directly to the carbon-in-leach (CIL) process. The CIL circuit consists of a pre-aeration tank, 2 leach tanks, and a series of 7 CIL tanks. Lime is added during pre-aeration to control pH, and cyanide is added to the first CIL tank. Leached gold and silver will be adsorbed onto granular carbon, which is present in all tanks. The slurry advances through each of the 7 tanks, once per day. Barren carbon is added to the last tank and flows through the circuit in the opposite direction: loaded carbon is removed from tank 1 and sent to the elution process. The elution process strips gold and silver from the carbon into solution. Pregnant solution (solution loaded with gold and silver) is transferred to the gold room, and stripped carbon is regenerated in the propane-fired carbon regeneration kiln before being recycled for the leach process. Some carbon loss occurs during heating in the kiln, and new carbon is added along with regenerated carbon to CIL tank 7.

   The gold room will house the electrowinning cells, retort, induction furnace, and associated support equipment. In the electrowinning cells, gold and silver are plated onto cathodes using electrolysis. Periodically, the electrowinning cells will be opened and the sludge cleaned out manually with a high-pressure spray gun. Sludge from the cells will flow by gravity to the electrowinning-sludge filter feed tank and into manually operated pressure canister filters to be dewatered. Dewatered sludge is collected in trays and placed in the mercury retort to dry the sludge and remove mercury. Dried sludge will be removed from the retort and combined with fluxes in a flux mixer before being charged into the melting furnace, where the sludge is melted and poured into doré bars.

   The CIL tailings will be pumped to the 2-stage agitated cyanide detoxification tanks, where lime will be added to buffer pH, copper sulfate will be added as a reaction catalyst, and sodium meta-bisulfate will be added. Detoxified slurry will overflow the second detoxification tank to the final tailings pump box where it will be pumped to the tailings management facility by the final tailings pumps.



PROCESS AND CONTROL DEVICES

8. The emissions units at this facility are the following:

a. Unit UG: Underground Activities

Ore is removed from the underground mine by drilling holes and loading the holes with an explosive emulsion to break up the rock. There are fugitive dust emissions from the underground blasting, hauling and material transfer as well as dust kicked up by vehicles operating in the mine. Vehicular road dust is assumed to have 95% control due moist material and to the dust settling in the mine rather than aboveground. There are also tailpipe emissions from equipment operating underground. The mine is vented and some of these emissions could enter the atmosphere from the stationary mine vent. A list of equipment expecting to be operating underground is shown below. Tailpipe emissions as well as underground fugitive emissions will be included in the emissions inventory.

Unit ID	Description	Rating[a]
EQP1	3 drills and bolters. Operate underground using line power when drilling but use diesel to move. Exhaust through mine vent.	97 hp, 2,995 hr/yr, 4,792 gal/yr
EQP2	4 loaders with 5.2 cu.yd. capacity. Includes underground diesel operation only. Exhaust through mine vent.	279 hp, 15,974 hr/yr, 70,287 gal/yr
EQP3	3 trucks with ejector bed. Includes underground diesel operation only. Exhaust through mine vent.	325 hp, 11,981 hr/yr, 62,3000 gal/yr
EQP4	1 emulsion loader. Includes underground diesel operation only. Exhaust through mine vent.	104 hp, 3,994 hr/yr, 6,789 gal/yr
EQP5	2 Telehandlers. Includes underground diesel operation only. Exhaust through mine vent.	130 hp, 7,987 hr/yr, 16,773 gal/yr
EQP6	1 grader. Includes underground diesel operation only. Exhaust through mine vent.	101 hp, 3,994 hr/yr, 6,390 gal/yr
EQP9	1 shotcrete sprayer. Includes underground diesel operation only. Exhaust through mine vent.	100 hp, 998 hr, yr, 1,597 gal/yr
EQP10	1 shotcrete truck. Includes underground diesel operation only. Exhaust through mine vent.	129 hp, 3,994 hr/yr, 8,387 gal/yr
EQP11	1 lube truck. Includes underground diesel operation only. Exhaust through mine vent.	148 hp, 3,994 hr/yr, 9,185 gal/yr
EQP12	1 water truck. Includes underground diesel operation only. Exhaust through mine vent.	148 hp, 3,994 hr/yr, 9185 gal/yr

a. Rating is for each unit. Annual schedule and fuel usage is aggregate.

b. Unit OC: Ore Crushing

Ore from the underground mine is hauled and dumped into a surge bin (OC1) which feeds a vibrating grizzly (OC2) screen prior to entering a primary jaw crusher (OC3). The ore is then transported with several conveyor transfer points (OC4, OC5, OC6) to a screen (OC7) before entering a cone crusher (OC8). From the cone crusher, the ore is conveyed (OC9) to an enclosed ore stockpile (OC10). When needed, material from the ore stockpile is transferred (OC11, OC12, OC13) to the wet milling process where water is added and a ball mill in closed circuit with a hydro-cyclone is used to further reduce the size of the ore prior to processing. The ore crushing system has a capacity of 34 tons/hour and 298,840 tons/yr.

c. Unit BC: Borrow Crushing

Borrow material intended to backfill the mine is removed from the borrow pit (BRW) by drilling holes in the pit area and pumping a mixture of ammonium nitrate/fuel oil (ANFO) into the hole and blasting the material free. The borrow is hauled either to the Waste Rock Storage Facility, the Cemented Rock Fill storage or hauled directly underground. The borrow is dumped into a surge bin (BC1) which feeds a vibrating grizzly (BC2) screen prior to entering the primary jaw

crusher (BC3). The borrow is transported with several conveyor transfer points (BC4, BC5, BC6) to a screen (BC7) before entering a cone crusher (BC8). From the cone crusher the material is conveyed (BC9, BC10) to a borrow stockpile. The borrow crushing system has a capacity of 79 tons/hour and 247,000 tons/yr. The borrow stockpile is periodically wetted to control dust. Above ground hauling and vehicular traffic is assumed to have 90% control due watering and dust suppressant application.

d. Unit CEM: Cement Plant

Some of the aggregate material from the borrow pit is stockpiled near the cement rock facility (CRF). Cement brought in from off-site is loaded into a storage silo (CEM1) and conveyed to a cement batch plant (CEM2) where it is combined with the borrow pit aggregate (CEM3) in a weight hopper (CEM4) before going to the central mixing facility (CEM5) for use in backfilling the mine. The plant has a design capacity of 236 cubic yards/hour and 70,106 cubic yards/yr.

e. Unit Process: Ore Processing

Overflow from the hydro-cyclone will go to a pre-aeration tank where lime is added to control pH. Sodium cyanide is added as the material passes through 2 leach tanks which helps pull gold and silver from the ore. From the leach tanks the material passes through a series of 7 carbon-in-leach (CIL) tanks. The leached gold and silver will be adsorbed onto activated granular carbon, which is present in all the CIL tanks. The ore slurry advances through all 7 CIL tanks, while the carbon flows in counter current (fresh carbon added to the last CIL tank flows to the first CIL tank). Loaded carbon is extracted from CIL tank 1 while the spent ore (tailings) is extracted from CIL tank 7.

The loaded carbon is sent to the high-temperature, high pressure elution process where the gold and silver are stripped from the carbon and remain in solution. The pregnant solutions (solution loaded with gold and silver) is transferred to the gold room, while the stripped carbon is regenerated and recycled. In the gold room solution from the pregnant solution tank (preg tank) is fed to electrowinning (EW) cells where current is supplied to an inert anode through the pregnant solution and metal is plated onto a cathode. Periodically the EW cells are opened and the plated metal (concentrate) is cleaned from the cathode, sent through a filter press to be dewatered and sent to the mercury retort (MR). Emissions from the preg tank and EW cells are combined with the retort exhaust downstream of the retort condenser and are controlled by a carbon filter (CF3). It is expected that the preg tank and EW cells have the potential to emit mercury (Hg) and hydrogen cyanide (HCN). Approximately 21 tons of wet concentrate is anticipated to be produced annually by the EW cells.

The concentrate from the EW cells is heated in the mercury retort (MR) to dry the concentrate and vaporize the mercury contained in the concentrate. The exhaust from the MR is routed through a condenser (CD1) where the mercury is cooled,

condensed and collected as a liquid. From the condenser, the exhaust is combined with the preg tank and EW exhaust and ducted through a carbon filter (CF3) to remove any residual mercury. The carbon will be sulfur impregnated or halogenated in order to better remove mercury from the exhaust before it is emitted to the atmosphere.

The dried concentrate from the MR is combined with flux to assist in removing impurities before being sent to a diesel-fired melting furnace (MF) where it is melted and poured into doré bars. The MF is rated at 0.6 MMBtu/hr (467.9 MMBtu/yr) and exhausts first to a baghouse (BH1) guaranteed to limit particulate emissions to 0.004 gr/dscf at 4700 acfm and then to a carbon filter (CF2) with sulfur impregnated or halogenated carbon in order to better remove mercury from the exhaust before it is emitted to the atmosphere.

The stripped carbon from the elution process will be sent to an electrically heated carbon reactivation kiln (CKD) to indirectly heat the carbon to burn off contaminants and re-activate the carbon for re-use in the CIL process. Some fresh carbon will need to be added to make up for carbon lost in the regeneration process. Emissions from the CKD are sent first to a venturi scrubber (VS1), guaranteed for PM emissions of 0.06 lb/hr, and then to a carbon filter (CF1) with sulfur impregnated or halogenated carbon in order to better remove mercury from the exhaust before it is emitted to the atmosphere. The CKD is expected to regenerate about 0.2 ton/yr of carbon (1,752 ton/yr).

Tailings from the CIL circuit are pumped to an agitated cyanide detoxification tank, where lime will be added to buffer pH, copper sulfate added as a reaction catalyst, and sodium metabisulfate to detoxify the tailing. The detoxified tailings will be pumped to the tailings management facility (TMF).

f. Unit TANKS: Fuel Tanks

There are three fuel storage tanks onsite. One 10,000 gallon tank is used to store gasoline (TG1) and has an expected annual throughput of 120,000 gallons. A 30,000 gallon tank is used to store diesel fuel (TD1) and has an expected annual throughput of 240,000 gallons. A smaller 3,000 gallon tank is used to store diesel fuel (TD2) with an expected annual throughput of 15,000 gallons. Emissions from the tanks are considered categorically insignificant since none are subject to an NSPS standard. [OAR 340-200-0020(24)(jj)]

g. Unit Boilers: Boilers for Heating Ventilation and Air Conditioning (HVAC)

Several small propane-fired boilers are used for HVAC of several buildings on-site. There are 1.0 MMBtu/hr boilers for the Administrative Building (HA), Plant Office and Warehouse (HPO), Laboratory (HL), Plant Workshop and Warehouse (HWW), and Mine Office and Changeroom (HMO) and a 2.0 MMBtu/hr boiler for the Truck Workshop and Warehouse (HTW). The boiler emissions are not considered categorically insignificant because the aggregate emissions for CO and NO_x are greater than de minimis. [OAR 340-200-0020(24)(c)]

h. Unit Emergency Engines:

There is a 2,682 hp emergency diesel generator (EDG1) to provide electricity in the event line power is lost. The generator is limited to 100 hours of non-emergency run time per year and is rated at 18.77 MMBtu/hr. There is a 268 hp emergency diesel fire pump (EDFP) to provide water for fighting fires. The pump is limited to 100 hours of non-emergency run time per year and is rated at 1.877 MMBtu/hr. Emissions from the emergency engines are considered categorically insignificant since the aggregate horsepower rating of all emergency generator and pump engines (2950 hp) is less than 3,000 hp. [OAR 340-200-0020(24)(uu)]

i. Unit LS: Lime Silo

A 55-ton silo (LS1) will hold dry lime for input to the lime slaker (LS2). A passive vent on the silo is used to control product loss during silo loading. About 329 tons of lime will be processed each year.

j. Unit LAB: Analytical Laboratory

An analytical laboratory will be maintained on-site. Ore samples will be prepared by crushing, grinding, and screening (LABSP) and then a sub-sample will undergo fire assay to measure precious metal concentrations. Exhaust will be ducted through a fume hood. Approximately 2,190 tons of sample will be prepared each year with only 9 ton/yr sent to fire assay. Emissions from the lab are considered categorically insignificant since they are from bench scale laboratory equipment used exclusively for chemical and physical analysis. [OAR 340-200-0020(24)(q)]

k. Aggregate Insignificant (AI) Activities

Aggregate insignificant activities include fugitive emissions from storage piles and from paved roads and occasional emissions from emergency generators.

9. Categorically insignificant activities include the following:

a. Evaporative and tail pipe emissions from on-site motor vehicle operation
b. Janitorial activities
c. Groundskeeping activities including, but not limited to building painting and road and parking lot maintenance
d. Maintenance and repair shop
e. Automotive repair shops or storage garages
f. Air cooling or ventilating equipment not designed to remove air contaminants generated by or released from associated equipment
g. Refrigeration systems with less than 50 pounds of charge of ozone depleting substances regulated under Title VI, including pressure tanks used in refrigeration systems but excluding any combustion equipment associated with such systems

h. Bench scale laboratory equipment and laboratory equipment used exclusively for chemical and physical analysis, including associated vacuum producing devices but excluding research and development facilities
i. Temporary construction activities
j. Warehouse activities
k. Accidental fires
l. Routine maintenance, repair and replacement such as anticipated activities most often associated with and performed during regularly scheduled equipment outages to maintain a plant and its equipment in good operating condition, including but not limited to steam cleaning, abrasive use, and woodworking
m. Electric motors
n. Storage tanks, reservoirs, transfer and lubricating equipment used for ASTM grade distillate or residual fuels, lubricants and hydraulic fluids
o. On-site storage tanks not subject to any New Source Performance Standards (NSPS), including underground storage tanks (UST), storing gasoline or diesel used exclusively for fueling of the facility's fleet of vehicles
p. Natural gas, propane and liquefied petroleum gas (LPG) storage tanks and transfer equipment
q. Storm water settling basins
r. Hazardous air pollutant emissions in fugitive dust from pave and unpaved roads except for those sources that have processes or activities that contribute to the deposition and entrainment of hazardous air pollutants from surface soils
s. Health, safety and emergency response activities

COMPLIANCE HISTORY

10. The facility will be inspected after construction to determine compliance with permit conditions.

SPECIFIC PERFORMANCE AND EMISSION STANDARDS

Facility-Wide Requirements

11. Visible emissions: OAR 340-208-0110(3) is a requirement that visible emissions of all non-fugitive sources must not equal or exceed 20% opacity as measured by EPA Method 9. Most point sources of emissions at the facility are unlikely to generate visible emissions. Therefore, the fugitive visible emission surveys shall serve as monitoring for this requirement. If visible emissions are observed from any point source, the permittee will be required to take corrective action or conduct a Method 9 test to determine opacity.

12. Fugitive emissions: OAR 340-208-0210 is a requirement to take reasonable precautions to minimize fugitive particulate emissions. It is not possible to perform testing on fugitive emissions. Therefore, the permit does not include any testing requirements. The

permittee will be required to perform a weekly visible emissions survey to determine if any visible emissions are leaving the plant site boundaries. If visible emissions are observed, the permittee must take steps to minimize the fugitive emissions. Records of all fugitive emission surveys must be kept.

13. Nuisance conditions: OAR 340-208-0300 is a requirement that prohibits nuisance conditions and OAR 340-208-0450 prohibits particulate fallout. These requirements are not part of the State Implementation Plan (SIP) so they are only enforceable by the State. Nuisance conditions must be verified by the Department. The permittee will be required to keep a log of any complaints and respond within a reasonable amount of time by conducting an investigation into the source of the compliant.

14. Particulate grain loading: OAR 340-226-210(2)(c) is a requirement for non-fugitive sources constructed after 4/16/15 and limits particulate emissions to no more than 0.10 grains per dry standard cubic foot. This standard applies to the mercury retort (MR), melting furnace (MF), carbon reactivation kiln (CKD), emergency engines (EDG1, EDFP), lime storage silo vent (LS1), and the cement silo (CEM1) and weigh hopper (CEM4) since these units are non-fugitive, non-fuel burning sources. The mercury retort (MR) is also subject to a 0.05 g/dscm (0.02 gr/dscf) in NSPS Subpart LL (see item 20 in this review report). Since the Subpart LL limit is more stringent than the State 0.10 gr/dscf limit, the permit conditions will be streamlined to list only the more stringent 0.05 g/dscm limit for the mercury retort. Expected particulate emissions from each of these units is less than 1.0 ton/yr, so it is anticipated emissions will be well below the grain loading limit. No testing will be required to demonstrate compliance with the grain loading limit. The weekly visible emissions monitoring should serve to indicate problems with particulate emissions.

15. Fuel Sulfur Content: OAR 340-228-0110 limits the amount of sulfur in diesel fuel to no more than 0.5% by weight. These are state-wide requirements that also apply to fuel suppliers, so it should not be possible for the permittee to purchase fuels which exceed the sulfur limit. The permittee is not required to test the diesel, but will be required to obtain a certificate from the supplier stating that the fuel meets the specifications. If they cannot get a certificate, then the permittee would be required to analyze a sample of the fuel to show that it meets the specifications. The permittee is required to maintain records of the sulfur content of the fuel used at the facility

16. Particulate grain loading for fuel burning equipment: OAR 340-228-210(2)(c) is a requirement to limit particulate emissions to no more than 0.10 grain per dry standard cubic foot for fuel burning equipment such as the boilers. The boilers are unlikely to have problems meeting the grain loading limit while burning propane. No testing will be required to demonstrate the boiler's compliance with the grain loading limit, but the permittee will be required to certify that only propane is burned in the boilers.

17. Gasoline Dispensing Facility (GDF): The gasoline storage tank (TG1) has a capacity of 10,000 gallons and throughput of 120,000 gallons/yr and is subject to the GDF2 [OAR 340-244-0234(4)(b)] and GDF3 [OAR 340-244-0234(4)(c)] requirements. These requirements include work practices to minimize spills and use of submerged fill. [OAR 340-244-0240]

New Source Performance Standards (NSPS) Requirements

18. Small industrial steam generating units (Subpart Dc): The boilers at the facility are not subject to NSPS Subpart Dc because the boilers are all smaller than 10 MMBtu/hr. [40 CFR 60.40c(a)]

19. Volatile organic liquid storage vessels (Subpart Kc): The fuel storage tanks are not subject to NSPS Subpart Kc because the capacity of TG1 and TD2 are less than 20,000 gallons. [40 CFR 60.110c(a)] Although TD1 has a capacity greater than 20,000 gallons, the diesel stored in the tank has a maximum true vapor pressure less than 0.25 psia and is not subject to this regulation. [40 CFR 60.110c(b)(8)]

20. Metallic mineral processing (Subpart LL): Portions of this facility are subject to NSPS Subpart LL. The mercury retort (MR) is considered a thermal dryer and has a stack, so it is subject to a particulate emission limit of 0.05 g/dscm and 7% opacity. [40 CFR 60.382(a)] An initial source test for the mercury retort (MR) is required to demonstrate compliance with these limits. [40 CFR 60.385(a)] Process fugitive emissions from the above ground ore crushing (OC) and borrow crushing (BC) activities are subject to a 10% opacity limit and an initial Method 9 test to verify compliance is required. [40 CFR 60.382(b)]

21. Stationary compression ignition internal combustion engines (Subpart IIII): The emergency generator (EDG1) and fire pump engine (EDFP) are subject to NSPS Subpart IIII. The emergency generator is expected to meet Tier 2 emission standards [40 CFR 60.4205(b)] while the fire pump engine is expected to meet Tier 3 emission standards [40 CFR 60.4205(c)] The diesel burned in both engines must meet the Ultra Low Sulfur Diesel (ULSD) standards. [40 CFR 60.4207(b)] Each engine must have a non-resettable hour meter to monitor the hours of operation. [40 CFR 60.4209(a)] Each engine must be certified to meet the respective Tier requirements and be operated and maintained according to the manufacturer's emission-related written instructions. [40 CFR 60.4211(a)] There is a limit of 100 hours per calendar year that each engine can be operated during non-emergency situations. There is no limit on the amount of emergency operations. [40 CFR 60.4211(f)]

National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements

22. Stationary reciprocating internal combustion engines (Subpart ZZZZ): The emergency generator (EDG1) and fire pump engine (EDFP) are subject to NESHAP Subpart ZZZZ. Since the engines are considered new sources (constructed after 6/12/06) at an area source of hazardous air pollutant (HAP) emissions (less than 10 tons/yr of a single HAP or 25/ton/yr of combined HAP), the Subpart ZZZZ requirements are met by complying with the NSPS Subpart IIII requirements. No further NESHAP requirements apply to the engines. [40 CFR 63.6590(c)]

23. Gasoline dispensing facilities (GDF) (Subpart CCCCCC): DEQ has not adopted the federal rules for GDF, so this regulation is not enforceable by the State. The gasoline storage tank (TG1) has a monthly throughput of approximately 10,000 gallons. Similar to the Division 244 State rules, Subpart CCCCCC requires measures to be taken to

minimize gasoline spills and covering all open gasoline containers when not in use. [40 CFR 63.11117(a)] It is also required to load the tank only using submerged fill pipes. [40 CFR 63.11117(b)]

24. Industrial boiler at area source of HAP (Subpart JJJJJJ): The boilers at the facility are considered gas-fired and are exempt from Subpart JJJJJJ. [40 CFR 63.11195(e)]

25. Gold mine ore processing and production – area source (Subpart EEEEEEE): The facility is subject to NESHAP Subpart EEEEEEE. It is considered a new source since construction commenced after 4/28/10. [40 CFR 11640(b)(2)] Sources subject to this regulation are required to obtain a Title V permit. [40CFR 63.11640(d)] The source does not use an ore pretreatment process as defined in 40 CFR 63.11651 but uses a carbon process with mercury retort. New facilities using a carbon process with mercury retort must emit no more than 0.8 lbs of mercury per ton of concentrate processed. [40 CFR 63.11645(f)] The permittee must test to demonstrate compliance with the mercury limit within 180 days of startup and annually thereafter with consecutive tests at least 3 months but not more than 15 months apart. [40 CFR 63.11646(a)] Compliance must be demonstrated as the combined mercury emissions from the preg tanks, electrowinning cells, mercury retort, melting furnace and carbon regeneration kiln divided by the amount of concentrate fed to the mercury retort. For the preg tanks, electrowinning cells and mercury retort, which are ducted to a single control device and stack the permittee can conduct a single compliance test with all three units in operation. On-going compliance with the mercury limit will be monitored either by using sorbent traps on the exhaust of each carbon filter and establishing an upper operating limit for the monthly trap analysis or sampling the carbon in the filter quarterly and taking appropriate action as the limit is approached. [40 CFR 63.11647(f)] The gas temperature at the inlet to each carbon filter will also be monitored once per shift. If the gas temperature exceeds a maximum operating limit, corrective action must be taken to return the temperature below the limit within 48 hours. [40 CFR 63.11647(g)]

Compliance Assurance Monitoring (CAM) Requirements

26. The Compliance Assurance Monitoring (CAM) rules do not apply to this source because the NESHAP mercury limits were proposed by EPA after 11/15/90. [OAR 340-212-0200(2)(a)(A)] CAM requirements do not apply to the non-mercury limits because control devices are not used to achieve compliance with the non-mercury standards. [OAR 340-212-0200(1)(b)]

Typically Achievable Control Technology (TACT) Requirements

27. The Typically Achievable Control Technology (TACT) rules do not apply to this source because other standards under NSPS are applicable. [OAR 340-226-1030(2)(a)]

Insignificant Emission Units Requirements

28. As identified earlier in this Review Report, this facility has insignificant emissions units (IEUs) that include categorically insignificant activities and aggregate insignificant emissions, as defined in OAR 340-200-0020. For the most part, the standards that apply

to IEUs are for opacity (20% limit) and particulate matter (0.10 gr/dscf limit). DEQ does not consider it likely that IEUs could exceed an applicable emissions limit or standard because IEUs are generally equipment or activities that do not have any emission controls (e.g., small natural gas fired space heaters) and do not typically have visible emissions. Since there are no controls, no visible emissions, and the emissions are less than one ton per year, DEQ does not believe monitoring, recordkeeping or reporting is necessary for assuring compliance with the standards.

EMISSIONS

29. Proposed PSEL information.

Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis		Plant Site Emission Limits (PSEL)		
		Current (tons/yr)	Proposed (tons/yr)	Current PSEL (tons/yr)	Proposed PSEL (tons/yr)	PSEL Increase (tons/yr)
PM	0	NA	0	NA	49	49
PM_{10}	0	NA	0	NA	16	16
$PM_{2.5}$	NA	NA	0	NA	3	3
SO_2	0	NA	0	NA	2	2
NO_x	0	NA	0	NA	7	7
CO	0	NA	0	NA	19	19
VOC	0	NA	0	NA	1	1
GHG (CO_2e)	0	NA	0	NA	7,229	7,229

a. The baseline emission rate is actual emissions in the 1977-78 time period. [OAR 340-222-0048] A baseline emission rate is not established for $PM_{2.5}$. The baseline time period for GHG is any 12 consecutive months during 2000 through 2010. Since the facility was constructed after 2010, the baseline is zero for all pollutants.

b. The netting basis is typically equal to the baseline emission rate (OAR 340-222-0046(2)) unless changes are required:
   i. by a rule, order, or permit condition (OAR 340-222-0046(3)(a));
   ii. due to excess unassigned emissions (OAR 340-222-0046(3)(b));
   iii. due to transferred emission reduction credits (OAR 340-222-0046(3)(c)); or
   iv. due to major new source review (OAR 340-222-0046(3)(e)).

   None of these actions are applicable so the netting basis is set to the baseline emission rate, which is zero for all pollutants. There was no previous netting basis.

c. There is no previous PSEL. The proposed PSEL is based on the calculations in the detail sheet attached to this Review Report. The PSEL does not include emissions from categorically insignificant activities, such as underground (mine) tailpipe emissions [OAR 340-222-0035(5)] However, they are included in the detail sheets for completeness.

d. The PSEL is a federally enforceable limit on the potential to emit.

SIGNIFICANT EMISSION RATE ANALYSIS

30. The proposed PSEL is greater than the netting basis by more than the significant emission rate for PM and PM_{10}. Therefore, the facility is subject to the Type B State New Source Review (NSR) for these pollutants. [OAR 340-224-0010(2)(b), (2)(d)(B)]

Pollutant	SER	Requested increase over netting basis	Increase due to utilizing capacity that existed in baseline period	Increase due to physical changes or changes in method of operation
PM	25	49	0	49
PM_{10}	15	16	0	16
$PM_{2.5}$	10	3	0	3
SO_2	40	2	0	2
NO_x	40	7	0	7
CO	100	19	0	19
VOC	40	1	0	1
GHG (CO_2e)	75,000	7,229	0	7,229

31. The Type B State NSR requirements include an analysis to demonstrate that impacts are less than the National Ambient Air Quality Standards (NAAQS). [OAR 340-224-0270(1)(a)] There are no NAAQS for PM. There is a NAAQS for PM_{10} which is 150 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average concentration.

32. Version 22112 of the AERMOD modeling system was used to determine the ambient impacts using site-specific meteorological data collected on-site from Oct 2014 through September 2015, with upper air data from Boise, ID. An on-site ambient particulate monitor was also installed and collected data from July 2014 through September 2015. The results of the ambient monitoring are shown below.

Pollutant	Averaging Time	Background Concentration ($\mu g/m^3$)
$PM_{2.5}$	Annual	4.6
	24-hour	21
PM_{10}	24-hour	23

NW-AIRQUEST was also used to determine background concentrations.

Pollutant	Averaging Time	Background Concentration
$PM_{2.5}$	24-hour	15.89 µg/m^3
PM_{10}	24-hour	88.46 µg/m^3
NO_2	1-hour	2.70 ppb
O_3	8-hour	60.70 ppb

33. In addition to an ambient air quality analysis for PM_{10}, a DEQ Internal Management Directive (IMD) requires sources that trigger New Source Review (NSR) to also demonstrate compliance with the short-term NAAQS for $PM_{2.5}$, NO_x, and SO_2. DEQ's modeling guidance has established Significant Emission Thresholds (SET) for these short-term limits. A comparison of the facility emissions to the SET is shown below. SO_2 emissions are below the SET, so a short-term NAAQS analysis is not required for that pollutant. An air quality analysis for $PM_{2.5}$ and NO_x was conducted using AERMOD to estimate ambient concentrations for comparison with the short-term NAAQS.

	24-hr $PM_{2.5}$ (lb/day)	1-hr NO_x (lb/hr)	1-hr SO_2 (lb/hr)
Facility emissions	33.6	40.32	0.48
SET	5	3	3

34. The results of the ambient impacts analysis are summarized in the table below. All ambient impacts are less than the NAAQS.

Pollutant	Avg time	Background (µg/m^3)	Modeled Impact (µg/m^3)	Total Impact (µg/m^3)	NAAQS (µg/m^3)	Compliance
PM_{10}	24-hr	23	24.6	47.6	150	Yes
$PM_{2.5}$	24-hr	21	3.7	24.7	35	Yes
NO_2	1-hr	5	140	145	188	Yes

Monitoring the type of fuel used in the boilers will ensure NO_2 emissions are minimized.

35. $PM_{2.5}$ emissions can form indirectly as a result of NO_x and SO_2 emissions interacting with other chemicals downwind. A Modeled Emission Rates for Precursors (MERPs) analysis was conducted to determine the indirect impacts on the short-term $PM_{2.5}$ impact. The impact of indirect $PM_{2.5}$ remains below the NAAQS.

Pollutant	Avg time	Background (µg/m^3)	Modeled Impact (µg/m^3)	Secondary Impact (µg/m^3)	Total Impact (µg/m^3)	NAAQS (µg/m^3)	Compliance
$PM_{2.5}$	24-hr	21	3.6579	0.0090	24.6669	35	Yes

36. The source is also required to demonstrate that it will not exceed the Prevention of Significant Deterioration (PSD) Increment. [OAR 340-224-0270(1)(d)] This increment is intended to prevent significant deterioration of the airshed near the facility, and included impacts from the facility (primary impact) and other sources in the area

(secondary impact) combined. The results of this analysis indicate no violation of the increments.

Pollutant	Avg time	Primary Impact ($\mu g/m^3$)	Secondary Impact ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	PSD Increment ($\mu g/m^3$)	Compliance
PM_{10}	Annual	2.2119	0.0090	2.2209	17	Yes
	24-hr	24.6	NA	24.6	30	Yes

HAZARDOUS AIR POLLUTANTS

37. This source is not a major source of Hazardous Air Pollutants (HAP) because the estimated HAP emissions are less than 10 tons/year of any individual HAP and less than 25 tons/year of combined HAP emissions. The calculated HAP emissions are shown in the attached detail sheet. Estimated HAP emissions greater than 0.01 ton/yr are listed below.

Hazardous Air Pollutants	**Potential to Emit (tons/year)**
1,3-Butadiene	0.02
Acetaldehyde	0.06
Benzene	0.03
Cyanide Compounds	1.93
Ethyl Benzene	0.02
Formaldehyde	0.16
Hexane	0.12
Hydrochloric Acid	0.02
Naphthalene	0.41
Phenol	0.05
Toluene	0.07
Xylenes	0.11
Total HAP Emissions	**3.06**

CLEANER AIR OREGON

38. Toxic air contaminant (TAC) emissions from this source were reported from the mine, borrow pit, process area, tailings facility and associated units for 67 TACs for which DEQ has established Risk Based Concentrations (RBCs). A level 3 risk assessment was performed using the same meteorological data, and modelling assumptions used in the NAAQS analysis. The resulting modeled risk levels are below the Source Permit Level

for new facilities of 0.5 excess cancer risk per million and a Hazard Index of 0.5 for noncancer effects.

Risk Category	Maximum Risk	Source Permit Level
Cancer	0.2	0.5
Noncancer – chronic	<0.02	0.5
Noncancer - acute	0.3	0.5

39. Based on the results of the risk assessment, this source is determined to be below the source permit level under the Cleaner Air Oregon program.

GREENHOUSE GAS REPORTING APPLICABILITY

40. OAR Chapter 340 Division 215 is applicable to the source because emissions of greenhouse gases are projected to exceed 2,500 metric tons (2,756 short tons) of CO_2 equivalents per year.

SOURCE TESTING

41. The NESHAP requirements discussed in item 25 require annual mercury tests on the mercury retort, melting furnace, and carbon regeneration kiln.

PUBLIC NOTICE

42. Pursuant to OAR 340-216-0066(4)(a), issuance of Standard Air Contaminant Discharge Permits require public notice in accordance with OAR 340-209-0030(3)(c), which requires DEQ to provide notice of the proposed permit action and a minimum of 35 days for interested persons to submit written comment. In addition, the Oregon Department of Geology and Mineral Industries requires a consolidated public hearing that encompasses the DEQ public notice requirements, and also requires a consolidated public hearing on the project with other cooperating agencies. [OAR 632-037-0105].

DW:JT

ATTACHMENT A – DETAIL SHEETS

Process Emission Factors

Emission Unit		PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	VOC	Reference
Ore Crusher		lb/ton	lb/ton	lb/ton					
OC1	Ore dump to surge bin	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC2	Surge bin to screen	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC3	Primary crusher	1.2E-03	5.4E-04	1.0E-04					AP-42 Table 11.19.2-2 tertiary crush - ctrl
OC4	Crusher to conveyor	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC5	Ore screen	2.2E-03	7.4E-04	5.0E-05					AP-42 Table 11.19.2-2 screening - control
OC6	Conveyor to 2ry surge	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC7	2ry surge to 2ry crush	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC8	2ry crusher	1.2E-03	5.4E-04	1.0E-04					AP-42 Table 11.19.2-2 tertiary crush - ctrl
OC9	Crusher to conveyor	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC10	screen discharge to conv	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC11	Conveyor to fine ore bin	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC12	Fine ore to ball mill feed	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
OC13	Ball mill conveyor	1.4E-04	4.6E-05	1.3E-05					AP-42 Table 11.19.2-2 Conv. Transfer - ctrl
Combined Ore Crusher		**6.0E-03**	**2.3E-03**	**3.8E-04**					
Borrow Crusher		lb/ton	lb/ton	lb/ton					
BC1	Borrow dump to surge	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
BC2	Surge bin to screen	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
BC3	Primary crusher	5.4E-03	2.4E-03	3.6E-04					AP-42 Table 11.19.2-2 tertiary crush
BC4	Crusher to conveyor	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
BC5	Conveyor trans 1	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
BC6	Conveyor trans 2	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
BC7	Screen	2.5E-02	8.7E-03	1.3E-03					AP-42 Table 11.19.2-2 screening

Emission Unit		PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	VOC	Reference
BC8	Cone crush	5.4E-03	2.4E-03	3.6E-04					AP-42 Table 11.19.2-2 tertiary crush
BC9	Screen to pile conv	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
BC10	Conveyor to pile	3.0E-03	1.1E-03	1.7E-04					AP-42 Table 11.19.2-2 Conv. Transfer
Combined Borrow Crusher		**5.7E-02**	**2.1E-02**	**3.2E-03**					
Lime Silo (aggregate insignificant)		lb/ton	lb/ton	lb/ton					
LS1	Lime Silo load	9.9E-04	3.4E-04	5.0E-05					AP-42 11.12-2 cement pneum load -cntrl
LS2	Lime silo to slaker	4.8E-03	2.8E-03	4.0E-04					AP-42 11.12-2 weigh hopper load-unctrl
Ore Processing		lb/hr	lb/hr	lb/hr	lb/hr	lb/MMBtu	lb/MMBtu	lb/MMBtu	
CKD	Carbon regen kiln drum	0.06	0.06	0.06	1.05				NDEP-BAPC permit (Marigold)
MF	Induction Melting furnace	0.66	0.66	0.66	3.65E-02	1.46E-01	5.18E-01	2.50E-03	Subpart LL for PM, AP-42 (diesel)
Analytical Laboratory (CIA)		lb/ton	lb/ton	lb/ton					Categorically Insignificant
LABSP	Lab sample prep	0.02	7.7E-03	7.4E-04					AP-42 Table 11.19.2-2
LABFA	Lab fire assay	20	20	20					AP-42 Table 12.7-2 Zinc smelt electr retort
Emergency Engines (CIA)		lb/kW-hr	lb/kW-hr	lb/kW-hr					Categorically Insignificant
EDG1	Emerg Generator	4.41E-04	4.41E-04	4.41E-04	7.72E-03	1.41E-02	1.45E-05	2.87E-03	40 CFR 1039 Tier 2, 536 hp
EDFP	Emerg fire pump	4.41E-04	4.41E-04	4.41E-04	7.72E-03	1.41E-02	1.45E-05	2.87E-03	40 CFR 1039 Tier 2, 536 hp
HVAC Boilers		lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	lb/MMBtu	
Comb	Heating boilers	7.65E-03	7.65E-03	7.65E-03	8.20E-02	1.42E-01	1.74E-02	8.74E-03	AP-42 Table 1.5-1 comm propane boiler
Cement Plant		lb/ton	lb/ton	lb/ton					
CEM1	Cement silo	9.9E-04	3.4E-04	5.0E-05					AP-42 Table 11.12-2 Cement to silo-ctrl
CEM2	Cement batch plant	9.9E-04	3.4E-04	5.0E-05					AP-42 Table 11.12-2 Cement to silo-ctrl
CEM5	Central mix	1.8E-02	5.5E-03	8.0E-04					AP-42 Table 11.12-2 mixer load-ctrl
Combined Cement Handling		**2.0E-02**	**6.2E-03**	**9.0E-04**					
CEM3	Aggregate transfer	6.9E-03	3.3E-03	5.0E-04					AP-42 Table 11.12-2 aggregate trans
CEM4	Weigh hopper	4.8E-03	2.8E-03	4.0E-04					AP-42 Table 11.12-2 weigh hopper
Combined Aggregate Handling		**1.2E-02**	**6.1E-03**	**9.0E-04**					

Emission Unit		PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	VOC	Reference
Fuel Tanks (CIA)		lb/hr	lb/hr	lb/hr					Categorically Insignificant
TG1	Gas tank							2.11E-01	EPA TANKS 4.0.9.d
TD2	Diesel Tank							9.30E-04	EPA TANKS 4.0.9.d
TD3	Diesel Tank							9.80E-05	EPA TANKS 4.0.9.d

Mining Emission Factors

Emission Unit	PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	Reference
Underground Ore Mining	lb/ton	lb/ton	lb/ton				
Drilling (lb/ton) -AI	1.7E-04	8.0E-05	1.2E-05				AP-42 Table 11.19.2-2 wet drill, PM size factor AP-42 13.2.4
	lb/blast	lb/blast	lb/blast	lb/ton emulsion			
Blasting	0.07	3.39E-02	1.96E-03	32.53	6.16	3.6E-03	AP-42 Table 11.9-1 blast, area 279ft2, PM size factor 11.9-1
Haul Road (lb/VMT)	0.56	0.15	0.015				AP-42 13.2.2 s=5.8%, W=59.4 ton, 95% control
Material load (lb/ton) – AI	2.1E-04	1.0E-04	1.5E-05				AP-42 Table 11.19.2-2 truck load, PM size factor AP-42 13.2.4
Material unload (lb/ton) – AI	3.4E-05	1.6E-05	2.4E-06				AP-42 Table 11.19.2-2 truck unload, PM size factor AP-42 13.2.4
Grading (lb/VMT)	0.22	0.06	0.01				AP-42 Table 11.9-1, S=6.5 mph, 95% control
Borrow mining (BRW)							
Drilling (lb/hole)	1.3	0.676	0.039				AP-42 Table 11.9-4 drill overburden, PM size factor Table 11.9-1
	lb/blast	lb/blast	lb/blast	lb/ton ANFO			
Blasting	4.95	2.57	0.15	67	1.8	3.6E-03	AP-42 Table 11.9-1 blast, area 5000ft2, PM size factor 11.9-1
Haul Road (lb/VMT)	0.85	0.23	0.023				AP-42 13.2.2 s=5.8%, W=59.4 ton, P=90 day/yr,90% control
Material load (lb/ton) – AI	2.1E-04	1.0E-04	1.5E-05				AP-42 Table 11.19.2-2 truck load, PM size factor AP-42 13.2.4
Material unload (lb/ton) – AI	3.4E-05	1.6E-05	2.4E-06				AP-42 Table 11.19.2-2 truck unload, PM size factor AP-42 13.2.4
Grading (lb/VMT)	0.43	0.13	0.01				AP-42 Table 11.9-1, S=6.5 mph, 90% control
Water truck (lb/VMT)	1.21	0.32	0.032				AP-42 13.2.2 s=5.8%, W=130 ton, P=90 day/yr,90% control
Stockpile (lb/acre-yr) – AI	4.84	2.42	0.36				AP-42 13.2.5, w/ onsite met

AI: Aggregate Insignificant

Underground Tailpipe Emission Factors (all categorically insignificant)

Emission Unit		PM (lb/kWh)	PM_{10} (lb/kWh)	$PM_{2.5}$ (lb/kWh)	CO (lb/kWh)	NO_x (lb/kWh)	SO_2 (lb/kWh)	VOC (lb/kWh)	Reference
EQP1	Drill & Bolt	8.82E-04	8.82E-04	8.82E-04	1.10E-02	1.65E-02	1.45E-05	1.65E-02	40 CFR 1039, App I, Tier 2 37-75 kW, SO_2 mass balance ULSD
EQP2	Loader	4.41E-04	4.41E-04	4.41E-04	7.72E-03	8.82E-03	1.45E-05	8.82E-03	40 CFR 1039, App I, Tier 3 130-560 kW SO_2 mass balance ULSD
EQP3	Haul truck	4.41E-04	4.41E-04	4.41E-04	7.72E-03	8.82E-03	1.45E-05	8.82E-03	40 CFR 1039, App I, Tier 3 130-560 kW SO_2 mass balance ULSD
EQP4	Emulsion loader	4.41E-05	4.41E-05	4.41E-05	1.10E-02	8.82E-04	1.45E-05	4.19E-04	40 CFR 1039.101, Tier 4 56-130 kW SO_2 mass balance ULSD
EQP5	Forklift	6.61E-04	6.61E-04	6.61E-04	1.10E-02	8.82E-03	1.45E-05	8.82E-03	40 CFR 1039, App I, Tier 3 75-130 kW SO_2 mass balance ULSD
EQP6	Grader	4.41E-05	4.41E-05	4.41E-05	1.10E-02	8.82E-04	1.45E-05	4.19E-04	40 CFR 1039.101, Tier 4 56-130 kW SO_2 mass balance ULSD
EQP9	Shotcrete sprayer	6.61E-04	6.61E-04	6.61E-04	1.10E-02	8.82E-03	1.45E-05	8.82E-03	40 CFR 1039, App I, Tier 3 75-130 kW SO_2 mass balance ULSD
EQP10	Shotcrete truck	6.61E-04	6.61E-04	6.61E-04	1.10E-02	8.82E-03	1.45E-05	8.82E-03	40 CFR 1039, App I, Tier 3 75-130 kW SO_2 mass balance ULSD
EQP11	Lube truck	6.61E-04	6.61E-04	6.61E-04	1.10E-02	8.82E-03	1.45E-05	8.82E-03	40 CFR 1039, App I, Tier 3 75-130 kW SO_2 mass balance ULSD
EQP12	Water truck	4.41E-05	4.41E-05	4.41E-05	1.10E-02	8.82E-04	1.45E-05	4.19E-04	40 CFR 1039.101, Tier 4 56-130 kW SO_2 mass balance ULSD

Process Emissions

Emission Unit		Throughput	PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	VOC
			ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
OC1	Ore dump to surge bin	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC2	Surge bin to screen	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC3	Primary crusher	297,840 ton/yr	1.8E-01	8.0E-02	1.5E-02				
OC4	Crusher to conveyor	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC5	Ore screen	297,840 ton/yr	3.3E-01	1.1E-01	7.4E-03				
OC6	Conveyor to 2ry surge	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC7	2ry surge to 2ry crush	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC8	2ry crusher	297,840 ton/yr	1.8E-01	8.0E-02	1.5E-02				
OC9	Crusher to conveyor	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC10	screen discharge to conv	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC11	Conveyor to fine ore bin	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC12	Fine ore to ball mill feed	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
OC13	Ball mill conveyor	297,840 ton/yr	2.1E-02	6.9E-03	1.9E-03				
BC1	Borrow dump to surge	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
BC2	Surge bin to screen	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
BC3	Primary crusher	247,000 ton/yr	6.7E-01	3.0E-01	4.4E-02				
BC4	Crusher to conveyor	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
BC5	Conveyor trans 1	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
BC6	Conveyor trans 2	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
BC7	Screen	247,000 ton/yr	3.1E+00	1.1E+00	1.6E-01				
BC8	Cone crush	247,000 ton/yr	6.7E-01	3.0E-01	4.4E-02				
BC9	Screen to pile conv	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
BC10	Conveyor to pile	247,000 ton/yr	3.7E-01	1.4E-01	2.1E-02				
LS1	Lime Silo load – AI	329 ton/yr	1.6E-04	5.6E-05	8.2E-06				
LS2	Lime silo to slaker – AI	329 ton/yr	7.9E-04	4.6E-04	6.6E-05				

Emission Unit		Throughput	PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	VOC
			ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
CKD	Carbon regen kiln drum	8760 hr/yr	0.26	0.26	0.26	4.60			
MF	Induction Melting furnace	780 hr/yr	0.26	0.26	0.26				
		467.9 MMBtu/yr				0.009	0.034	0.121	5.85E-04
LABSP	Lab sample prep -CIA	2, 190 ton/yr	2.2E-02	8.4E-03	8.1E-04				
LABFA	Lab fire assay – CIA	9 ton/yr	9.0E-02	9.0E-02	9.0E-02				
EDG1	Emerg Generator – CIA	200,000 kWh/yr	4.4E-02	4.4E-02	4.4E-02	7.7E-01	1.4	1.5E-03	2.9E-01
EDFP	Emerg fire pump – CIA	20,000 kWh/yr	4.4E-03	4.4E-03	4.4E-03	7.7E-02	1.4E-01	1.5E-04	2.9E-02
Boilers	Heating boilers	61,320 MMBtu/yr	2.3E-01	2.3E-01	2.3E-01	2.5	4.4	5.3E-01	2.7E-01
CEM1	Cement silo	18,742 ton/yr	9.3E-03	3.2E-03	4.7E-04				
CEM2	Cement batch plant	18,742 ton/yr	9.3E-03	3.2E-03	4.7E-04				
CEM3	Aggregate transfer	249,000 ton/yr	8.6E-01	4.1E-01	6.2E-02				
CEM4	Weigh hopper	249,000 ton/yr	6.0E-01	3.5E-01	5.0E-02				
CEM5	Central mix	18,742 ton/yr	1.7E-01	5.2E-02	7.5E-03				
TG1	Gas tank – CIA	8760 hr/yr							9.24E-01
TD2	Diesel Tank – CIA	8760 hr/yr							4.07E-03
TD3	Diesel Tank – CIA	8760 hr/yr							4.29E-04
	TOTAL		**10.5**	**4.7**	**1.5**	**8.0**	**5.9**	**0.7**	**1.5**

AI: Aggregate Insignificant
CIA: Categorically Insignificant

Mining Emissions

Emission Unit		Throughput	PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2
			ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
UG	Drilling - AI	291,200 ton/r	2.5E-02	1.2E-02	1.8E-03			
	Blasting	2912 blast/yr	0.095	0.0494	0.0028			
		529 ton emul/yr				8.6	1.6	9.52E-04
	Haul Road	72,150 VMT/yr	20.36	5.39	0.54			
	Mat'l load – AI	289,700 ton/yr	3.1E-02	1.4E-02	2.2E-03			
	Matl unload - AI	1,500 ton/yr	2.5E-05	1.2E-05	1.8E-06			
	Grading	25,958 VMT/yr	2.80	0.84	8.7E-02			
BRW	Drilling	1300 hole/yr	0.845	0.4394	0.02535			
	Blasting	26 blast/yr	0.064	0.033	0.0019			
		68 ton ANFO/yr				2.3	6.12E-02	1.22E-04
	Haul Road	20,418 VMT/yr	8.68	2.30	0.23			
	Matl load – AI	744,000 ton/yr	7.9E-02	3.7E-02	5.6E-03			
	Matl unload – AI	786,700 ton/yr	1.3E-02	6.3E-03	9.5E-04			
	Grading	11,830 VMT/yr	2.55	0.76	7.90E-02			
	Water truck	3,974 VMT/yr	2.40	0.64	6.36E-02			
	Stockpile – AI	216.2 acre/yr	0.523	0.262	0.039			
TOTAL			**38.5**	**10.8**	**1.1**	**10.9**	**1.7**	**1.07E-03**

AI: Aggregate Insignificant

Underground Tailpipe Emissions (all categorically insignificant)

Emission Unit		Throughput	PM	PM_{10}	$PM_{2.5}$	CO	NO_x	SO_2	VOC
		kW-hr/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
EQP1	Drill&Bolt	66,445	2.93E-02	2.93E-02	2.93E-02	3.66E-01	5.49E-01	4.81E-04	5.49E-01
EQP2	Loader	974,529	2.15E-01	2.15E-01	2.15E-01	3.76	4.30	7.05E-03	4.30E+00
EQP3	Haul truck	645,567	1.42E-01	1.42E-01	1.42E-01	2.49	2.85	4.67E-03	2.85E+00
EQP4	Emulsion loader	69,360	1.53E-03	1.53E-03	1.53E-03	3.82E-01	3.06E-02	5.02E-04	1.45E-02
EQP5	Forklift	171,359	5.67E-02	5.67E-02	5.67E-02	9.44E-01	7.56E-01	1.24E-03	7.56E-01
EQP6	Grader	88,593	1.95E-03	1.95E-03	1.95E-03	4.88E-01	3.91E-02	6.41E-04	1.86E-02
EQP9	Shotcrete sprayer	22,148	7.32E-03	7.32E-03	7.32E-03	1.22E-01	9.77E-02	1.60E-04	9.77E-02
EQP10	Shotcrete truck	104,039	3.44E-02	3.44E-02	3.44E-02	5.73E-01	4.59E-01	7.53E-04	4.59E-01
EQP11	Lube truck	127,353	4.21E-02	4.21E-02	4.21E-02	7.02E-01	5.62E-01	9.22E-04	5.62E-01
EQP12	Water truck	127,353	2.81E-03	2.81E-03	2.81E-03	7.02E-01	5.62E-02	9.22E-04	2.67E-02
TOTAL			**0.53**	**0.53**	**0.53**	**10.53**	**9.69**	**0.017**	**9.63**

Greenhouse Gas Emissions

Fuel	Emission Factor	GWP	CO_2e Factor
Propane:	CO_2: 138.6 lb/MMBtu	1	138.6 lb/MMBtu
	CH_4: 6.61E-03 lb/MMBtu	28	0.185 lb/MMBtu
	N_2O: 1.32E-03 lb/MMBtu	265	0.351 lb/MMBtu
Total			139.14 lb/MMBtu
Diesel	CO_2: 163.1 lb/MMBtu	1	163.1 lb/MMBtu
	CH_4: 6.61E-03 lb/MMBtu	28	0.185 lb/MMBtu
	N_2O: 1.32E-03 lb/MMBtu	265	0.351 lb/MMBtu
Total			163.64 lb/MMBtu

Emission Units	Throughput (MMBtu/yr)	Emissions (ton CO_2e)/yr
Propane Boilers	61,320	4,266
Diesel Melt furnace	467.9	38
Diesel emergency engines	2,065	169
Diesel underground motor	22,486	1,839
Total		6,312

TOTAL EMISSIONS

Pollutant	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	GHG
Process	10.5	4.7	1.5	0.7	5.9	8.0	1.5	4,473
Mining	38.5	10.8	1.1	--	1.7	10.9	--	--
Non-road	0.5	0.5	0.5	0.02	9.7	10.5	9.6	1,839
Total	**49.5**	**16.0**	**3.1**	**0.7**	**17.3**	**29.4**	**11.1**	**6,312**

PSEL SUMMARY
(excludes categorically insignificant emissions and combines aggregate insignificant)

Pollutant	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC	GHG
Process	10.3	4.5	1.3	0.7	4.4	7.1	0.3	4,473
Mining	37.8	10.5	1.0	--	1.7	10.9	--	--
Aggregate Insignificant	1	1	1	1	1	1	1	2,756
Total	**49.1**	**16.0**	**3.4**	**1.7**	**7.1**	**19.0**	**1.3**	**7,229**

HAZARDOUS AIR POLLUTANTS
Process HAP Emissions

	Propane		MF Diesel		Emergency Diesel		OC		BC		CEM3/4	
Compound	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ppm	ton/yr	ppm	ton/yr	ppm	ton/yr
1,3-Butadiene			1.08E-04	2.53E-05	1.59E-03	1.64E-03						
2-Methyl naphthalene	2.35E-08	7.21E-07	1.02E-06	2.39E-07								
3-Methylcholanthrene	1.76E-09	5.40E-08										
7,12-Dimethylbenz[a]anthracene	1.57E-08	4.81E-07										
Acenaphthene	1.36E-09	4.17E-08	1.54E-06	3.60E-07	2.45E-05	2.53E-05						
Acenaphthylene	1.19E-08	3.65E-07	4.74E-07	1.11E-07	2.97E-05	3.07E-05						
Acetaldehyde	1.37E-05	4.20E-04	2.56E-03	5.99E-04	5.72E-03	5.91E-03						
Acrolein	4.74E-06	1.45E-04	2.56E-03	5.99E-04	2.47E-04	2.55E-04						
Antimony							41.44	3.70E-05	48.53	3.40E-04	48.53	7.07E-05
Anthracene	1.58E-09	4.84E-08	1.74E-07	4.07E-08	2.93E-05	3.03E-05						
Arsenic	1.96E-07	6.01E-06	1.17E-05	2.74E-06	1.17E-05	1.21E-05	154.21	1.38E-04	142.61	1.00E-03	142.61	2.08E-04
Benzene	1.10E-05	3.37E-04	3.21E-05	7.51E-06	1.36E-03	1.40E-03						
Benz[a]anthracene	1.92E-09	5.89E-08	9.85E-08	2.30E-08	2.85E-05	2.94E-05						
Benzo[a]pyrene	9.61E-10	2.95E-08	5.51E-08	1.29E-08	2.59E-07	2.67E-07						
Benzo[b]fluoranthene	1.12E-09	3.43E-08	4.87E-08	1.14E-08	4.89E-05	5.05E-05						
Benzo[e]pyrene			1.02E-07	2.39E-08								
Benzo[g,h,i]perylene	1.23E-09	3.77E-08	6.20E-08	1.45E-08	2.08E-08	2.15E-08						
Benzo[k]fluoranthene	9.71E-10	2.98E-08	6.07E-07	1.42E-07	4.89E-05	5.05E-05						
Beryllium	1.18E-08	3.62E-07					1.09	9.74E-07	1.83	1.28E-05	1.83	2.67E-06
Cadmium	1.08E-06	3.31E-05	1.09E-05	2.55E-06	1.09E-05	1.13E-05	0.2	1.79E-07	0.21	1.47E-06	0.21	3.06E-07
Chlorobenzene			1.46E-06	3.42E-07	1.46E-06	1.51E-06						
Chromium VI	1.37E-06	4.20E-05	7.30E-07	1.71E-07	7.30E-07	7.54E-07	27.87	2.49E-05	23.07	1.62E-04	23.07	3.36E-05
Chrysene	1.36E-09	4.17E-08	9.34E-08	2.19E-08	2.61E-05	2.69E-05						
Cobalt	8.24E-08	2.53E-06					1.42	1.27E-06	2.78	1.95E-05	2.78	4.05E-06
Dibenz[a,h]anthracene	8.99E-10	2.76E-08	4.74E-08	1.11E-08	2.55E-05	2.63E-05						
Ethylbenzene	9.31E-06	2.85E-04	1.46E-06	3.42E-07	7.96E-05	8.22E-05						

	Propane		MF Diesel		Emergency Diesel		OC		BC		CEM3/4	
Compound	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	lb/MMBtu	ton/yr	ppm	ton/yr	ppm	ton/yr	ppm	ton/yr
Fluoranthene	1.17E-08	3.59E-07	2.42E-07	5.66E-08	2.92E-05	3.02E-05						
Fluorene	4.50E-09	1.38E-07	8.54E-07	2.00E-07	1.54E-04	1.59E-04						
Formaldehyde	7.26E-05	2.23E-03	2.56E-03	5.99E-04	1.26E-02	1.30E-02						
Hexane	1.76E-03	5.40E-02	2.55E-05	5.97E-06	1.96E-04	2.02E-04						
Hydrochloric Acid			1.36E-03	3.18E-04	1.36E-03	1.40E-03						
Indeno[1,2,3-cd]pyrene	1.15E-09	3.53E-08	4.85E-08	1.13E-08	2.53E-05	2.61E-05						
Lead			6.06E-05	1.42E-05	6.06E-05	6.26E-05	6.45	5.76E-06	8.32	5.84E-05	8.32	1.21E-05
Manganese	3.73E-07	1.14E-05	2.26E-05	5.29E-06	2.26E-05	2.33E-05	75.84	6.78E-05	97.7	6.85E-04	97.7	1.42E-04
Mercury	2.55E-07	7.82E-06	1.46E-05	3.42E-06	1.46E-05	1.51E-05	2.24	2.00E-06	2.43	1.70E-05	2.43	3.54E-06
Naphthalene	1.09E-06	3.34E-05	3.87E-05	9.05E-06	1.44E-04	1.49E-04						
Nickel	2.06E-06	6.32E-05	2.85E-05	6.67E-06	2.85E-05	2.94E-05	4.62	4.13E-06	4.51	3.16E-05	4.51	6.57E-06
1,4-Dichlorobenzene	1.18E-06	3.62E-05										
Perylene			1.98E-07	4.63E-08								
Phenanthrene	3.30E-08	1.01E-06	2.72E-06	6.36E-07	2.85E-04	2.94E-04						
Pyrene	5.49E-09	1.68E-07	2.98E-07	6.97E-08	6.15E-05	6.35E-05						
Selenium	2.35E-08	7.21E-07	1.61E-05	3.77E-06	1.61E-05	1.66E-05						
Toluene	3.59E-05	1.10E-03	3.21E-05	7.51E-06	7.69E-04	7.94E-04						
Xylene	2.67E-05	8.19E-04	1.17E-05	2.74E-06	3.09E-03	3.19E-03						

	CKD		EW	MR	MF		CEM1/2		CEM Supplement		CEM5	
Compound	ppm	ton/yr	ton/yr	ton/yr	ppm	ton/yr	lb/ton	ton/yr	lb/ton	ton/yr	lb/ton	ton/yr
Antimony	41.44	1.09E-05			41.44	1.07E-05						
Arsenic	154.21	4.05E-05			154.21	3.97E-05	4.24E-09	7.95E-08	1.00E-06	2.60E-06	2.96E-07	2.77E-06
Beryllium	1.09	2.86E-07			1.09	2.81E-07	4.86E-10	9.11E-09	9.04E-08	2.35E-07		
Cadmium	0.2	5.26E-08			0.2	5.15E-08	4.68E-09	8.77E-08	1.98E-10	5.15E-10	7.10E-10	6.65E-09
Chromium VI	27.87	7.32E-06			27.87	7.17E-06	2.90E-08	5.44E-07	1.22E-06	3.17E-06	1.27E-07	1.19E-06
Cobalt	1.42	3.73E-07			1.42	3.66E-07						
Lead	6.45	1.70E-06			6.45	1.66E-06	1.09E-08	2.04E-07	5.20E-07	1.35E-06	3.66E-08	3.43E-07
Manganese	75.84	1.99E-05			75.84	1.95E-05	1.17E-07	2.19E-06	2.56E-07	6.66E-07	3.78E-06	3.54E-05
Mercury		1.04E-03	2.53E-03	1.17E-04		5.18E-04						
Nickel	4.62	1.21E-06			4.62	1.19E-06	4.18E-08	7.83E-07	2.28E-06	5.93E-06	2.48E-07	2.32E-06
Phosphorus							2.36E-07	4.42E-06	3.54E-06	9.20E-06	1.60E-06	1.50E-05
Selenium									7.24E-08	1.88E-07		

	TG1		TD2,3		Cyanide emissions	TOTAL
Compound	wt %	ton/yr	wt %	ton/yr	ton/yr	ton/yr
1,3-Butadiene						1.67E-03
2-Methyl naphthalene						9.59E-07
3-Methylcholanthrene						5.40E-08
7,12-Dimethylbenz[a]anthracene						4.81E-07
Acenaphthene						2.57E-05
Acenaphthylene						3.11E-05
Acetaldehyde						6.93E-03
Acrolein						9.99E-04
Antimony						4.70E-04
Anthracene						3.03E-05
Arsenic						1.45E-03
Benzene	1.80%	1.66E-02	0.001%	4.50E-08		1.84E-02
Benz[a]anthracene						2.95E-05
Benzo[a]pyrene						3.10E-07
Benzo[b]fluoranthene						5.05E-05
Benzo[e]pyrene						2.39E-08
Benzo[g,h,i]perylene						7.37E-08
Benzo[k]fluoranthene						5.07E-05
Beryllium						1.76E-05
Biphenyl	0.01%	9.24E-05	0.10%	4.50E-06		9.69E-05
Cadmium						4.91E-05
Chlorobenzene						1.85E-06
Chromium VI						2.83E-04
Chrysene						2.70E-05
Cobalt						2.81E-05
Cumene	0.50%	4.62E-03				4.62E-03
Cyanide compounds					1.932	1.93
Dibenz[a,h]anthracene						2.64E-05
Ethylbenzene	1.61%	1.48E-02	0.013%	5.85E-07		1.52E-02
Fluoranthene						3.06E-05
Fluorene						1.59E-04
Formaldehyde						1.58E-02
Hexane	7.14%	6.60E-02	1.00%	4.50E-05		1.20E-01
Hydrochloric Acid						1.72E-03
Indeno[1,2,3-cd]pyrene						2.62E-05
Lead						1.58E-04
Manganese						1.01E-03
Mercury			0.00004%	1.80E-09		1.61E-03

Compound	TG1		TD2,3		Cyanide emissions	TOTAL
	wt %	ton/yr	wt %	ton/yr	ton/yr	ton/yr
Naphthalene	44.40%	4.10E-01	0.55%	2.48E-05		4.11E-01
Nickel						1.53E-04
1,4-Dichlorobenzene						3.62E-05
Perylene						4.63E-08
Phenanthrene			0.125%	5.63E-06		3.02E-04
Phenol	5.50%	5.08E-02	0.064%	2.88E-06		5.08E-02
Phosphorus						2.86E-05
Pyrene						6.37E-05
Selenium						2.13E-05
Styrene			0.032%	1.44E-06		1.44E-06
Toluene	7.21%	6.67E-02	0.032%	1.44E-06		6.86E-02
Xylene	7.17%	6.63E-02	0.29%	1.31E-05		7.03E-02
TOTAL						**2.724**

Mine HAP Emissions

Compound	Underground fugitive		Emulsion		Above ground fugitive		ANFO		Total
	ppm	ton/yr		ton/yr	ppm	lb/ton		ton/yr	ton/yr
			ppm				ppm		
1,3-butadiene			0.76	4.02E-04			0.76	5.17E-05	4.54E-04
Acetonitrile			10	5.29E-03			10	6.80E-04	5.97E-03
Acrolein			1	5.29E-04			1	6.80E-05	5.97E-04
Acrylonitrile			1.9	1.01E-03			1.9	1.29E-04	1.13E-03
Benzene			12	6.35E-03			12	8.16E-04	7.16E-03
Ethyl benzene			0.12	6.35E-05			0.12	8.16E-06	7.16E-05
Naphthalene			1.9	1.01E-03			1.9	1.29E-04	1.13E-03
Styrene			0.9	4.76E-04			0.9	6.12E-05	5.37E-04
Toluene			1.8	9.52E-04			1.8	1.22E-04	1.07E-03
			lb/MMBtu				lb/MMBtu		
Antimony	41.44	6.23E-06			48.53	7.40E-05			8.02E-05
Arsenic	154.21	4.54E-04	4.00E-06	2.47E-06	142.61	2.17E-04	4.00E-06	3.18E-07	6.75E-04
Beryllium	1.09	1.08E-06	3.00E-06	1.85E-06	1.83	2.79E-06	3.00E-06	2.39E-07	5.96E-06
Cadmium	0.2	4.29E-08	3.00E-06	1.85E-06	0.21	3.20E-07	3.00E-06	2.39E-07	2.45E-06
Chromium VI	27.87	2.46E-04	3.00E-06	1.85E-06	23.07	3.52E-05	3.00E-06	2.39E-07	2.83E-04
Cobalt	1.42	3.25E-07			2.78	4.24E-06			4.56E-06
Lead	6.45	1.05E-06	9.00E-06	5.55E-06	8.32	1.27E-05	9.00E-06	7.16E-07	2.00E-05
Manganese	75.84	2.05E-04	6.00E-06	3.70E-06	97.7	1.49E-04	6.00E-06	4.77E-07	3.58E-04
Mercury	2.24	5.72E-06	3.00E-06	1.85E-06	2.43	3.70E-06	3.00E-06	2.39E-07	1.15E-05
Nickel	4.62	3.11E-06	3.00E-06	1.85E-06	4.51	6.88E-06	3.00E-06	2.39E-07	1.21E-05
Selenium			1.50E-05	9.26E-06			1.50E-05	1.19E-06	1.04E-05

	Underground fugitive		Emulsion		Above ground fugitive		ANFO		Total
Compound	ppm	ton/yr		ton/yr	ppm	lb/ton		ton/yr	ton/yr
TOTAL									**1.96E-02**

Underground Non-Road Tailpipe Emissions
22,486 MMBtu/yr diesel usage

Compound	Emissions lb/MMBtu	Emissions ton/yr
1,3-Butadiene	1.59E-03	1.79E-02
Acenaphthene	2.45E-05	2.75E-04
Acenaphthylene	2.97E-05	3.34E-04
Acetaldehyde	5.72E-03	6.43E-02
Acrolein	2.47E-04	2.78E-03
Anthracene	2.93E-05	3.29E-04
Arsenic	1.17E-05	1.32E-04
Benzene	1.36E-03	1.53E-02
Benz[a]anthracene	2.85E-05	3.20E-04
Benzo[a]pyrene	2.59E-07	2.91E-06
Benzo[b]fluoranthene	4.89E-05	5.50E-04
Benzo[g,h,i]perylene	2.08E-08	2.34E-07
Benzo[k]fluoranthene	4.89E-05	5.50E-04
Cadmium	1.09E-05	1.23E-04
Chlorobenzene	1.46E-06	1.64E-05
Chromium VI	7.30E-07	8.21E-06
Chrysene	2.61E-05	2.93E-04
Dibenz[a,h]anthracene	2.55E-05	2.87E-04
Ethylbenzene	7.96E-05	8.95E-04
Fluoranthene	2.92E-05	3.28E-04
Fluorene	1.54E-04	1.73E-03
Formaldehyde	1.26E-02	1.42E-01
Hexane	1.96E-04	2.20E-03
Hydrochloric Acid	1.36E-03	1.53E-02
Indeno[1,2,3-cd]pyrene	2.53E-05	2.84E-04
Lead	6.06E-05	6.81E-04
Manganese	2.26E-05	2.54E-04
Mercury	1.46E-05	1.64E-04
Naphthalene	1.44E-04	1.62E-03
Nickel	2.85E-05	3.20E-04
Phenanthrene	2.85E-04	3.20E-03
Pyrene	6.15E-05	6.91E-04

Compound	Emissions lb/MMBtu	Emissions ton/yr
Selenium	1.61E-05	1.81E-04
Toluene	7.69E-04	8.65E-03
Xylene	3.09E-03	3.47E-02
TOTAL		**0.32**

TOTAL HAP

	HAP (ton/yr)
Process	2.72
Mining	0.02
Non-Road	0.32
Total	**3.06**