

Statement of Basis

**Permit to Construct No. P-2013.0014
Project ID 61161**

**Cyprus Thompson Creek Mining Company
Clayton, Idaho**

Facility ID 037-00001

Final

**May 28, 2014
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Permit Writer**

D.P.

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CBP	concrete batch plant
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
FEC	Facility Emissions Cap
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
HMA	hot mix asphalt
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards

O&M	operation and maintenance
O ₂	oxygen
PAH	polyaromatic hydrocarbons
PC	permit condition
PCB	polychlorinated biphenyl
PERF	Portable Equipment Relocation Form
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
PW	process weight rate
RAP	recycled asphalt pavement
RFO	reprocessed fuel oil
RICE	reciprocating internal combustion engines
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd ³	cubic yards
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

The Cyprus Thompson Creek Mining Company (Thompson Creek) operates an open pit molybdenum mine and concentrator in central Idaho. The operation produces 15-20 million pounds of molybdenum disulfide per year. Two types of concentrate are produced at the Thompson Creek facility, concentrate grade and lubricant grade. Concentrate grade is shipped off-site for further refining. Lubricant grade concentrate goes through additional processing steps to produce a higher purity product. High purity product is approximately 98 percent molybdenum disulfide.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

January 27, 2009	P-2008.0159, Tier II and Permit to Construct for a new tailings pump IC engine, Permit status (A, but will become S upon issuance of this permit)
March 3, 2008	T2-050508, Tier II permit renewal, Permit status (S)
December 22, 1999	Permit number 037-00001, Minor changes made to the recently issued Tier II operating permit, Permit status (S)
December 8, 1999	Permit number 037-00001, Renewed Tier II operating permit, Permit status (S)
February 25, 1997	Permit number 037-00001, Initial Tier II operating permit, Permit status (S)
February 20, 1990	Permit number 0540-0001, Permit to install a new lube grade circuit, Permit status (S)
September 29, 1989	Permit number 0540-0001, Permit to install a new lube grade circuit, Permit status (S)
June 26, 1985	Permit number 0540-0001, Initial permit for a molybdenum mine and mill producing molybdenum concentrate, Permit status (S)

Application Scope

This permitting project is to convert an existing Tier II and Permit to Construct into a Permit to Construct. In addition, the Applicant has proposed the following changes in emissions units at the facility as a result of this project.

The applicant has proposed to:

- Replace Boiler #1, which is a York Shipley boiler, with a Bryan boiler of the same heat input rating.
- Replace the Hot Oil Parker boiler with an identical new Parker boiler.
- Increase the East and West Ore Feeders combined throughput rate by increasing the operating production rate of the feeders from 40,000 tons per day (14,600,000 tons per year) to 44,500 tons per day (16,242,500 tons per year).
- Add a second tailings emergency IC engine powering an electrical generator to the permit.

Application Chronology

February 25, 2013	DEQ received an application and an application fee.
April 9 – April 24, 2013	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
March 28, 2013	DEQ determined that the application was incomplete.

June 20, 2013	DEQ received supplemental information from the applicant.
July 26, 2013	The project was assigned to a different engineer.
September 5, 2013	DEQ determined that the application was complete.
October 29, 2013	DEQ made available the draft permit and statement of basis for peer and regional office review.
October 31, 2013	DEQ made available the draft permit and statement of basis for applicant review.
November 11, 2013	DEQ received the permit processing fee.
February 5, 2014	DEQ received updated comments from the facility.
February 26, 2014	DEQ made available the draft permit and statement of basis for a second applicant review.
April 10 – May 12, 2014	DEQ provided a public comment period on the proposed action.
May 28, 2014	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
	<u>Boiler No. 1 (new):</u> Manufacturer: Bryan Boilers Model: RV600-S-150-FDGO Heat input rating: 6.4 MMBtu/hr Fuel: Diesel fuel only	None	Boiler No. 1 exhaust
	<u>Hot Oil Boiler (new):</u> Manufacturer: Parker Model: HT1920 Heat input rating: 1.8 MMBtu/hr Fuel: Diesel fuel only	None	Hot Oil Boiler exhaust
	<u>Portable Crusher:</u> Manufacturer: Pioneer (May be replaced by different crusher) Model: 2036	Reasonable Controls	N/A
	<u>Primary Crusher:</u> Manufacturer: GATX-Fuller Type: Gyratory Operating Capacity: 4,450 ton/hr	<u>Primary Crusher Baghouse:</u> Manufacturer: American Air Filter Model: Jet Pulse modular Fabrikpak Pressure drop: Maintain at or above 3 in H ₂ O Air to Cloth ratio: 10 to 1	Primary Crusher Baghouse exhaust
	<u>Overland Conveyor Transfer:</u> Manufacturer: GATX-Fuller	<u>Overland Conveyor Baghouse:</u> Manufacturer: American Air Filter Model: Jet Pulse modular Fabrikpak Pressure drop: 1 to 6 in H ₂ O Air to Cloth ratio: 7 to 1	Overland Conveyor Baghouse exhaust
	<u>East and West Ore Feeders:</u> Type: Apron Feeders	<u>East and West Ore Feeder Wet Scrubber:</u> Manufacturer: Ducon Model: Model IV Type: UW-4 Liquid flow rate: Greater than or equal to 14 gpm H ₂ O Pressure drop: Maintain at or above 6 in H ₂ O	East and West Ore Feeder Wet Scrubber exhaust
	<u>Holo Flite Dryer No. 1:</u> Manufacturer: Joy-Denver Model: D-1216-5	<u>Holo Flite Dryer No. 1 wet scrubber:</u> Manufacturer: Luftrol Model: UW-4-4 Liquid flow rate: 6 to 12 gpm H ₂ O Pressure drop: 0.13 to 0.23 in H ₂ O <u>Holo Flite Dryer No. 1 ESP:</u> Manufacturer: United Air Specialists Model: SH-10	Holo Flite Dryer No. 1 ESP exhaust

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION (continued)

Source ID No.	Sources	Control Equipment	Emission Point ID No.
	<p><u>Lube Grade Dryer Stack:</u></p> <ol style="list-style-type: none"> 1) Holo Flite Dryer No. 2 Manufacturer: Joy-Denver Model: D1216-5 2) Rotary Kiln Dryer Manufacturer: Christian Model: 12-13-16-UNI 	<p><u>Holo Flite Dryer No. 2 venturi scrubber:</u> Manufacturer: Luftrol Model: KVS-4-14 Type: Venturi Liquid flow rate: 6 to 12 gpm H₂O Pressure drop: 0.13 to 0.23 in H₂O</p> <p><u>Rotary Kiln Dryer venturi scrubber:</u> Manufacturer: Luftrol Model: KVS-4-14 Type: Venturi Liquid flow rate: 7 to 13 gpm H₂O Pressure drop: 0.13 to 0.22 in H₂O</p> <p><u>Holo Flite Dryer No. 2 & Rotary Kiln Dryer ESP:</u> Manufacturer: United Air Specialists Model: SH-10</p> <p>Note: The Holo Flite Dryer No. 2 and the Rotary Kiln Dryer each have a dedicated wet scrubber, then each vent gas stream is combined and sent through a single ESP.</p>	Lube Grade Dryer No. 2 & Rotary Kiln Dryer ESP exhaust
	<p><u>Jet Mill:</u> Pneumatic mill Manufacturer: Pulvaret Mill Model: Aljet Model 810 CIHL</p>	<p><u>Jet Mill Baghouse:</u> Manufacturer: Mikro Pulsaire Model: 36-S-10-30 Pressure drop: Maintain at or above 1 in H₂O Air to Cloth ratio: 10 to 1</p>	Jet Mill Baghouse exhaust
	<p><u>Tech Fine Packaging Bin:</u> High Purity Molybdenum Packaging</p>	<p><u>Tech Fine Packaging Baghouse:</u> Manufacturer: Mag-Pac Model: 52-65 Pressure drop: Maintain at or above 0.4 in H₂O Air to Cloth ratio: 2 to 1</p>	Tech Fine Packaging Baghouse exhaust
	<p><u>Pancake Mill Feed Bin:</u> Pneumatically Convey High Purity Molybdenum</p>	<p><u>Pancake Mill Baghouse:</u> Manufacturer: American Air Filter Model: AR35 Pressure drop: Maintain at or above 0.2 in H₂O Air to Cloth ratio: 5 to 1</p>	Pancake Mill Baghouse exhaust
	<p><u>Super Fine Packaging Bin & Pancake Mill:</u> Manufacturer: Jet Pulverizer Model: Micron-Master</p>	<p><u>Super Fine Packaging Baghouse:</u> Manufacturer: Mag-Pac Model: 52-65 Pressure drop: Maintain at or above 1 in H₂O Air to Cloth ratio: 1 to 1</p>	Super Fine Packaging Baghouse exhaust

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION (continued)

Source ID No.	Sources	Control Equipment	Emission Point ID No.
	<u>Pebble Lime line:</u> Pneumatic transport system	<u>Pebble Lime Baghouse:</u> Manufacturer: Dalamate Pressure drop: Maintain at or above 0.3 in H ₂ O Air to Cloth ratio: 9 to 1	Pebble Lime Baghouse exhaust
	<u>Emergency IC Engines Powering Electrical Generators:</u> Motivator IC Engine Manufacturer: Cummins Model: Unknown Date installed: 1981 Max. power rating: 1,490 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Annual use limit: 500 hrs/yr	None	Motivator IC Engine exhaust
	<u>Emergency IC Engines Powering Electrical Generators:</u> Mill Auxiliary IC Engine Manufacturer: Caterpillar Model: SR4 ARR:5N5060 Date installed: 1981 Max. power rating: 265 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Annual use limit: 500 hrs/yr	None	Mill Auxillary IC Engine exhaust
	<u>Emergency IC Engines Powering Electrical Generators:</u> Pumpback IC Engine Manufacturer: Caterpillar Model: SR4 ARR:1W0739 Date installed: 1981 Max. power rating: 450 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Annual use limit: 500 hrs/yr	None	Pumpback IC Engine exhaust
	<u>Emergency IC Engines Powering Electrical Generators:</u> Tailings Pumps IC Engine #1 Manufacturer: MTU Detroit Diesel Model: T1238A36 Date installed: 2010 Max. power rating: 2,561 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Annual use limit: 500 hrs/yr	None	Tailings Pump IC Engine No. 1 exhaust
	<u>Emergency IC Engines Powering Electrical Generators:</u> Tailings Pumps IC Engine #2 Manufacturer: MTU Detroit Diesel Model: T1238A36 Date installed: 2010 Max. power rating: 2,561 bhp Fuel: ULSD diesel Sulfur content: 0.0015% by weight Annual use limit: 500 hrs/yr	None	Tailings Pump IC Engine No. 2 exhaust

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION (continued)

Source ID No.	Sources	Control Equipment	Emission Point ID No.
	Leach Plant	<u>Leach Fume Caustic Wet scrubber:</u> Manufacturer: Unknown Model: Unknown Type: Unknown Liquid flow rate: 40 to 60 gpm H ₂ O Pressure drop: Maintain at or above 2 in H ₂ O	Leach Fume Caustic Wet Scrubber exhaust

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

Using this definition of Potential to Emit an emission inventory was developed for the new Boiler No. 1 replacement, Hot Oil Boiler replacement, the increased throughput for the East and West Ore Feeders, the new Tailings Pump IC engine No. 1 replacement, and the new Tailings Pump No. 2 at the facility (see Appendix A) associated with this proposed project. Emissions from all existing unmodified equipment at the facility were taken from the most recent permitting project (P-2008.0159 issued January 27, 2009).

Uncontrolled Potential to Emit

Using the definition of Potential to Emit, uncontrolled Potential to Emit is then defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall **not** be treated as part of its design **since** the limitation or the effect it would have on emissions **is not** state or federally enforceable.

The uncontrolled Potential to Emit is used to determine if a facility is a "Synthetic Minor" source of emissions. Synthetic Minor sources are facilities that have an uncontrolled Potential to Emit for regulated air pollutants or HAP above the applicable Major Source threshold without permit limits. As this facility was already determined to be a Synthetic Minor source for NO_x, PM, PM₁₀, and THAP (P-2008.0159 issued January 27, 2009) uncontrolled emissions were not determined for this project.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

This is an existing facility. Therefore, emissions from all existing equipment at the facility were taken from the most recent permitting project (P-2008.0159 issued January 27, 2009).

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	T/yr ^(b)
Boiler No. 1	0.076	0.33	0.23	10.3	0.66	2.9	0.17	0.72	0.0083	0.0364	0.00
Hot Oil Boiler	0.031	0.14	0.95	4.2	0.27	1.18	0.068	0.3	0.0034	0.015	0.00
Waste Oil Heaters (four)	0.448	0.62	1.1	1.5	0.8	1.1	0.072	0.1	0.0046	0.02	0.00
Primary crusher	2.23	4.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overland conveyor transfer	2.67	4.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East and West Ore Feeders	21.9	5.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Holo Flite Dryer No. 1	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.07	0.00
Lube grade dryer stack	0.001	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jet mill	0.016	0.0576	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tech fine packaging bin	0.013	0.047	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pancake mill	0.001	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Super fine packaging bin	0.024	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pebble lime baghouse	0.11	0.022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motivator IC engine	3.28	4.9	3.1	4.6	46.2	69.3	10.13	15.2	22.08	5.52	0.00
Mill auxiliary IC engine	0.58	0.14	0.54	0.14	8.2	2.1	1.8	4.5	0.64	0.16	0.00
Pumpback IC engine	0.99	0.25	0.92	0.23	14.0	3.5	3.1	0.77	1.12	0.28	0.00
Tailings pump IC engine No. 1	2.8	0.7	2.6	0.65	39.4	9.9	8.6	2.2	3.2	0.8	0.00
Leach plant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Project Totals	35.19	21.33	9.44	21.62	109.53	89.98	23.94	23.79	27.06	22.90	0.00^(c)

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
c) CO₂e emissions were not calculated previously as they were not required to determine Major Source status at the time of permitting.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria and GHG pollutants from all emissions units at the facility as determined by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	T/yr ^(b)
Boiler No. 1 (new replacement)	0.11	0.47	0.01	0.04	0.93	4.09	0.23	1.02	0.016	0.07	4,580.3
Hot Oil Boiler (new replacement)	0.03	0.13	0.00	0.01	0.26	1.15	0.07	0.29	0.0046	0.02	1,288.2
Waste Oil Heaters (four)	0.448	0.62	1.1	1.5	0.8	1.1	0.072	0.1	0.0046	0.02	447.7
Primary crusher	2.23	4.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overland conveyor transfer	2.67	4.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East and West Ore Feeders (increased throughput)	5.56	24.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Holo Flite Dryer No. 1	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.07	0.00
Lube grade dryer stack	0.001	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jet mill	0.016	0.0576	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tech fine packaging bin	0.013	0.047	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pancake mill	0.001	0.002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Super fine packaging bin	0.024	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pebble lime baghouse	0.11	0.022	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motivator IC engine	1.04	0.26	0.018	0.0045	35.76	8.94	8.20	2.05	0.96	0.24	426.6
Mill auxiliary IC engine	0.58	0.14	0.003	0.0008	8.2	2.1	1.8	4.5	0.16	0.16	75.9
Pumpback IC engine	0.99	0.25	0.005	0.0014	14.0	3.5	3.1	0.77	0.28	0.28	128.8
Tailings pump IC engine No. 1 (new replacement)	0.84	0.21	0.031	0.0078	26.95	6.74	14.74	3.68	2.96	0.74	733.2
Tailings pump IC engine No. 2 (new)	0.84	0.21	0.031	0.0078	26.95	6.74	14.74	3.68	2.96	0.74	733.2
Leach plant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Totals	15.52	35.90	1.20	1.57	113.85	34.36	42.95	16.09	7.35	18.34	8,413.9

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.

b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC		CO ₂ e
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	T/yr
Pre-Project Potential to Emit	35.19	21.33	9.44	21.62	109.53	89.98	23.94	23.79	27.06	22.90	8,413.9
Post Project Potential to Emit	15.52	35.90	1.20	1.57	113.85	34.36	42.95	16.09	7.35	18.34	8,413.9
Changes in Potential to Emit	-19.67	14.57	-8.24	-20.05	4.32	-55.62	19.01	-7.70	-19.71	-4.56	0.00

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table. Total TAPs emissions for the facility were provided by the Applicant and were conservatively assumed to be the total increase for the project. Per IDAPA 58.01.01.210.20, because the IC engines are regulated under NSPS Subparts IIII and NESHAP Subpart ZZZZ TAPs emissions from these sources were not included.

Pre- and post-project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

Table 5 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	0.0	0.0	0.0000000	0.017	No
Chromium	0.0	7.0E-06	0.000007	0.033	No
Ethyl benzene	0.0	1.0E-06	0.000001	29	No
Manganese	0.0	1.3E-05	0.0000	0.333	No
Naphthalene	0.0	2.22E-03	0.002220	3.33	No
Selenium	0.0	3.3E-5	0.0000	0.013	No
Toluene	0.0	4.85E-3	0.00485	25	No
o-Xylene	0.0	3.28E-3	0.0033	29	No

None of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is not required for any non-carcinogenic TAP because none of the 24-hour average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of carcinogenic toxic air pollutants (TAP) is provided in the following table. Total TAPs emissions for the facility were provided by the Applicant. Per IDAPA 58.01.01.210.20, because the IC engines are regulated under NSPS Subparts IIII and NESHAP Subpart ZZZZ TAPs emissions from these sources were not included.

Pre- and post-project, as well as the change in, carcinogenic TAP emissions are presented in the following table:

Table 6 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR CARCINOGENIC TOXIC AIR POLLUTANTS

Carcinogenic Toxic Air Pollutants	Pre-Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Post Project Annual Average Emissions Rates for Units at the Facility (lb/hr)	Change in Annual Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acetaldehyde	0.0	0.0	0.0000	3.0E-03	No
Benzene	0.0	2.86E-06	0.0000	8.0E-04	No
Beryllium & compounds	0.0	7.0E-06	0.0000	2.8E-05	No
Formaldehyde	0.0	4.4E-04	0.0004	5.1E-04	No
Nickel	0.0	7.0E-6	0.0000	2.7E-05	No
Total PAHs	0.0	6.2E-07	0.0000	9.1E-05	No
Total POMs	0.0	1.6E-07	0.0000	2.0E-06	No

- a) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

None of the PTEs for carcinogenic TAPs were exceeded as a result of this project. Therefore, modeling is not required for any carcinogenic TAP because none of the annual average carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

Post Project HAP Emissions

The following table presents the post project potential to emit for HAP pollutants from all emissions units at the facility as submitted by the Applicant and verified by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 7 HAZARDOUS AIR POLLUTANTS EMISSIONS POTENTIAL TO EMIT SUMMARY

Hazardous Air Pollutants	PTE (lb/hr)	PTE (T/yr)
Benzene	3.52E-03	0.0154
Ethyl benzene	3.23E-03	0.0141
Formaldehyde	7.03E-02	0.308
Naphthalene	3.45E-02	0.1511
1,1,1-Trichlorethane	9.60E-04	0.00420
Toluene	2.073E-03	0.00908
o-Xylene	1.97E-03	0.00863
Totals	0.1166	0.511

Ambient Air Quality Impact Analyses

As presented in the Modeling Memo in Appendix B, the estimated emission rates of PM₁₀, PM_{2.5}, SO₂, NO_x, and CO from this project were above applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline¹. Refer to the Emissions Inventories section for additional information concerning the emission inventories.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAP is provided in Appendix B.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Custer County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

"Synthetic Minor" classification for criteria pollutants is defined as the uncontrolled Potential to Emit for criteria pollutants are above the applicable major source thresholds and the Potential to Emit for criteria pollutants fall below the applicable major source thresholds.

As discussed previously this facility has been determined to be a Synthetic Minor for NO_x, PM₁₀, and THAP emissions and there is no change in facility classification as a result of this project.

¹ Criteria pollutant thresholds in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201

Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the modified emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401

Tier II Operating Permit

The application was submitted to convert a Tier II operating permit to a Permit to Construct (refer to the Permit to Construct section). Therefore, the procedures of IDAPA 58.01.01.400-410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625

Visible Emissions

The sources of PM₁₀ emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.7, 2.8, 3.4, 5.4, 6.4, 7.4, 10.9, and 11.4.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676

Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. No fuel burning equipment at this facility is rated at 10MMbtu/hr or more. Therefore, no equipment at this facility is subject to the requirements of this Rule and no further discussion is required.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301

Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for any criteria pollutant, or 100,000 tons per year for CO₂e, or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21

Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Because the facility is a metallic mineral processing plant and has two boilers and five compression-ignited IC engines (three existing, two new) the following NSPS requirements apply to this facility:

- 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
- 40 CFR 60, Subpart LL - Standards of Performance for Metallic Mineral Processing Plants
- 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Sections that are highlighted are applicable to the emissions units at the facility.

40 CFR 60, Subpart Dc

Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

§ 60.40c

Applicability and designation of authority

Section (a) states that except as provided in paragraphs (d), (e), (f), and (g) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).

As both boilers at this facility are rated at less than 10 MMBtu/hr the requirements of this subpart are not applicable to the boilers at this facility and no further discussion is required.

40 CFR 60, Subpart LL

Standards of Performance for Metallic Mineral Processing Plants

§ 60.380

Applicability and designation of affected facility

Section (a) states that the provisions of this subpart are applicable to the following affected facilities in metallic mineral processing plants: Each crusher and screen in open-pit mines; each crusher, screen, bucket elevator, conveyor belt transfer point, thermal dryer, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, railcar loading station, and railcar unloading station at the mill or concentrator with the following exceptions. All facilities located in underground mines are exempted from the provisions of this subpart. At uranium ore processing plants, all facilities subsequent to and including the beneficiation of uranium ore are exempted from the provisions of this subpart.

Section (b) states that an affected facility under paragraph (a) of this section that commences construction or modification after August 24, 1982, is subject to the requirements of this part.

As this facility the following emissions units commenced construction or modification after August 24, 1982 and are subject to the requirements of this subpart:

- Holo Flite Dryer #2
- Rotary Kiln Dryer
- Lube Grade Dryer Stack
- Jet Mill
- Tech Fine Packaging Bin
- Pancake Mill Feed Bin
- Super Fine Packaging Bin

The definitions of this subpart are applicable to this facility.

Section (a) states that on and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an affected facility any stack emissions that:

- (1) Contain particulate matter in excess of 0.05 grams per dry standard cubic meter (0.02 g/dscm).
- (2) Exhibit greater than 7 percent opacity, unless the stack emissions are discharged from an affected facility using a wet scrubbing emission control device.

These requirements are assured by Permit Condition 8.3.

Section (b) states that on and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from an affected facility any process fugitive emissions that exhibit greater than 10 percent opacity.

These requirements are assured by Permit Condition 8.4.

Section (a) states that the owner or operator subject to the provisions of this subpart shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the scrubber for any affected facility using a wet scrubbing emission control device. The monitoring device must be certified by the manufacturer to be accurate within ± 250 pascals (± 1 inch water) gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(b) The owner or operator subject to the provisions of this subpart shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to a wet scrubber for any affected facility using any type of wet scrubbing emission control device. The monitoring device must be certified by the manufacturer to be accurate within ± 5 percent of design scrubbing liquid flow rate and must be calibrated on at least an annual basis in accordance with manufacturer's instructions.

These requirements are assured by Permit Condition 8.10.

Section (a) states that the owner or operator subject to the provisions of this subpart shall conduct a performance test and submit to the Administrator a written report of the results of the test as specified in §60.8(a).

Section (b) states that during the initial performance test of a wet scrubber, and at least weekly thereafter, the owner or operator shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

Section (c) states that after the initial performance test of a wet scrubber, the owner or operator shall submit semiannual reports to the Administrator of occurrences when the measurements of the scrubber pressure loss (or gain) or liquid flow rate differ by more than ± 30 percent from the average obtained during the most recent performance test.

Section (d) states that the reports required under paragraph (c) shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

Section (e) states that the requirements of this subsection remain in force until and unless the Agency, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In that event, affected sources within the State will be relieved of the obligation to comply with this subsection, provided that they comply with requirements established by the State.

These requirements are assured by Permit Condition 8.11.

§ 60.386

Test methods and procedures

Section (a) states that in conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).

Section (b) states that the owner or operator shall determine compliance with the particulate matter standards §60.382 as follows:

- (1) Method 5 or 17 shall be used to determine the particulate matter concentration. The sample volume for each run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121 °C (250 °F)) in order to prevent water condensation on the filter.
- (2) Method 9 and the procedures in §60.11 shall be used to determine opacity from stack emissions and process fugitive emissions. The observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed.

Section (c) states that to comply with §60.385(c), the owner or operator shall use the monitoring devices in §60.384(a) and (b) to determine the pressure loss of the gas stream through the scrubber and scrubbing liquid flow rate at any time during each particulate matter run, and the average of the three determinations shall be computed.

These requirements are assured by Permit Condition 8.10.

The following NSPS Subpart applies to the newly installed Tailings Pumps #1 and #2 emergency IC engines.

40 CFR 60, Subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

§ 60.4200

Am I subject to this subpart?

Section (a) specifies that the provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in paragraphs (a)(1) through (4) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

- (i) 2007 or later, for engines that are not fire pump engines;
- (ii) The model year listed in Table 3 to this subpart or later model year, for fire pump engines.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are:

- (i) Manufactured after April 1, 2006, and are not fire pump engines, or
- (ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of any stationary CI ICE that are modified or reconstructed after July 11, 2005 and any person that modifies or reconstructs any stationary CI ICE after July 11, 2005.

(4) The provisions of §60.4208 of this subpart are applicable to all owners and operators of stationary CI ICE that commence construction after July 11, 2005.

(b) The provisions of this subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

(c) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart applicable to area sources.

(d) Stationary CI ICE may be eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR part 89, subpart J and 40 CFR part 94, subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

(e) Owners and operators of facilities with CI ICE that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

The Applicant has two newly installed emergency IC engines (Tailings Pumps IC Engines #1 and #2) that were installed/constructed after July 11, 2005. Therefore, this subpart is applicable to the two newly installed emergency Tailings Pumps IC Engines #1 and #2 at this facility.

§ 60.4205

What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

Section (a) specifies that owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines must comply with the emission standards in Table 1 to this subpart. Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

The two newly installed emergency IC engines (Tailings Pumps IC Engines #1 and #2) are Tier 2 certified engines which meet these emissions requirements. This requirement is assured by Permit Condition 10.4.

§ 60.4206

How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

Section (a) specifies that owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 over the entire life of the engine.

This requirement is assured by Permit Condition 10.5 for the emergency Tailings Pumps IC Engines #1 and #2.

§ 60.4207

What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

Section (a) specifies that beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.

(c) [Reserved]

(d) Beginning June 1, 2012, owners and operators of stationary CI ICE subject to this subpart with a displacement of greater than or equal to 30 liters per cylinder are no longer subject to the requirements of paragraph (a) of this section, and must use fuel that meets a maximum per-gallon sulfur content of 1,000 parts per million (ppm).

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

§ 80.510

What are the standards and marker requirements for NRLM diesel fuel and ECA marine fuel?

(b) Beginning June 1, 2010 . Except as otherwise specifically provided in this subpart, all NR and LM diesel fuel is subject to the following per-gallon standards:

(1) Sulfur content.

(i) 15 ppm maximum for NR diesel fuel.

(ii) 500 ppm maximum for LM diesel fuel.

The Applicant has proposed that all of the IC engines (see Applicant provided SO₂ emissions calculations in Appendix A). This requirement is assured by Permit Condition 10.6.

§ 60.4208

What is the deadline for importing or installing stationary CI ICE produced in previous model years?

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

This requirement is assured by Permit Condition 10.3 for the emergency Tailings Pumps IC Engines #1 and #2.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 kW (25 hp) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 kW (25 hp) and less than 56 kW (75 hp) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 kW (75 hp) and less than 130 kW (175 hp) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 kW (175 hp), including those above 560 kW (750 hp), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 kW (750 hp) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) After December 31, 2018, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power greater than or equal to 600 kW (804 hp) and less than 2,000 kW (2,680 hp) and a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that do not meet the applicable requirements for 2017 model year non-emergency engines.

(h) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (g) of this section after the dates specified in paragraphs (a) through (g) of this section.

(i) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

The Applicant has installed Tier 2 certified engines (Tailings Pumps IC Engines #1 and #2). These requirements are assured by Permit Condition 10.3.

§ 60.4209

What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine that does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter prior to startup of the engine.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. Emergency IC engines S-G04, S-G05, and S-G06 are not equipped with diesel particulate filters.

These requirements are assured by Permit Condition 10.13 for the emergency Tailings Pumps IC Engines #1 and #2.

§ 60.4211

What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

- (1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions;
- (2) Change only those emission-related settings that are permitted by the manufacturer; and
- (3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

- (1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.
- (2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.
- (3) Keeping records of engine manufacturer data indicating compliance with the standards.
- (4) Keeping records of control device vendor data indicating compliance with the standards.
- (5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

The Applicant has installed two post 2007 model year stationary CI internal combustion engines. Therefore, these requirements are not applicable and no further discussion is required.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's emission-related specifications, except as permitted in paragraph (g) of this section.

The Applicant has installed two Tier 2 certified IC engines and has had them installed and configured properly. Therefore, these requirements are not applicable and no further discussion is required.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section.

(1) Conducting an initial performance test to demonstrate initial compliance with the emission standards as specified in §60.4213.

(2) Establishing operating parameters to be monitored continuously to ensure the stationary internal combustion engine continues to meet the emission standards. The owner or operator must petition the Administrator for approval of operating parameters to be monitored continuously. The petition must include the information described in paragraphs (d)(2)(i) through (v) of this section.

(i) Identification of the specific parameters you propose to monitor continuously;

(ii) A discussion of the relationship between these parameters and NO_x and PM emissions, identifying how the emissions of these pollutants change with changes in these parameters, and how limitations on these parameters will serve to limit NO_x and PM emissions;

(iii) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(iv) A discussion identifying the methods and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(v) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(3) For non-emergency engines with a displacement of greater than or equal to 30 liters per cylinder, conducting annual performance tests to demonstrate continuous compliance with the emission standards as specified in §60.4213.

The Applicant has installed two Tier 2 certified IC engines. Therefore, these requirements are not applicable and no further discussion is required.

(e) If you are an owner or operator of a modified or reconstructed stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(e) or §60.4205(f), you must demonstrate compliance according to one of the methods specified in paragraphs (e)(1) or (2) of this section.

(1) Purchasing, or otherwise owning or operating, an engine certified to the emission standards in §60.4204(e) or §60.4205(f), as applicable.

(2) Conducting a performance test to demonstrate initial compliance with the emission standards according to the requirements specified in §60.4212 or §60.4213, as appropriate. The test must be conducted within 60 days after the engine commences operation after the modification or reconstruction.

The Applicant has installed two Tier 2 certified IC engines. Therefore, these requirements are not applicable and no further discussion is required.

(f) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this section, is prohibited.

These requirements are assured by Permit Condition 10.11 for emergency Tailings Pumps IC Engines #1 and #2.

(g) If you do not install, configure, operate, and maintain your engine and control device according to the manufacturer's emission-related written instructions, or you change emission-related settings in a way that is not permitted by the manufacturer, you must demonstrate compliance as follows:

- (1) If you are an owner or operator of a stationary CI internal combustion engine with maximum engine power less than 100 HP, you must keep a maintenance plan and records of conducted maintenance to demonstrate compliance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, if you do not install and configure the engine and control device according to the manufacturer's emission-related written instructions, or you change the emission-related settings in a way that is not permitted by the manufacturer, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of such action.
- (2) If you are an owner or operator of a stationary CI internal combustion engine greater than or equal to 100 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer.
- (3) If you are an owner or operator of a stationary CI internal combustion engine greater than 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after an engine and control device is no longer installed, configured, operated, and maintained in accordance with the manufacturer's emission-related written instructions, or within 1 year after you change emission-related settings in a way that is not permitted by the manufacturer. You must conduct subsequent performance testing every 8,760 hours of engine operation or 3 years, whichever comes first, thereafter to demonstrate compliance with the applicable emission standards.

The Applicant has installed two Tier 2 certified IC engines. Therefore, these requirements are not applicable and no further discussion is required.

What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

(1) Submit an initial notification as required in §60.7(a)(1). The notification must include the information in paragraphs (a)(1)(i) through (v) of this section.

(i) Name and address of the owner or operator;

(ii) The address of the affected source;

(iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(iv) Emission control equipment; and

(v) Fuel used.

(2) Keep records of the information in paragraphs (a)(2)(i) through (iv) of this section.

(i) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(ii) Maintenance conducted on the engine.

(iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards.

(iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. The following table applies:

You must comply with the labeling requirements in §60.4210(f) and the recordkeeping requirements in §60.4214(b) for new emergency stationary CI ICE beginning in the following model years:

Table 8 - Table 5 to Subpart IIII of Part 60—Labeling and Recordkeeping Requirements for New Stationary Emergency Engines

Engine power	Starting model year
19≤KW<56 (25≤HP<75)	2013
56≤KW<130 (75≤HP<175)	2012
KW≥130 (HP≥175)	2011

The Applicant has installed two Tier 2 certified IC engines that are not equipped with diesel particulate filters. Therefore, these requirements are not applicable and no further discussion is required.

NESHAP Applicability (40 CFR 61)

The proposed source is not an affected source subject to NESHAP in 40 CFR 61, and this permitting action does not alter the applicability status of existing affected sources at the facility.

MACT Applicability (40 CFR 63)

Because the facility is a metallic mineral processing plant and has two boilers and five compression-ignited IC engines (three existing, two new) the following NESHAP requirements apply to this facility:

- 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
- 40 CFR 63, Subpart JJJJJ - National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

The Applicant has three existing emergency IC engines (the Motivator, Mill Auxillary, and Pumpback IC Engines) that were installed/constructed prior to June 12, 2006. Therefore, this subpart is applicable to the three existing emergency Motivator, Mill Auxillary, and Pumpback IC Engines at this facility.

Sections that are highlighted are applicable to the emissions units at the facility.

40 CFR 63, Subpart ZZZZ

National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

§ 63.6580

What is the purpose of subpart ZZZZ?

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585

Am I subject to this subpart?

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

This facility is an area source for HAPs emissions. Therefore, the older IC engine at this facility (the Motivator, Mill Auxillary, and Pumpback IC Engines) are subject to the requirements of Subpart ZZZZ.

§ 63.6590

What parts of my plant does this subpart cover?

This subpart applies to each affected source.

Section (a) defines an affected source as any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.

Sections (1)(i) through (1)(iv) defines existing stationary RICE as the following:

For stationary RICE with a site rating of more than 500 brake horsepower (bhp) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

For stationary RICE with a site rating of less than or equal to 500 brake bhp located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

A change in ownership of an existing stationary RICE does not make that stationary RICE a new or reconstructed stationary RICE.

Sections (2)(i) through (2)(iii) defines new stationary RICE as the following:

A stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.

A stationary RICE with a site rating of equal to or less than 500 bhp located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

Section (3)(i) through (2)(iii) defines reconstructed stationary RICE as the following:

A stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.

A stationary RICE with a site rating of equal to or less than 500 bhp located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

A stationary RICE located at an area source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

Section (b) specifies which stationary RICE are subject to limited requirements of this subpart. An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of §63.6645(f). The requirements of (b)(1)(i) through (ii) are as follows:

The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions.

The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions.

Section (2) specifies that a new or reconstructed stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10% or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of this subpart.

Section (3) allows that the following stationary RICE do not have to meet the requirements of this subpart and of subpart A of this part, including initial notification requirements:

Existing spark ignition 2-stroke lean-burn (2SLB) stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing spark ignition 4-stroke lean-burn (4SLB) stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing emergency stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing limited use stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions;

Existing stationary RICE with a site rating of more than 500 bhp located at a major source of HAP emissions that combusts landfill gas or digester gas equivalent to 10% or more of the gross heat input on an annual basis;

Existing residential emergency stationary RICE located at an area source of HAP emissions;

Existing commercial emergency stationary RICE located at an area source of HAP emissions; or

Existing institutional emergency stationary RICE located at an area source of HAP emissions.

All three emergency IC engines, the Motivator, Mill Auxillary, and Pumpback, were installed prior to June 12, 2006 per the Applicant (all in 1981). Therefore, for Subpart ZZZZ the Motivator, Mill Auxillary, and Pumpback IC engines are considered "existing." The other IC engines at the facility powering electrical generators (Tailings Pumps IC Engines #1 and #2) are subject to NSPS Subpart IIII (as discussed previously). Therefore, Subpart ZZZZ does not apply to these IC engines.

§ 63.6595

When do I have to comply with this subpart?

(a) Affected sources.

(1) If you have an existing stationary RICE, excluding existing non-emergency CI stationary RICE, with a site rating of more than 500 brake HP located at a major source of HAP emissions, you must comply with the applicable emission limitations, operating limitations and other requirements no later than June 15, 2007. If you have an existing non-emergency CI stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, an existing stationary CI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations, operating limitations, and other requirements no later than May 3, 2013. If you have an existing stationary SI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary SI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations, operating limitations, and other requirements no later than October 19, 2013.

(2) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions before August 16, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart no later than August 16, 2004.

(3) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions after August 16, 2004, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

(4) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions before January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart no later than January 18, 2008.

(5) If you start up your new or reconstructed stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

(6) If you start up your new or reconstructed stationary RICE located at an area source of HAP emissions before January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart no later than January 18, 2008.

(7) If you start up your new or reconstructed stationary RICE located at an area source of HAP emissions after January 18, 2008, you must comply with the applicable emission limitations and operating limitations in this subpart upon startup of your affected source.

(b) Area sources that become major sources. If you have an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP, the compliance dates in paragraphs (b)(1) and (2) of this section apply to you.

(1) Any stationary RICE for which construction or reconstruction is commenced after the date when your area source becomes a major source of HAP must be in compliance with this subpart upon startup of your affected source.

(2) Any stationary RICE for which construction or reconstruction is commenced before your area source becomes a major source of HAP must be in compliance with the provisions of this subpart that are applicable to RICE located at major sources within 3 years after your area source becomes a major source of HAP.

(c) If you own or operate an affected source, you must meet the applicable notification requirements in §63.6645 and in 40 CFR part 63, subpart A.

Therefore, the Motivator, Mill Auxillary, and Pumpback IC engines shall comply with Subpart ZZZZ on and after May 3, 2013. This requirement is assured by Permit Condition 10.7.

§ 63.6603

What emission limitations, operating limitations, and other requirements must I meet if I own or operate an existing stationary RICE located at an area source of HAP emissions?

Compliance with the numerical emission limitations established in this subpart is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in §63.6620 and Table 4 to this subpart.

(a) If you own or operate an existing stationary RICE located at an area source of HAP emissions, you must comply with the requirements in Table 2d to this subpart and the operating limitations in Table 2b to this subpart that apply to you.

Table 9 - Table 2D to Subpart ZZZZ of Part 63—Requirements for Existing Stationary RICE Located at Area Sources of HAP Emissions

For each...	You must meet the following requirement, except during periods of startup...	During periods of startup you must...
4. Emergency stationary CI RICE and black start stationary CI RICE.	a. Change oil and filter every 500 hours of operation or annually, whichever comes first;	
	b. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and	
	c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.	

Therefore, the Motivator, Mill Auxillary, and Pumpback IC engines shall comply with Subpart ZZZZ on and after May 3, 2013. This requirement is assured by Permit Condition 10.5.

Sections that are highlighted are applicable to the emissions units at the facility.

40 CFR 63, Subpart JJJJJJ

National Emissions Standards for Hazardous Air Pollutants for
Industrial, Commercial, and Institutional Boilers Area Sources

§ 63.11193 Am I subject to this subpart?

You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in §63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in §63.2, except as specified in §63.11195.

This facility has industrial boilers at an area source of HAP. Therefore, the boilers at this facility is subject to the requirements of Subpart JJJJJJ.

§ 63.11194 What is the affected source of this subpart?

(a) This subpart applies to each new, reconstructed, or existing affected source as defined in paragraphs (a)(1) and (2) of this section.

(1) The affected source of this subpart is the collection of all existing industrial, commercial, and institutional boilers within a subcategory, as listed in §63.11200 and defined in §63.11237, located at an area source.

(2) The affected source of this subpart is each new or reconstructed industrial, commercial, or institutional boiler within a subcategory, as listed in §63.11200 and as defined in §63.11237, located at an area source.

(b) An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010.

(c) An affected source is a new source if you commenced construction of the affected source after June 4, 2010, and the boiler meets the applicability criteria at the time you commence construction.

(d) An affected source is a reconstructed source if the boiler meets the reconstruction criteria as defined in §63.2, you commenced reconstruction after June 4, 2010, and the boiler meets the applicability criteria at the time you commence reconstruction.

(e) An existing dual-fuel fired boiler meeting the definition of gas-fired boiler, as defined in §63.11237, that meets the applicability requirements of this subpart after June 4, 2010 due to a fuel switch from gaseous fuel to solid fossil fuel, biomass, or liquid fuel is considered to be an existing source under this subpart as long as the boiler was designed to accommodate the alternate fuel.

(f) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or part 71 as a result of this subpart. You may, however, be required to obtain a title V permit due to another reason or reasons. See 40 CFR 70.3(a) and (b) or 71.3(a) and (b).

Notwithstanding the exemption from title V permitting for area sources under this subpart, you must continue to comply with the provisions of this subpart.

The operations at TCMC are classified as an "area source" of HAP emissions. The term "construction" is defined at 40 C.F.R. § 63.2 of the MACT General Provisions as meaning "the on-site fabrication, erection, or installation of an affected source." As provided under Section 63.11194(b), both Boiler No. 1 and the Hot Oil Boiler were constructed before June 4, 2010 per the Applicant. Therefore they each qualify as "existing" industrial boilers under this subpart.

§ 63.11196 What are my compliance dates?

(a) If you own or operate an existing affected boiler, you must achieve compliance with the applicable provisions in this subpart as specified in paragraphs (a)(1) through (3) of this section.

(1) If the existing affected boiler is subject to a work practice or management practice standard of a tune-up, you must achieve compliance with the work practice or management practice standard no later than March 21, 2014.

(2) If the existing affected boiler is subject to emission limits, you must achieve compliance with the emission limits no later than March 21, 2014.

(3) If the existing affected boiler is subject to the energy assessment requirement, you must achieve compliance with the energy assessment requirement no later than March 21, 2014.

(b) If you start up a new affected source on or before May 20, 2011, you must achieve compliance with the provisions of this subpart no later than May 20, 2011.

(c) If you start up a new affected source after May 20, 2011, you must achieve compliance with the provisions of this subpart upon startup of your affected source.

(d) If you own or operate an industrial, commercial, or institutional boiler and would be subject to this subpart except for the exemption in §63.11195(b) for commercial and industrial solid waste incineration units covered by 40 CFR part 60, subpart CCCC or subpart DDDD, and you cease combusting solid waste, you must be in compliance with this subpart on the effective date of the waste to fuel switch as specified in §60.2145(a)(2) and (3) of subpart CCCC or §60.2710(a)(2) and (3) of subpart DDDD.

Both Boiler No. 1 and the Hot Oil Boiler were constructed before June 4, 2010 per the Applicant. Therefore they each qualify as “existing” industrial boilers under this subpart. Therefore, the initial compliance date for the two boilers is March 21, 2014. Permit conditions 3.7 and 3.8 include this date.

§ 63.11200

What are the subcategories of boilers?

The subcategories of boilers, as defined in §63.11237 are:

(a) Coal.

(b) Biomass.

(c) Oil.

(d) Seasonal boilers.

(e) Oil-fired boilers with heat input capacity of equal to or less than 5 million British thermal units (Btu) per hour.

(f) Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up.

(g) Limited-use boilers.

Since both Boiler No. 1 and Hot Oil boiler combust diesel fuel they are considered to be in the “oil” subcategory, but they are actually subject to different separate “oil” subcategories as provided in Section 11200(c) and (e). This is because the heat input capacity of Boiler No. 1 is greater than 5 MMBtu/hr (subject to Section 63.11200(c)) and the heat input capacity of the Hot Oil Boiler is less than 5 MMBtu/hr (subject to Section 63.11200(e)).

§ 63.11201

What standards must I meet?

(a) You must comply with each emission limit specified in Table 1 to this subpart that applies to your boiler.

Since the two oil-fired boilers are not considered new (constructed before June 4, 2010 per the Applicant) there are no emissions standards listed in Table 1 that apply.

(b) You must comply with each work practice standard, emission reduction measure, and management practice specified in Table 2 to this subpart that applies to your boiler. An energy assessment completed on or after January 1, 2008 that meets or is amended to meet the energy assessment requirements in Table 2 to this subpart satisfies the energy assessment requirement. A facility that operates under an energy management program established through energy management systems compatible with ISO 50001, that includes the affected units, also satisfies the energy assessment requirement.

Table 10 - Table 2 to Subpart JJJJJ of Part 63—Work Practice Standards, Emission Reduction Measures, and Management Practices

If your boiler is in this subcategory...	You must meet the following...
4. Existing oil-fired boilers with heat input capacity greater than 5 MMBtu/hr that do not meet the definition of seasonal boiler or limited-use boiler, or use an oxygen trim system that maintains an optimum air-to-fuel ratio	Conduct an initial tune-up as specified in §63.11214, and conduct a tune-up of the boiler biennially as specified in §63.11223.
12. Existing oil-fired boilers with heat input capacity of equal to or less than 5 MMBtu/hr	Conduct an initial tune-up as specified in §63.11214, and conduct a tune-up of the boiler every 5 years as specified in §63.11223.

Therefore, Boiler No. 1 (with a heat input rating of 6.4 MMBtu/hr) is subject to an initial tune-up as specified in §63.11214, and conduct a tune-up of the boiler biennially as specified in §63.11223. The Hot Oil Boiler (with a heat input rating of 1.8 MMBtu/hr) is subject to an initial tune-up as specified in §63.11214, and conduct a tune-up of the boiler every 5 years as specified in §63.11223. **These requirements are assured by Permit Conditions 3.7 and 3.8 respectively.**

(c) You must comply with each operating limit specified in Table 3 to this subpart that applies to your boiler.

Since the two oil-fired boilers are not subject to emissions limits in this subpart there are no operating limits listed in Table 3 that apply.

(d) These standards apply at all times the affected boiler is operating, except during periods of startup and shutdown as defined in §63.11237, during which time you must comply only with Table 2 to this subpart.

§ 63.11214 How do I demonstrate initial compliance with the work practice standard, emission reduction measures, and management practice?

(a) If you own or operate an existing or new coal-fired boiler with a heat input capacity of less than 10 million Btu per hour, you must conduct a performance tune-up according to §63.11223(b) and you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.

(b) If you own or operate an existing or new biomass-fired boiler or an existing or new oil-fired boiler, you must conduct a performance tune-up according to §63.11223(b) and you must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.

As discussed previously these requirements are assured by Permit Conditions 3.7 and 3.8.

(c) If you own or operate an existing affected boiler with a heat input capacity of 10 million Btu per hour or greater, you must submit a signed certification in the Notification of Compliance Status report that an energy assessment of the boiler and its energy use systems was completed according to Table 2 to this subpart and is an accurate depiction of your facility.

(d) If you own or operate a boiler subject to emission limits in Table 1 of this subpart, you must minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures, if available. If manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available. You must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted startups and shutdowns according to the manufacturer's recommended procedures or procedures specified for a boiler of similar design if manufacturer's recommended procedures are not available.

(a) For affected sources subject to the work practice standard or the management practices of a tune-up, you must conduct a performance tune-up according to paragraph (b) of this section and keep records as required in §63.11225(c) to demonstrate continuous compliance. You must conduct the tune-up while burning the type of fuel (or fuels in the case of boilers that routinely burn two types of fuels at the same time) that provided the majority of the heat input to the boiler over the 12 months prior to the tune-up.

(b) Except as specified in paragraphs (c) through (f) of this section, you must conduct a tune-up of the boiler biennially to demonstrate continuous compliance as specified in paragraphs (b)(1) through (7) of this section. Each biennial tune-up must be conducted no more than 25 months after the previous tune-up. For a new or reconstructed boiler, the first biennial tune-up must be no later than 25 months after the initial startup of the new or reconstructed boiler.

(1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection.

(2) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.

(3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown, not to exceed 36 months from the previous inspection). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection.

(4) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject.

(5) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer.

(6) Maintain on-site and submit, if requested by the Administrator, a report containing the information in paragraphs (b)(6)(i) through (iii) of this section.

(i) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler.

(ii) A description of any corrective actions taken as a part of the tune-up of the boiler.

(iii) The type and amount of fuel used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit.

(7) If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of startup.

(c) Boilers with an oxygen trim system that maintains an optimum air-to-fuel ratio that would otherwise be subject to a biennial tune-up must conduct a tune-up of the boiler every 5 years as specified in paragraphs (b)(1) through (7) of this section. Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed boiler with an oxygen trim system, the first 5-year tune-up must be no later than 61 months after the initial startup. You may delay the burner inspection specified in paragraph (b)(1) of this section and inspection of the system controlling the air-to-fuel ratio specified in paragraph (b)(3) of this section until the next scheduled unit shutdown, but you must inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months.

(d) Seasonal boilers must conduct a tune-up every 5 years as specified in paragraphs (b)(1) through (7) of this section. Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed seasonal boiler, the first 5-year tune-up must be no later than 61 months after the initial startup. You may delay the burner inspection specified in paragraph (b)(1) of this section and inspection of the system controlling the air-to-fuel ratio specified in paragraph (b)(3) of this section until the next scheduled unit shutdown, but you must inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months. Seasonal boilers are not subject to the emission limits in Table 1 to this subpart or the operating limits in Table 3 to this subpart.

(e) Oil-fired boilers with a heat input capacity of equal to or less than 5 million Btu per hour must conduct a tune-up every 5 years as specified in paragraphs (b)(1) through (7) of this section. Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed oil-fired boiler with a heat input capacity of equal to or less than 5 million Btu per hour, the first 5-year tune-up must be no later than 61 months after the initial startup. You may delay the burner inspection specified in paragraph (b)(1) of this section and inspection of the system controlling the air-to-fuel ratio specified in paragraph (b)(3) of this section until the next scheduled unit shutdown, but you must inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months.

(f) Limited-use boilers must conduct a tune-up every 5 years as specified in paragraphs (b)(1) through (7) of this section. Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. For a new or reconstructed limited-use boiler, the first 5-year tune-up must be no later than 61 months after the initial startup. You may delay the burner inspection specified in paragraph (b)(1) of this section and inspection of the system controlling the air-to-fuel ratio specified in paragraph (b)(3) of this section until the next scheduled unit shutdown, but you must inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months. Limited-use boilers are not subject to the emission limits in Table 1 to this subpart, the energy assessment requirements in Table 2 to this subpart, or the operating limits in Table 3 to this subpart.

As discussed previously these requirements are assured by Permit Conditions 3.7 and 3.8.

Permit Conditions Review

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

PERMIT SCOPE

Permit Condition 1.1 describes the modifications to the existing processes at the facility process being permitted as a result of this project.

Permit Condition 1.3 explains which previous permit for the facility is being replaced as a result of this project.

Table 1.1 was updated to reflect the new equipment being installed as a result of this project.

FACILITY-WIDE CONDITIONS

No changes were made to these permit conditions as a result of this project.

BOILER NO. 1 AND THE HOT OIL BOILER

Permit Condition 3.1 provides the process description for the emissions units permitted in this section of the permit.

Permit Condition 3.2 describes the equipment being permitted and the emissions control equipment (if applicable) being employed to control emissions from each emissions unit.

Permit Condition 3.3 lists the criteria pollutant emissions limits of the equipment.

Permit Condition 3.4 establishes that emissions shall not exceed 20% opacity.

Permit Condition 3.5 requires that the boilers only combust ultra-low sulfur diesel fuel as proposed by the Applicant.

Permit Condition 3.6 requires that the Permittee maintain records of the diesel fuel sulfur content on a shipment by shipment basis.

As discussed previously Permit Condition 3.7 incorporates the biennial boiler tune-up requirements of NESHAP Subpart JJJJJ.

As discussed previously Permit Condition 3.8 incorporates the every five year boiler tune-up requirements of NESHAP Subpart JJJJJ.

Permit Condition 3.9 was included to provide the notification address of EPA Region X.

Permit Condition 3.10 was included per current DEQ guidance on permits that include NESHAP requirements.

PORTABLE CRUSHER

Permit condition 4.7 was added to make the recordkeeping requirement consistent with current DEQ guidance.

PRIMARY CRUSHER AND OVERLAND CONVEYOR TRANSFER

Permit Condition 5.4 establishes that emissions shall not exceed 20% opacity.

Permit Condition 5.9 was added to make the recordkeeping requirement consistent with current DEQ guidance.

EAST AND WEST ORE FEEDERS

Permit Condition 6.3 was updated to include the increased emissions limits for the East and West Ore Feeders as proposed by the Applicant (due to increased throughput to both lines).

Permit Condition 6.4 establishes that emissions shall not exceed 20% opacity.

Permit Condition 6.5 was updated to reflect the new combined East and West Ore Feeders throughput (as proposed by the Applicant).

Permit Condition 6.9 was added to make the recordkeeping requirement consistent with current DEQ guidance.

HOLO FLITE DRYER NO. 1

Permit Condition 7.3 lists the criteria pollutant emissions limits of the equipment.

Permit Condition 7.4 establishes that emissions shall not exceed 20% opacity.

HOLO FLITE DRYER NO. 2 AND ROTARY KILN DRYER (LUBE GRADE DRYER STACK)

No Permit Conditions were added or modified.

HIGH PURITY MOLYBDENUM MILLING AND PACKAGING/LIME SILO

No Permit Conditions were added or modified.

EMERGENCY IC ENGINES POWERING ELECTRICAL GENERATORS

As discussed previously Permit Condition 10.3 requires that the Tailings Pumps IC Engines #1 and #2 shall be an EPA Tier 2 Certified engines as proposed by the Applicant.

Permit Condition 10.4 requires that all of the IC Engines combust ultra-low sulfur fuel as proposed by the Applicant.

As discussed previously Permit Condition 10.5 requires that the Tailings Pumps IC Engines #1 and #2 IC Engine's maintenance be performed as required by Subpart IIII.

As discussed previously Permit Condition 10.6 requires that the Motivator, Mill Auxillary, and Pumpback IC Engines shall comply with the requirements of 40 CFR 63, Subpart ZZZZ on and after May 3, 2013 as required by the Subpart.

Permit Condition 10.8 establishes that emissions shall not exceed 20% opacity.

Permit Condition 10.15 and 10.16 were included per current DEQ guidance on permits that include NSPS and NESHAP requirements.

LEACH PLANT

Permit Condition 11.3 establishes that emissions shall not exceed 20% opacity.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were comments on the application and there was a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Public Comment Period

A public comment period was made available to the public in accordance with IDAPA 58.01.01.209.01.c. During this time, comments were submitted in response to DEQ's proposed action. Refer to the chronology for public comment period dates.

A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

APPENDIX A – EMISSIONS INVENTORIES

TABLE 1
THOMPSON CREEK MINE
CRITERIA POLLUTANT EMISSIONS SUMMARY

Source Description	PM ₁₀	PM _{2.5}	NO _x	CO	VOC	SO ₂	CO _{2e}
Primary Crusher	4.06 tpy	1.19 tpy	--	--	--	--	--
Overland Conveyor	4.87 tpy	1.43 tpy	--	--	--	--	--
East Ore Feeder	13.69 tpy	4.03 tpy	--	--	--	--	--
West Ore Feeder	13.69 tpy	4.03 tpy	--	--	--	--	--
Holofite Dryer #1	0.08 tpy	0.02 tpy	--	--	16.07 tpy	--	--
Leach Plant			--	--	--	--	--
Holofite Dryer #2	Common vent to Lube Grade Dryer Stack						
Rotary Kiln							
Lube Grade Dryer Stack	0.004 tpy	0.004 tpy	--	--	1.90 tpy	--	--
Jet Mill Baghouse Stack	0.058 tpy	0.020 tpy	--	--	--	--	--
Tech Fine Packaging Baghouse	0.047 tpy	0.017 tpy	--	--	--	--	--
Pancake Mill Feed Bin Baghouse	0.002 tpy	0.001 tpy	--	--	--	--	--
Super Fine Packaging Bin Baghouse	0.105 tpy	0.037 tpy	--	--	--	--	--
Pebble Lime Baghouse	0.015 tpy	0.005 tpy	--	--	--	--	--
Boiler #1	0.47 tpy	0.32 tpy	4.09 tpy	1.02 tpy	0.07 tpy	0.04 tpy	4,580.3 tpy
Hot Oil Boiler	0.13 tpy	0.09 tpy	1.15 tpy	0.29 tpy	0.02 tpy	0.01 tpy	1,288.2 tpy
Waste Oil Heaters (4)	0.66 tpy	0.66 tpy	0.22 tpy	0.10 tpy	0.02 tpy	1.47 tpy	447.7 tpy
LPG Heating	0.01 tpy	0.01 tpy	0.00 tpy	0.02 tpy	0.00 tpy	0.00 tpy	159.8 tpy
Motivator	0.26 tpy	0.26 tpy	8.94 tpy	2.05 tpy	0.24 tpy	0.00 tpy	426.6 tpy
Mill Auxiliary Generator	0.15 tpy	0.15 tpy	2.05 tpy	0.45 tpy	0.04 tpy	0.00 tpy	75.9 tpy
Pumpback Generator	0.25 tpy	0.25 tpy	3.49 tpy	0.77 tpy	0.07 tpy	0.00 tpy	128.8 tpy
Tailings Pump Generator #1	0.21 tpy	0.21 tpy	6.74 tpy	3.68 tpy	0.74 tpy	0.01 tpy	733.2 tpy
Tailings Pump Generator #2	0.21 tpy	0.21 tpy	6.74 tpy	3.68 tpy	0.74 tpy	0.01 tpy	733.2 tpy
Total	39.0 tpy	12.9 tpy	33.4 tpy	12.1 tpy	19.9 tpy	1.5 tpy	8,573.7 tpy
Total Fugitive Emissions	1,352.8 tpy	433.6 tpy					

TABLE 2
THOMPSON CREEK MINE TSP EMISSIONS

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
SECTION 2: FUEL BURNING EQUIPMENT							
See PM10 Emissions							
SECTION 3: PROCESS AND MANUFACTURING OPERATIONS							
Primary Crusher	16,242,500	0.5	4060.63	baghouse	99%	40.61 tpy	22.250 lb/hr
	tons/year	lb/ton					
Overland Conveyor	16,242,500	0.12	974.55	baghouse	99%	9.75 tpy	5.340 lb/hr
	tons/year	lb/ton					
East and West Ore Feeders	18,250,000	0.12	1,095	venturi	95%	54.75 tpy	12.500 lb/hr
	tons/yr	lbs/ton					
Holofite Dryer #1	81,030	4.93	199.74	venturi/ESP	99.9%	0.20 tpy	0.046 lb/hr
	tons/year	lb/ton					
Lube Grade Dryer Stack		0.001	8760	venturi/ESP	99.9%	0.004 tpy	0.001 lb/hr
Holofite Dryer #2		lb/hr	hr/yr				
Rotary Kiln							
Jet Mill Baghouse	5,760	0.016	7200	baghouse	99.0%	0.058 tpy	0.016 lb/hr
Tech Fine Packaging Bin BH	5,760	0.013	7200	baghouse	99.0%	0.047 tpy	0.013 lb/hr
	tons/year	lb/hr	hr/yr				
Pancake Mill Feed Bin BH	1,450	0.001	3412	baghouse	99.0%	0.002 tpy	0.001 lb/hr
Super Fine Packaging Bin BH	1,450	0.024	8760	baghouse	99.0%	0.105 tpy	0.024 lb/hr
	tons/year	lb/hr	hr/yr				
Pebble Lime Baghouse	5,000	0.61	1.52	baghouse	99.0%	0.015 tpy	0.073 lb/hr
	tons/year	lb/ton					
Process Water Lime Silo	1,000	0.61	0.31	baghouse	99.0%	0.003 tpy	0.146 lb/hr
	tons/year	lb/ton					
TOTAL POINT SOURCE TSP						105.64 tpy	
						Tons/year	

TABLE 3
THOMPSON CREEK MINE PM10 EMISSIONS

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
SECTION 2: FUEL BURNING EQUIPMENT							
Waste Oil Heaters							
Truck Shop 1	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
Truck Shop 2	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
Wash Bay 1	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
Wash Bay 2	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
			gal/hr	hr/yr			
Boilers							
Boiler #1	409,226 gal/yr	2.30 lb/kgal	48.72 gal/hr	8,760 hr/yr	0.0%	0.47 tpy	0.11 lb/hr
Hot Oil Boiler	115,095 gal/yr	2.30 lb/kgal	13.14 gal/hr	8,760 hr/yr	0.0%	0.13 tpy	0.03 lb/hr
LPG Heating	25,000 gal/yr	0.40 lb/kgal	0.005 tpy		0.0%	0.005 tpy	
ELECTRIC POWER GENERATORS							
Motivator	500 hr/yr	0.0007 lb/hp-hr	1,490 bhp			0.26 tpy	1.04 lb/hr
Mill Auxiliary	500 hr/yr	0.0022 lb/hp-hr	265 bhp			0.15 tpy	0.58 lb/hr
Pumpback	500 hr/yr	0.0022 lb/hp-hr	450 bhp			0.25 tpy	0.99 lb/hr
Tailings Pump 1	500 hr/yr	0.20 g/kW-hr	2,561 bhp	1,910 bkW		0.21 tpy	0.84 lb/hr
Tailings Pump 2	500 hr/yr	0.20 g/kW-hr	2,561 bhp	1,910 bkW		0.21 tpy	0.84 lb/hr
SECTION 3: PROCESS AND MANUFACTURING OPERATIONS							
Primary Crusher	16,242,500 tons/yr	0.05 lb/ton	406.1 tpy	baghouse	99%	4.06 tpy	2.23 lb/hr
	tons/year	lb/ton					
Overland Conveyor	16,242,500 tons/yr	0.06 lb/ton	487.3 tpy	baghouse	99%	4.87 tpy	2.67 lb/hr
	tons/year	lb/ton					
East and West Ore Feeders	18,250,000 tons/yr	0.06 lb/ton	547.5 tpy	venturi	95%	27.38 tpy	6.25 lb/hr
	tons/yr	lbs/ton					

**TABLE 3
THOMPSON CREEK MINE PM10 EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
Holofite Dryer #1	81,030 tons/yr	1.97 lb/ton	79.8 tpy	venturi/ESP	99.9%	0.08 tpy	0.02 lb/hr
	tons/year	lb/ton					
Lube Grade Dryer Stack		0.001 lb/hr	8760	venturi/ESP	99.9%	0.004 tpy	0.0010 lb/hr
Holofite Dryer #2		lb/hr	hr/yr				
Rotary Kiln							
Jet Mill Baghouse	5,760 tons/yr	0.016 lb/hr	7200	baghouse	99.0%	0.058 tpy	0.016 lb/hr
Tech Fine Packaging Bin BH	5,760 tons/yr	0.013 lb/hr	7200	baghouse	99.0%	0.047 tpy	0.013 lb/hr
	tons/year	lb/hr	hr/yr				
Pancake Feed Bin BH	1,450 tons/yr	0.001 lb/hr	3412	baghouse	99.0%	0.002 tpy	0.001 lb/hr
Super Fine Packaging Bin BH	1,450 tons/yr	0.024 lb/hr	8760	baghouse	99.0%	0.105 tpy	0.024 lb/hr
	tons/year	lb/hr	hr/yr				
Pebble Lime Baghouse	5,000 tons/yr	0.61 lb/ton	1.52 tpy	baghouse	99.0%	0.015 tpy	0.073 lb/hr
	tons/year	lb/ton					
Process Water Lime Silo	1,000 tons/yr	0.81 lb/ton	0.31 tpy	baghouse	99.0%	0.003 tpy	0.146 lb/hr
	tons/year	lb/ton					
TOTAL POINT SOURCE PM10						38.97 tpy	
						Tons/year	

**TABLE 4
THOMPSON CREEK MINE PM2.5 EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
SECTION 2: FUEL BURNING EQUIPMENT							
Waste Oil Heaters							
Truck Shop 1	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
Truck Shop 2	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
Wash Bay 1	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
Wash Bay 2	10,000 gal/yr	33.15 lb/kgal	3.60 gal/hr	2,800 hr/yr	0.0%	0.17 tpy	0.12 lb/hr
			gal/hr	hr/yr			
Boilers							
Boiler #1	409,226 gal/yr	1.54 lb/kgal	46.72 gal/hr	8,760 hr/yr	0.0%	0.32 tpy	0.07 lb/hr
Hot Oil Boiler	115,095 gal/yr	1.54 lb/kgal	13.14 gal/hr	8,760 hr/yr	0.0%	0.09 tpy	0.02 lb/hr
LPG Heating	25,000 gal/yr	0.40 lb/kgal	0.005 tpy		0.0%	0.005 tpy	
ELECTRIC POWER GENERATORS							
Motivator	500 hr/yr	0.0007 lb/hp-hr	1,490 bhp			0.26 tpy	1.04 lb/hr
Mill Auxillary	500 hr/yr	0.0022 lb/hp-hr	265 bhp			0.15 tpy	0.58 lb/hr
Pumpback	500 hr/yr	0.0022 lb/hp-hr	450 bhp			0.25 tpy	0.99 lb/hr
Tailings Pump 1	500 hr/yr	0.20 g/kW-hr	2,561 bhp	1,910 bkW		0.21 tpy	0.84 lb/hr
Tailings Pump 2	500 hr/yr	0.20 g/kW-hr	2,561 bhp	1,910 bkW		0.21 tpy	0.84 lb/hr
SECTION 3: PROCESS AND MANUFACTURING OPERATIONS							
Primary Crusher	16,242,500 tons/yr	0.015 lb/ton	119.4 tpy	baghouse	99%	1.19 tpy	0.65 lb/hr
	tons/year	lb/ton					
Overland Conveyor	16,242,500 tons/yr	0.018 lb/ton	143.3 tpy	baghouse	99%	1.43 tpy	0.79 lb/hr
	tons/year	lb/ton					
East and West Ore Feeders	18,250,000 tons/yr	0.018 lb/ton	161.0 tpy	venturi	95%	8.05 tpy	1.84 lb/hr
	tons/yr	lbs/ton					

TABLE 4
THOMPSON CREEK MINE PM2.5 EMISSIONS

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
Holoflite Dryer #1	81,030 tons/yr	0.58 lb/ton	23.5 tpy	venturi/ESP	99.9%	0.02 tpy	0.01 lb/hr
	tons/year	lb/ton					
Lube Grade Dryer Stack		0.001 lb/hr	8760	venturi/ESP	99.9%	0.004 tpy	0.0010 lb/hr
Holoflite Dryer #2		lb/hr	hr/yr				
Rotary Kiln							
Jet Mill Baghouse	5,760 tons/yr	0.0056 lb/hr	7200	baghouse	99.0%	0.020 tpy	0.006 lb/hr
Tech Fine Packaging Bin BH	5,760 tons/yr	0.0046 lb/hr	7200	baghouse	99.0%	0.017 tpy	0.005 lb/hr
	tons/year	lb/hr	hr/yr				
Pancake Feed Bin BH	1,450 tons/yr	0.0004 lb/hr	3412	baghouse	99.0%	0.001 tpy	0.000 lb/hr
Super Fine Packaging Bin BH	1,450 tons/yr	0.0085 lb/hr	8760	baghouse	99.0%	0.037 tpy	0.008 lb/hr
	tons/year	lb/hr	hr/yr				
Pebble Lime Baghouse	5,000 tons/yr	0.22 lb/ton	0.54 tpy	baghouse	99.0%	0.005 tpy	0.026 lb/hr
	tons/year	lb/ton					
Process Water Lime Silo	1,000 tons/yr	0.22 lb/ton	0.11 tpy	baghouse	99.0%	0.001 tpy	0.052 lb/hr
	tons/year	lb/ton					
TOTAL POINT SOURCE PM2.5						12.93 tpy	
						Tons/year	

**TABLE 5
THOMPSON CREEK MINE
NOx EMISSIONS**

SOURCE FUGITIVE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
Mobile Sources							
Haul Trucks	175,200 hr/yr	4.12 lb/hr	360.6 tpy		0.0%	360.56 tpy	4.12 lb/hr
Dozers	43,800 hr/yr	1.26 lb/hr	27.6 tpy		0.0%	27.59 tpy	1.26 lb/hr
Wheeled Loaders	26,280 hr/yr	1.89 lb/hr	24.8 tpy		0.0%	24.83 tpy	1.89 lb/hr
Motor Graders	35,040 hr/yr	0.71 lb/hr	12.5 tpy		0.0%	12.49 tpy	0.71 lb/hr
Wheeled Dozers	26,280 hr/yr	4.12 lb/hr	54.1 tpy		0.0%	54.08 tpy	4.12 lb/hr
Drills	35,040 hr/yr	0.71 lb/hr	12.5 tpy		0.0%	12.49 tpy	0.71 lb/hr
Misc.	14,760 hr/yr	1.69 lb/hr	12.5 tpy		0.0%	12.48 tpy	1.69 lb/hr
		lb/hour					
Blasting	200	17				1.70 tpy	
	blasts/year	lb/blast				506.24 tpy	
POINT SOURCE							
Waste Oil Heaters	40,000.0 gal/yr	11.0 lb/kgal	0.2 tpy	14.40 gal/hr	0.0%	0.22 tpy	0.18 lb/hr
	gal/year	lb/1000 gal		gal/hr			
Boilers							
Boiler #1	409,226.3 gal/yr	20.0 lb/kgal	4.1 tpy		0.0%	4.09 tpy	0.93 lb/hr
Hot Oil Boiler	115,094.9 gal/yr	20.0 lb/kgal	1.2 tpy		0.0%	1.15 tpy	0.26 lb/hr
	gal/year	lb/1000 gal					
LPG Heating	25,000.0 gal/yr	0.014 lb/kgal	0.0002 tpy		0.0%	0.0002 tpy	
	gal/year	lb/1000 gal					
ELECTRIC POWER GENERATORS							
Motivator	500 hr/yr	0.024 lb/hp-hr	1,490 bhp			8.94 tpy	35.76 lb/hr
Mill Auxiliary	500 hr/yr	0.031 lb/hp-hr	265 bhp			2.05 tpy	8.22 lb/hr
Pumpback	500 hr/yr	0.031 lb/hp-hr	450 bhp			3.49 tpy	13.95 lb/hr
Tailings Pump 1	500 hr/yr	6.40 g/kW-hr	2,561 bhp	1,910 bKW		6.74 tpy	26.95 lb/hr
Tailings Pump 2	500 hr/yr	6.40 g/kW-hr	2,561 bhp	1,910 bKW		6.74 tpy	26.95 lb/hr
TOTAL POINT SOURCE						33.4 tpy	
TOTAL FUGITIVE						506.2 tpy	
TOTAL NOx						539.7 tpy	

**TABLE 6
THOMPSON CREEK MINE
CO EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
FUGITIVE							
Mobile Sources							
Haul Trucks	175,200 hr/yr	1.794 lb/hr	157.2 tpy		0.0%	157.15 tpy	1.79 lb/hr
Dozers	43,800 hr/yr	0.346 lb/hr	7.6 tpy		0.0%	7.58 tpy	0.35 lb/hr
Wheeled Loaders	26,280 hr/yr	0.572 lb/hr	7.5 tpy		0.0%	7.52 tpy	0.57 lb/hr
Motor Graders	35,040 hr/yr	0.151 lb/hr	2.6 tpy		0.0%	2.65 tpy	0.15 lb/hr
Wheeled Dozers	26,280 hr/yr	1.794 lb/hr	23.6 tpy		0.0%	23.57 tpy	1.79 lb/hr
Drills	35,040 hr/yr	0.151 lb/hr	2.6 tpy		0.0%	2.65 tpy	0.15 lb/hr
Misc. (Shovels, 6x6)	14,760 hr/yr	0.675 lb/hr	5.0 tpy		0.0%	4.98 tpy	0.68 lb/hr
		lb/hour				206.09 tpy	
POINT SOURCE							
Waste Oil Heaters	40,000 gal/yr	5.0 lb/kgal	0.1 tpy	14.4 gal/hr	0.0%	0.10 tpy	0.07 lb/hr
	gal/year	lb/1000 gal					
Boilers							
Boiler #1	409,226.3 gal/yr	5.0 lb/kgal	1.0 tpy		0.0%	1.02 tpy	0.23 lb/hr
Hot Oil Boiler	115,094.9 gal/yr	5.0 lb/kgal	0.3 tpy		0.0%	0.29 tpy	0.07 lb/hr
	gal/year	lb/1000 gal					
LPG Heating	25,000 gal/yr	1.9 lb/kgal	0.02 tpy		0.0%	0.02 tpy	
	gal/year	lb/1000 gal					
ELECTRIC POWER GENERATORS							
Motivator	500 hr/yr	0.0055 lb/hp-hr	1,490 bhp			2.05 tpy	8.20 lb/hr
Mill Auxiliary	500 hr/yr	0.0068 lb/hp-hr	265 bhp			0.45 tpy	1.80 lb/hr
Pumpback	500 hr/yr	0.0068 lb/hp-hr	450 bhp			0.77 tpy	3.06 lb/hr
Tailings Pump 1	500 hr/yr	3.50 g/kW-hr	2,561 bhp	1,910 bkW		3.68 tpy	14.74 lb/hr
Tailings Pump 2	500 hr/yr	3.50 g/kW-hr	2,561 bhp	1,910 bkW		3.68 tpy	14.74 lb/hr
TOTAL POINT SOURCE							
						12.1 tpy	
TOTAL FUGITIVE						206.1 tpy	
TOTAL CO						218.2 tpy	

**TABLE 7
THOMPSON CREEK MINE
SO_x EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
FUGITIVE							
Mobile Sources							
Haul Trucks	175,200 hr/yr	0.45 lb/hr	39.8 tpy		0.0%	39.77 tpy	0.45 lb/hr
Dozers	43,800 hr/yr	0.14 lb/hr	3.0 tpy		0.0%	3.00 tpy	0.14 lb/hr
Wheeled Loaders	26,280 hr/yr	0.18 lb/hr	2.4 tpy		0.0%	2.39 tpy	0.18 lb/hr
Motor Graders	35,040 hr/yr	0.09 lb/hr	1.5 tpy		0.0%	1.51 tpy	0.09 lb/hr
Wheeled Dozers	26,280 hr/yr	0.35 lb/hr	4.6 tpy		0.0%	4.57 tpy	0.35 lb/hr
Drills	35,040 hr/yr	0.09 lb/hr	1.5 tpy		0.0%	1.51 tpy	0.09 lb/hr
Misc.	14,760 hr/yr	0.14 lb/hr	1.1 tpy		0.0%	1.06 tpy	0.14 lb/hr
		lb/hour			TOTAL	53.80 tpy	
POINT SOURCES							
Waste Oil Heaters	40,000.0 gal/yr	73.50 lb/kgal	1.47 tpy	14.4 gal/hr	0.0%	1.47 tpy	1.06 lb/hr
	gal/year	lb/1000 gal					
Boilers							
Boiler #1	409,226.3 gal/yr	0.213 lb/kgal	0.044 tpy		0.0%	0.04 tpy	0.01 lb/hr
Hot Oil Boiler	115,094.9 gal/yr	0.213 lb/kgal	0.012 tpy		0.0%	0.01 tpy	0.00 lb/hr
	gal/year	lb/1000 gal					
LPG Heating	25,000.0 gal/yr	0.0144 lb/kgal	0.0002 tpy		0.0%	0.0002 tpy	
	gal/year	lb/1000 gal					
ELECTRIC POWER GENERATORS							
		S =	0.0015 wt %				
Motivator	500 hr/yr	0.0000121 lb/hp-hr	1,490 bhp			0.0045 tpy	0.018 lb/hr
Mill Auxiliary	500 hr/yr	0.0000121 lb/hp-hr	265 bhp			0.0008 tpy	0.003 lb/hr
Pumpback	500 hr/yr	0.0000121 lb/hp-hr	450 bhp			0.0014 tpy	0.005 lb/hr
Tailings Pump 1	500 hr/yr	0.0000121 lb/hp-hr	2,561 bhp			0.0078 tpy	0.031 lb/hr
Tailings Pump 2	500 hr/yr	0.0000121 lb/hp-hr	2,561 bhp			0.0078 tpy	0.031 lb/hr
					TOTAL	1.55 tpy	
TOTAL FUGITIVE							
TOTAL POINT SOURCE							
TOTAL SO_x							
						53.80 tpy	
						1.55 tpy	
						55.35 tpy	

THOMPSON CREEK MINE

Table 8-1. VOC EMISSIONS (Dryers not Included)

FUEL BURNING EQUIPMENT					
Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	1.00	Ap-42, Fifth Edition, Vol 1, Ch1.11	0.0%	0.005 tpy
Truck Shop 2	10,000	1.00	Ap-42, Fifth Edition, Vol 1, Ch1.11	0.0%	0.005 tpy
Wash Bay 1	10,000	1.00	Ap-42, Fifth Edition, Vol 1, Ch1.11	0.0%	0.005 tpy
Wash Bay 2	10,000	1.00	Ap-42, Fifth Edition, Vol 1, Ch1.11	0.0%	0.005 tpy
	0	lb/1000 gal			
Boilers					
Boiler #1	409,226	0.34	Ap-42, Fifth Edition, Table 1.3-3.	0.0%	0.070 tpy
Hot Oil Boiler	115,095	0.34	Ap-42, Fifth Edition, Table 1.3-3.	0.0%	0.020 tpy
	0	lbs/1000 gals			
LPG Heating	25,000	0.3	Ap-42, Fifth Edition, Vol 1, Ch1.5	0.0%	0.004 tpy
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS					
Motivator	500 hr/yr	0.00064 lb/hp-hr	AP-42, Fifth Edition, Table 3.4-1	1,490 bhp	0.24 tpy
Mill Auxiliary	500 hr/yr	0.00064 lb/hp-hr	AP-42, Fifth Edition, Table 3.4-1	285 bhp	0.04 tpy
Pumpback	500 hr/yr	0.00064 lb/hp-hr	AP-42, Fifth Edition, Table 3.4-1	450 bhp	0.07 tpy
Tailings Pump 1	500 hr/yr	0.70 g/kW-hr	NSPS IIII	1,910 bkW	0.74 tpy
Tailings Pump 2	500 hr/yr	0.70 g/kW-hr	NSPS IIII	1,910 bkW	0.74 tpy
FUEL EVAPORATIVE LOSES					
Gasoline					
Filling - submerged	75000	7.3	Ap-42, Fifth Edition, Vol 1, Ch 5.2		0.27 tpy
Breaking	75000	1	Ap-42, Fifth Edition, Vol 1, Ch 5.2		0.04 tpy
Fueling	75000	11	Ap-42, Fifth Edition, Vol 1, Ch 5.2		0.41 tpy
Spillage	75000	0.7	Ap-42, Fifth Edition, Vol 1, Ch 5.2		0.03 tpy
	gal/year	lb/1000 gal			
Diesel					
Loading - submerged	693000	0.014	Ap-42, Fifth Edition, Vol 1, Ch 5.2		0.00 tpy
	gal/year	lb/1000 gal			
Total VOC					2.70 tpy

THOMPSON CREEK MINE

Table 8-2. VOC SPECIATED HAP EMISSIONS

Benzene					
FUEL BURNING EQUIPMENT					
Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	2.14E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.07E-06
Truck Shop 2	10,000	2.14E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.07E-06
Wash Bay 1	10,000	2.14E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.07E-06
Wash Bay 2	10,000	2.14E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.07E-06
Boiler #1	409,226	2.14E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		4.38E-05
Hot Oil Boiler	115,095	2.14E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.23E-05
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS			POWER OUTPUT		
Motivator	500 hr/yr	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	1,490 bhp	2.43E-03
Mill Auxiliary	500 hr/yr	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	285 bhp	4.33E-04
Pumpback	500 hr/yr	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	450 bhp	7.35E-04
Tailings Pump 1	500 hr/yr	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2,561 bhp	4.18E-03
Tailings Pump 2	500 hr/yr	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2,561 bhp	4.18E-03
		lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
9.33E-04	9.33E-10	7,000	6.53E-06	Total Benzene	
				1.20E-02 tons/yr	

THOMPSON CREEK MINE

Table 8-3. VOC SPECIATED HAP EMISSIONS

Ethylbenzene

FUEL BURNING EQUIPMENT					
Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	6.36E-05	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.18E-07
Truck Shop 2	10,000	6.36E-05	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.18E-07
Wash Bay 1	10,000	6.36E-05	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.18E-07
Wash Bay 2	10,000	6.36E-05	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.18E-07
Boiler #1	409,228	6.36E-05	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.30E-05
Hot Oil Boiler	115,095	6.36E-05	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.66E-06
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS					
				POWER OUTPUT	
Motivator	500	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	1490	2.43E-03
Mill Auxillary	500	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	265	4.33E-04
Pumpback	500	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	450	7.35E-04
Tailings Pump 1	500	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	4.18E-03
Tailings Pump 2	500	6.53E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	4.18E-03
	hr/yr	lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
9.33E-04	9.33E-10	7,000	6.53E-06		

**Total
Ethylbenzene
1.20E-02
tons/yr**

THOMPSON CREEK MINE

Table 8-4. VOC SPECIATED HAP EMISSIONS
Formaldehyde

FUEL BURNING EQUIPMENT					
Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	3.30E-02	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.65E-04
Truck Shop 2	10,000	3.30E-02	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.65E-04
Wash Bay 1	10,000	3.30E-02	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.65E-04
Wash Bay 2	10,000	3.30E-02	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.65E-04
Boiler #1	409,226	3.30E-02	Ap-42, Fifth Edition, Vol 1, Ch1.3		6.75E-03
Hot Oil Boiler	115,095	3.30E-02	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.90E-03
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS			POWER OUTPUT		
Motivator	500	5.37E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	1490	2.00E-03
Mill Auxiliary	500	5.37E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	265	3.56E-04
Pumpback	500	5.37E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	450	6.04E-04
Tailings Pump 1	500	5.37E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	3.44E-03
Tailings Pump 2	500	5.37E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	3.44E-03
	hr/yr	lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
7.67E-04	7.67E-10	7,000	5.37E-06		

**Total Formaldehyde 1.91E-02
tons/yr**

THOMPSON CREEK MINE

Table 8-5. VOC SPECIATED HAP EMISSIONS
Naphthalene

FUEL BURNING EQUIPMENT					
Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	1.13E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.85E-06
Truck Shop 2	10,000	1.13E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.85E-06
Wash Bay 1	10,000	1.13E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.85E-06
Wash Bay 2	10,000	1.13E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.85E-06
Boiler #1	409,226	1.13E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		2.31E-04
Hot Oil Boiler	115,095	1.13E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		6.50E-05
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS			POWER OUTPUT		
Motivator	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	1490	2.21E-04
Mill Auxiliary	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	265	3.93E-05
Pumpback	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	450	6.68E-05
Tailings Pump 1	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	3.80E-04
Tailings Pump 2	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	3.80E-04
	hr/yr	lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
8.48E-05	8.48E-11	7,000	5.94E-07		

**Total Naphthalene 1.41E-03
tons/yr**

THOMPSON CREEK MINE

Table 8-8. VOC SPECIATED HAP EMISSIONS
1,1,1-Trichloroethane

FUEL BURNING EQUIPMENT

Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	2.36E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.18E-06
Truck Shop 2	10,000	2.36E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.18E-06
Wash Bay 1	10,000	2.36E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.18E-06
Wash Bay 2	10,000	2.36E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.18E-06
Boiler #1	409,226	2.36E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		4.83E-05
Hot Oil Boiler	115,095	2.36E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.36E-05
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS				POWER OUTPUT	
Motivator	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	1490	2.21E-04
Mill Auxiliary	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	265	3.93E-05
Pumpback	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	450	6.68E-05
Tailings Pump 1	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	3.80E-04
Tailings Pump 2	500	5.94E-07	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	3.80E-04
	hr/yr	lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
8.48E-05	8.48E-11	7,000	5.94E-07		

**Total 1,1,1-
Trichloroethane**
**1.15E-03
tons/yr**

THOMPSON CREEK MINE

Table 8-7. VOC SPECIATED HAP EMISSIONS

Toluene

FUEL BURNING EQUIPMENT					
Waste Oil Heaters	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Truck Shop 1	10,000	6.20E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.10E-05
Truck Shop 2	10,000	6.20E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.10E-05
Wash Bay 1	10,000	6.20E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.10E-05
Wash Bay 2	10,000	6.20E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.10E-05
Boiler #1	409,228	6.20E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		1.27E-03
Hot Oil Boiler	115,095	6.20E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3		3.57E-04
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS			POWER OUTPUT		
Motivator	500	2.86E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	1490	1.07E-03
Mill Auxiliary	500	2.86E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	265	1.90E-04
Pumpback	500	2.86E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	450	3.22E-04
Tailings Pump 1	500	2.86E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	1.83E-03
Tailings Pump 2	500	2.86E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	1.83E-03
	hr/yr	lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
4.09E-04	4.09E-10	7,000	2.86E-06		
Total Toluene					6.99E-03 tons/yr

THOMPSON CREEK MINE

Table 8-8. VOC SPECIATED HAP EMISSIONS
o-Xylene

FUEL BURNING EQUIPMENT					
	PROCESS RATE	EMISSION FACTOR	EF SOURCE	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Waste Oil Heaters					
Truck Shop 1	10,000	1.09E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.45E-07
Truck Shop 2	10,000	1.09E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.45E-07
Wash Bay 1	10,000	1.09E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.45E-07
Wash Bay 2	10,000	1.09E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		5.45E-07
Boiler #1	409,226	1.09E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		2.23E-05
Hot Oil Boiler	115,095	1.09E-04	Ap-42, Fifth Edition, Vol 1, Ch1.3		6.27E-06
	gal/year	lb/1000 gal			
ELECTRIC POWER GENERATORS			POWER OUTPUT		
Motivator	500	2.00E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	1490	7.43E-04
Mill Auxiliary	500	2.00E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	265	1.32E-04
Pumpback	500	2.00E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	450	2.24E-04
Tailings Pump 1	500	2.00E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	1.28E-03
Tailings Pump 2	500	2.00E-06	Ap-42, Fifth Edition, Vol 1, Ch3.3	2561	1.28E-03
	hr/yr	lb/hp-hr		hp	
Factor Conversion					
lb/MMBtu	lb/Btu	Btu/hp-hr	lb/hp-hr		
2.85E-04	2.85E-10	7,000	2.00E-06		
Total o-Xylene					3.69E-03 tons/yr

THOMPSON CREEK MINE

Table 8-9. VOC-HAP EMISSIONS SUMMARY
All Sources (Dryers NOT Included)

Pollutant	Tons/year
VOC	2.70
VOC SPECIATED HAP's	
Benzene	1.20E-02
Ethylbenzene	1.20E-02
Formaldehyde	1.91E-02
Naphthalene	1.41E-03
1,1,1-Trichloroethane	1.15E-03
Toluene	6.99E-03
o-Xylene	3.69E-03
Total HAP's	5.63E-02

THOMPSON CREEK MINE

Tatel 8-10. Dryer VOC Emissions

Dryer	Hours Op per yr (hr/yr)	Production Rate (lb/hr)	Emission Factor (lb/hr)	Emissions Rate (tons/yr)	Emission Factor Source
Holofite #1	8760	11,998	3.67	18.1	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Lube Circuit	8760	1,248	0.434	1.9	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.

17.98 TOTAL VOC EMISSIONS FROM DRYERS (tons/yr)

2.70 TOTAL NON-DRYER VOC EMISSIONS (tons/yr) (from Table 9)

20.67 TOTAL FACILITY VOC EMISSIONS (tons/yr)

Table 8-11. VOC SPECIATED HAP's

Holofite #1

	Hours Op per yr (hr/yr)	Emission Factor (lb/hr)	Emissions Rate (tons/yr)	Emission Factor Source
Benzene	8760	4.40E-05	1.93E-04	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Ethylbenzene	8760	3.34E-04	1.46E-03	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Formaldehyde	8760	3.30E-02	1.45E-01	Ap-42, Fifth Edition, Vol 1, Ch1.3
Naphthalene	8760	1.13E-03	1.45E-01	Ap-42, Fifth Edition, Vol 1, Ch1.3
1,1,1-Trichloroethane	8760	4.30E-04	1.88E-03	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Toluene	8760	1.49E-04	6.63E-04	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
o-Xylene	8760	9.69E-04	4.24E-03	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.

Table 8-12. VOC SPECIATED HAP's

Lube Circuit

	Hours Op per yr (hr/yr)	Emission Factor (lb/hr)	Emissions Rate (tons/yr)	Emission Factor Source
Benzene	8760	7.48E-04	3.28E-03	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Ethylbenzene	8760	1.48E-04	6.48E-04	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Formaldehyde	8760	3.30E-02	1.45E-01	Ap-42, Fifth Edition, Vol 1, Ch1.3
Naphthalene	8760	1.13E-03	4.95E-03	Ap-42, Fifth Edition, Vol 1, Ch1.3
1,1,1-Trichloroethane	8760	2.65E-04	1.16E-03	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
Toluene	8760	3.27E-04	1.43E-03	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.
o-Xylene	8760	1.59E-04	6.96E-04	Stack Sampling, AMTEST AIR QUALITY, LLC, February 6-7, 2008.

THOMPSON CREEK MINE

Table 8-13. TOTAL VOC SPECIATED HAP'S

	Holoflite #1	Lube Circuit	Other (Table 9)	Total (tons/yr)
Benzene	1.93E-04	3.28E-03	1.20E-02	1.54E-02
Ethylbenzene	1.46E-03	6.48E-04	1.20E-02	1.41E-02
Formaldehyde	1.45E-01	1.45E-01	1.91E-02	3.08E-01
Naphthalene	1.45E-01	4.95E-03	1.41E-03	1.51E-01
1,1,1-Trichloroethane	1.88E-03	1.16E-03	1.15E-03	4.20E-03
Toluene	6.53E-04	1.43E-03	6.99E-03	9.08E-03
o-Xylene	4.24E-03	6.96E-04	3.69E-03	8.63E-03
TOTAL				6.11E-01

Table 8-14. EMISSIONS SUMMARY TABLE

Total VOC & Speciated VOC HAP's

All Sources

Pollutant	Tons/year	Regulatory Limit (tons/yr)	Amount Under Limit (tons/yr)
VOC	20.67	100	79.33
VOC SPECIATED HAP's			
Benzene	1.54E-02	10	9.985
Ethylbenzene	1.41E-02	10	9.986
Formaldehyde	3.08E-01	10	9.692
Naphthalene	1.51E-01	10	9.849
1,1,1-Trichloroethane	4.20E-03	10	9.996
Toluene	9.08E-03	10	9.991
o-Xylene	8.63E-03	10	9.991
Total VOC HAP's	5.11E-01	25	24.49

TABLE 9
THOMPSON CREEK MINE
GREENHOUSE GAS EMISSIONS

GHG	CO ₂	CO ₂ EQ =	1	
	PROCESS RATE	PROCESS RATE	EMISSION FACTOR	EMISSIONS (TONS/YEAR)
Waste Oil Heaters	40000 gal/year	14.4 gal/hr	22300 lb/1000 gal	446.00
Boilers				
Boiler #1	409,226		22300	4,562.87
Hot Oil Boiler	115,095 gal/year		22300 lb/1000 gal	1,283.31
LPG Heating	25,000 gal/year		12500 lb/1000 gal	156.25
Motivator	500 hr/yr	10.43 MMBtu/hr	73.96 kg/MMBtu	425.16
Mill Auxiliary	500 hr/yr	1.86 MMBtu/hr	73.96 kg/MMBtu	75.62
Pumpback	500 hr/yr	3.15 MMBtu/hr	73.96 kg/MMBtu	128.40
Tailings Pump 1	500 hr/yr	17.93 MMBtu/hr	73.96 kg/MMBtu	730.76
Tailings Pump 2	500 hr/yr	17.93 MMBtu/hr	73.96 kg/MMBtu	730.76
TOTAL CO ₂				8,539.1 tpy
TOTAL CO ₂ EQ				8,539.1 tpy

**TABLE 9
THOMPSON CREEK MINE
GREENHOUSE GAS EMISSIONS**

GHG	N ₂ O	CO ₂ EQ =	310	
	PROCESS RATE	PROCESS RATE	EMISSION FACTOR	EMISSIONS (TONS/YEAR)
Waste Oil Heaters	40,000 gal/year	14.4 gal/hr	0.26 lb/1000 gal	0.0052
Boilers				
Boiler #1	409,226		0.26	0.05
Hot Oil Boiler	115,095 gal/year		0.26 lb/1000 gal	0.01
LPG Heating	25,000 gal/year		0.9 lb/1000 gal	0.01
Motivator	500 hr/yr	10.43 MMBtu/hr	0.0006 kg/MMBtu	0.003
Mill Auxiliary	500 hr/yr	1.86 MMBtu/hr	0.0006 kg/MMBtu	0.001
Pumpback	500 hr/yr	3.15 MMBtu/hr	0.0006 kg/MMBtu	0.001
Tailings Pump 1	500 hr/yr	17.93 MMBtu/hr	0.0006 kg/MMBtu	0.006
Tailings Pump 2	500 hr/yr	17.93 MMBtu/hr	0.0006 kg/MMBtu	0.006
TOTAL N ₂ O				0.10 tpy
TOTAL CO ₂ EQ				31.49 tpy

**TABLE 9
THOMPSON CREEK MINE
GREENHOUSE GAS EMISSIONS**

GHG	CH ₄	CO ₂ EQ =	21	
	PROCESS RATE	PROCESS RATE	EMISSION FACTOR	EMISSIONS (TONS/YEAR)
Waste Oil Heaters	40000 gal/year	14.4 gal/hr	0.216 lb/1000 gal	0.0043
Boilers				
Boiler #1	409,226		0.216	0.04
Hot Oil Boiler	115,095 gal/year		0.216 lb/1000 gal	0.01
LPG Heating	25,000 gal/year		0.2 lb/1000 gal	0.0025
Motivator	500 hr/yr	10.43 MMBtu/hr	0.0030 kg/MMBtu	0.017
Mill Auxiliary	500 hr/yr	1.86 MMBtu/hr	0.0030 kg/MMBtu	0.003
Pumpback	500 hr/yr	3.15 MMBtu/hr	0.0030 kg/MMBtu	0.005
Tailings Pump 1	500 hr/yr	17.93 MMBtu/hr	0.0030 kg/MMBtu	0.030
Tailings Pump 2	500 hr/yr	17.93 MMBtu/hr	0.0030 kg/MMBtu	0.030
			TOTAL CH₄	0.15
			TOTAL CO₂ EQ	3.11

TOTAL GHG AS CO₂ EQ =

8,573.7 tpy

7,777.9 M tpy

**TABLE 10
THOMPSON CREEK MINE
METAL EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	As Conc. (%)	Total As (tons/yr)
Holoflite Dryer #1	81,030	4.93	199.74	venturi/ESP	99.9%	0.1997	0.008557	1.71E-05
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.0044	0.008557	3.75E-07
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	1.75E-05
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	Pb Conc. (%)	Total Pb (tons/yr)
Holoflite Dryer #1	81,030	4.93	199.74	venturi/ESP	99.9%	0.1997	0.019561	3.91E-05
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.0044	0.019561	8.57E-07
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	8.57E-07
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	Cr Conc. (%)	Total Cr (tons/yr)
Assume 100% Cr in product								
Holoflite Dryer #1	81030	4.93	199.73895	venturi/ESP	0.999	0.19973895	0.0130	2.60E-05
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.00438	0.0130	5.69E-07
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	2.65E-05

**TABLE 10
THOMPSON CREEK MINE
METAL EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	Cd Conc. (%)	Total Cd (tons/yr)
Assume 100% Cd in product								
Holoflite Dryer #1	81030	4.93	199.73895	venturi/ESP	0.999	0.19973895	0.0002	4.19E-07
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.00438	0.0002	9.20E-09
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	4.29E-07
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	Co Conc. (%)	Total Co (tons/yr)
Assume 100% Co in product								
Holoflite Dryer #1	81030	4.93	199.73895	venturi/ESP	0.999	0.19973895	0.000010	2.00E-08
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.00438	0.000010	4.38E-10
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	2.04E-08
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	Be Conc. (%)	Total Be (tons/yr)
Assume 100% Be in product								
Holoflite Dryer #1	81030	4.93	199.73895	venturi/ESP	0.999	0.19973895	0.000011	2.20E-08
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.00438	0.000011	4.82E-10
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	2.26E-08

**TABLE 10
THOMPSON CREEK MINE
METAL EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL TSP EMISSIONS (TONS/YEAR)	NI Conc. (%)	Total NI (tons/yr)
Assume 100% Ni in product								
Holoflite Dryer #1	81030	4.93	199.73895	venturi/ESP	0.999	0.19973895	0.001300	2.60E-06
	tons/year	lb/ton						
Lube Grade Dryer Stack		0.001	8760	Stack test		0.00438	0.001300	5.69E-08
Holoflite Dryer #2		lb/hr	hr/yr					
Rotary Kiln								
							Total	2.65E-06
							TOTAL	4.80E-05

**TABLE 11
THOMPSON CREEK MINE
HCl EMISSIONS**

SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)	TOTAL EMISSIONS (lb/hr)
Leach Plant	8,760	0.003		Scrubber	99.0%	0.01314	0.003
	hr/yr	lb/hr					
		Stack Test Data AMTEST, 1998					

TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS

SECTION 8: FUGITIVE EMISSIONS						
FUGITIVE SOURCES	PROCESS RATE					
Drilling	7,750					
	holes/year					
Blasting	200					
	blasts/year					
Overburden Removal						
25 yard shovel	9,475,000					
15 yard shovel	4,887,300					
loader	6,500,000					
	tons/year					
Ore Mining						
25 yard shovel	7,475,000					
15 yard shovel	0					
loader	0					
	tons/year					
Overburden Dumping	28,117,300					
	tons/year					
Hauling/Access Road						
haul trucks	386,167					
small vehicles	210,000					
	VMT					
Grading						
	8,200					
	VMT					
Bulldozing						
	4,400					
	hours					
Wind Erosion						
Exposed acres	1,260					
	acres					

**TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS**

FUGITIVE EMISSIONS TSP						
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Drilling	7,750 holes/year	1.3000 lb/hole	5.04 tpy	cyclone	99%	0.05 tpy
Blasting	200 blasts/year	58.5000 lb/blast	5.85 tpy		0%	5.85 tpy
Overburden Removal						
25 yard shovel	9,475,000	0.0007	3.32 tpy		0%	3.32 tpy
15 yard shovel	4,667,300	0.0004	0.93 tpy		0%	0.93 tpy
loader	6,500,000	0.0004	1.30 tpy		0%	1.30 tpy
	tons/year	lb/ton				
Ore Mining						
25 yard shovel	7,475,000	0.0007	2.62 tpy		0%	2.62 tpy
15 yard shovel		0.0004	0.00 tpy		0%	0.00 tpy
loader		0.0004	0.00 tpy		0%	0.00 tpy
	tons/year	lb/ton				
Overburden Dumping	28,117,300	0.0032	44.99 tpy		0%	44.99 tpy
	tons/year	lb/ton				
Hauling/Access Road						
haul trucks	386,167	25.5000	4,923.63 tpy	water	75%	1,230.91 tpy
small vehicles	210,000	0.3900	40.95 tpy	water	75%	10.24 tpy
	VMT	lb/VMT				
Grading						
	8,200	19.5000	79.95 tpy		0%	79.95 tpy
	VMT	lb/VMT				
Bulldozing						
	4,400	8.6500	19.03 tpy		0%	19.03 tpy
	hours	lb/hour				

TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS

Wind Erosion						
	1,260	0.3800	0.24 tpy		0%	0.24 tpy
	acres	lb/acre				
MOBIL EQUIPMENT COMBUSTION						
Haul Trucks	175,200	0.0000	0.00 tpy		0.0%	0.00 tpy
Dozers	43,800	0.0000	0.00 tpy		0.0%	0.00 tpy
Wheeled Loaders	28,280	0.0000	0.00 tpy		0.0%	0.00 tpy
Motor Graders	35,040	0.0000	0.00 tpy		0.0%	0.00 tpy
Wheeled Dozers	28,280	0.0000	0.00 tpy		0.0%	0.00 tpy
Drills	35,040	0.0000	0.00 tpy		0.0%	0.00 tpy
Misc.	14,760	0.0000	0.00 tpy		0.0%	0.00 tpy
	hr/yr	lb/hour				
Ore drop to Mill Stockpile	16,242,500	0.0032	25.99 tpy		0%	25.99 tpy
	tons/year	lb/ton	tons/year			
Truck dumping into Crusher	16,242,500	0.0032	25.99 tpy	water	90%	2.60 tpy
	tons/year	lb/ton	tons/year			
Portable Crusher						
Truck unloading	700,000	0.0001	0.04 tpy		0%	0.04 tpy
Screening	700,000	0.0250	8.75 tpy		0%	8.75 tpy
Primary Crushing	700,000	0.5000	175.00 tpy	water	90%	17.50 tpy
Screening	700,000	0.0250	8.75 tpy		0%	8.75 tpy
Conveying	700,000	0.0030	1.05 tpy	water	90%	0.11 tpy
Secondary Crushing	700,000	0.5000	175.00 tpy		0%	175.00 tpy
Conveying	700,000	0.0030	1.05 tpy		0%	1.05 tpy
Drop process	700,000	0.0030	1.05 tpy		0%	1.05 tpy
	tons/year	lbs/ton				212.24 tpy
TOTALTSP FUGITIVE						1,852.49 tpy
						Tons/year

TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS

FUGITIVE EMISSIONS PM ₁₀						
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Drilling	7,750	0.0035	0.01 tpy	cyclone	99%	0.00 tpy
	holes/year	lb/hole				
Blasting	200	23.4000	2.34 tpy		0%	2.34 tpy
	blasts/year	lb/blast				
Overburden Removal						
25 yard shovel	9,475,000	0.0007	3.32 tpy		0%	3.32 tpy
15 yard shovel	4,667,300	0.0004	0.93 tpy		0%	0.93 tpy
loader	6,500,000	0.0004	1.30 tpy		0%	1.30 tpy
	tons/year	lb/ton				
Ore Mining						
25 yard shovel	7,475,000	0.0007	2.62 tpy		0%	2.62 tpy
15 yard shovel	0	0.0004	0.00 tpy		0%	0.00 tpy
loader	0	0.0004	0.00 tpy		0%	0.00 tpy
	tons/year	lb/ton				
Overburden Dumping	28,117,300	0.0015	21.09 tpy		0%	21.09 tpy
	tons/year	lb/ton				
Hauling/Access Road						
haul trucks	780,000	11.5400	4,500.60 tpy	water	75%	1,125.15 tpy
small vehicles	210,000	0.1900	19.95 tpy	water	75%	4.99 tpy
	VMT	lb/VMT				
Grading						
	16,400	9.9800	81.84 tpy		0%	81.84 tpy
	VMT	lb/VMT				
Bulldozing						
	4,400	4.3200	9.50 tpy		0%	9.50 tpy
	hours	lb/hour				

TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS

Wind Erosion						
	1,260	0.1900	0.12 tpy		0%	0.12 tpy
	acres	lb/acre				
MOBIL EQUIPMENT COMBUSTION						
Haul Trucks	175,200	0.2580	22.43 tpy		0.0%	22.43 tpy
Dozers	43,800	0.1120	2.45 tpy		0.0%	2.45 tpy
Wheeled Loaders	26,280	0.1720	2.26 tpy		0.0%	2.26 tpy
Motor Graders	35,040	0.0610	1.07 tpy		0.0%	1.07 tpy
Wheeled Dozers	26,280	0.1650	2.17 tpy		0.0%	2.17 tpy
Drills	35,040	0.1390	2.44 tpy		0.0%	2.44 tpy
Misc.	14,760	0.1390	1.03 tpy		0.0%	1.03 tpy
	hr/yr	lb/hour				
Ore drop to Mill Stockpile	16,242,500	0.0015	12.18 tpy		0%	12.18 tpy
	tons/year	lb/ton	tons/year			
Truck dumping into Crusher	16,242,500	0.0015	12.18 tpy	water	90%	1.22 tpy
	tons/year	lb/ton	tons/year			
Portable Crusher						
Truck unloading	700,000	0.0001	0.04 tpy		0%	0.04 tpy
Screening	700,000	0.0087	3.05 tpy		0%	3.05 tpy
Primary Crushing	700,000	0.0500	17.50 tpy	water	90%	1.75 tpy
Screening	700,000	0.0087	3.05 tpy		0%	3.05 tpy
Conveying	700,000	0.0011	0.39 tpy	water	90%	0.04 tpy
Secondary Crushing	700,000	0.0500	17.50 tpy		0%	17.50 tpy
Conveying	700,000	0.0011	0.39 tpy		0%	0.39 tpy
Drop process	700,000	0.0011	0.39 tpy		0%	0.39 tpy
	tons/year	lbs/ton				26.18 tpy
TOTAL PM₁₀ FUGITIVE						1,352.79 tpy
						Tons/year

TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS

FUGITIVE EMISSIONS PM_{2.5}						
SOURCE	PROCESS RATE	EMISSION FACTOR	UNCONTROLLED EMISSIONS (TONS/YEAR)	CONTROL SYSTEM	CONTROL EFFICIENCY	TOTAL EMISSIONS (TONS/YEAR)
Drilling	7,750	0.0035	0.01 tpy	cyclone	99%	0.00 tpy
	holes/year	lb/hole				
Blasting	200	1.7550	0.18 tpy		0%	0.18 tpy
	blasts/year	lb/blast				
Overburden Removal						
25 yard shovel	9,475,000	0.000074	0.35 tpy		0%	0.35 tpy
15 yard shovel	4,667,300	0.000042	0.10 tpy		0%	0.10 tpy
loader	6,500,000	0.000042	0.14 tpy		0%	0.14 tpy
	tons/year	lb/ton				
Ore Mining						
25 yard shovel	7,475,000	0.000074	0.27 tpy		0%	0.27 tpy
15 yard shovel	0	0.000042	0.00 tpy		0%	0.00 tpy
loader	0	0.000042	0.00 tpy		0%	0.00 tpy
	tons/year	lb/ton				
Overburden Dumping	4,667,300	0.0002	0.40 tpy		0%	0.40 tpy
	6,500,000	lb/ton				
Hauling/Access Road						
haul trucks	780,000	3.8250	1,491.75 tpy	water	75%	372.94 tpy
small vehicles	210,000	0.0585	6.14 tpy	water	75%	1.54 tpy
	VMT	lb/VMT				
Grading						
	16,400	0.6045	4.96 tpy		0%	4.96 tpy
	VMT	lb/VMT				
Bulldozing						
	4,400	0.9083	2.00 tpy		0%	2.00 tpy
	hours	lb/hour				

TABLE 12
THOMPSON CREEK MINE
PM / PM10 / PM2.5
FUGITIVE EMISSIONS

Wind Erosion						
	1,280	0.0114	0.01 tpy		0%	0.01 tpy
	acres	lb/acre				
MOBIL EQUIPMENT COMBUSTION						
Haul Trucks	175,200	0.2580	22.43 tpy		0.0%	22.43 tpy
Dozers	43,800	0.1120	2.45 tpy		0.0%	2.45 tpy
Wheeled Loaders	26,280	0.1720	2.26 tpy		0.0%	2.26 tpy
Motor Graders	35,040	0.0810	1.07 tpy		0.0%	1.07 tpy
Wheeled Dozers	26,280	0.1850	2.17 tpy		0.0%	2.17 tpy
Drills	35,040	0.1390	2.44 tpy		0.0%	2.44 tpy
Misc.	14,760	0.1390	1.03 tpy		0.0%	1.03 tpy
	hr/yr	lb/hour				
Ore drop to Mill Stockpile	16,242,500	0.0002	1.38 tpy		0%	1.38 tpy
	tons/year	lb/ton	tons/year			
Truck dumping into Crusher	16,242,500	0.0002	1.38 tpy	water	90%	0.14 tpy
	tons/year	lb/ton	tons/year			
Portable Crusher						
Truck unloading	700,000	0.00003	0.01 tpy		0%	0.01 tpy
Screening	700,000	0.0026	0.90 tpy		0%	0.90 tpy
Primary Crushing	700,000	0.0147	5.15 tpy	water	90%	0.51 tpy
Screening	700,000	0.0026	0.90 tpy		0%	0.90 tpy
Conveying	700,000	0.0003	0.11 tpy	water	90%	0.01 tpy
Secondary Crushing	700,000	0.0147	5.15 tpy		0%	5.15 tpy
Conveying	700,000	0.0003	0.11 tpy		0%	0.11 tpy
Drop process	700,000	0.0003	0.11 tpy		0%	0.11 tpy
	tons/year	lbs/ton				7.70
TOTAL PM_{2.5} FUGITIVE						
						433.62
						Tons/year

THOMPSON CREEK MINE PROCESSING DATA

SECTION 2: FUEL BURNING EQUIPMENT							
Waste Oil Heaters	10,000 gal/yr	2,800 hr/yr	3.60 gal/hr	A =	0.65		
				S =	0.5		
Boilers				S =	0.0015 wt %		
Boiler #1	409,226.3 gal/yr	46.72 gal/hr	8,760 hr/yr	6.40 MMBtu/hr	137,000 Btu/gal		
Hot Oil Boiler	115,094.9 gal/yr	13.14 gal/hr	8,760 hr/yr	1.80 MMBtu/hr	137,000 Btu/gal		
LPG Heating	25,000 gal/year			S =	0.16 gr/1000 ft3		
ELECTRIC POWER GENERATORS							
Motivator	500 hr/yr	1,490 bhp		S =	0.0015 wt %		
Mill Auxiliary	500 hr/yr	265 bhp					
Pumpback	500 hr/yr	450 bhp					
Tailings Pump 1	500 hr/yr	2,561 bhp					
Tailings Pump 2	500 hr/yr	2,561 bhp					
MOBIL EQUIPMENT COMBUSTION							
Haul Trucks	175,200 hr/yr	780,000		S =	0.0015 wt %		
Dozers	43,800 hr/yr						
Wheeled Loaders	26,280 hr/yr						
Motor Graders	35,040 hr/yr	16,400					
Wheeled Dozers	26,280 hr/yr						
Drills	35,040 hr/yr						
Misc.	14,760 hr/yr						
		VMT					

**THOMPSON CREEK MINE
PROCESSING DATA**

SECTION 3: PROCESS AND MANUFACTURING OPERATIONS							
Primary Crusher	16,242,500	3650	4450				
	tons/year	hr/yr	ton/hr				
Overland Conveyor	16,242,500	3650	4450				
	tons/year	hr/yr	ton/hr				
East and West Ore Feeders	18,250,000	8760	24	50,000	2,083	4,166,667	
	tons/year	hr/yr	hr/day	tons/day	ton/hr	lb/hr	
Holoflite Dryer #1	81,030	8760	9.25				
	tons/year	hr/yr	ton/hr				
Leach Plant	2,783	8760					
	tons/year	hr/yr					
LUBE GRADE HPM PRODUCTION							
Holoflite Dryer #2	1,253	24	365	8760	5488.14	Vented through a common stack	
Rotary Kiln	1,253	24	365	8760	5488.14	One source	
	lb/hr	hr/day	day/yr	hr/yr	ton/yr		
Jet Mill/Jet Mill Baghouse	1,600	24	300	7200	5760	feed from the JM feed bin discharge to JM BH	
Tech Fine Packaging Bin	1,600	24	300	7200	5760	feed from JM baghouse	
	lb/hr	hr/day	day/yr	hr/yr	ton/yr		
Pancake Mill Feed Bin	1,450	3412	850	feed coming from the jet mill to the pancake mill feed bin			
Super Fine Packaging Bin	1,450	8760	331	feed coming from the pancake mill to the super fine storage bin			
	tons/year	hr/yr	lb/hr				
Pebble Lime Baghouse	5,000	416.667	12				
	tons/year	hr/yr	ton/hr				
Process Water Lime Silo	1,000	41.667	24				
	tons/year	hr/yr	ton/hr				
Portable Crusher	700,000	3500	200				
	tons/year	hr/yr	ton/hr				

**THOMPSON CREEK MINE
PROCESSING DATA**

SECTION 5: STORAGE AND HANDLING OF LIQUID SOLVENTS & OTHER VOLATILE COMPOUNDS							
Gasoline							
Filling - submerged	75,000						
Breaking	75,000						
Fueling	75,000						
Spillage	75,000						
	gal/year						
Diesel							
Loading - submerged	693,000						
	gal/year						

**THOMPSON CREEK MINE
EMISSION FACTORS**

SOURCE	EMISSION FACTOR TSP OR OTHER	EMISSION FACTOR PM ₁₀	EMISSION FACTOR PM _{2.5}	FACTOR REFERENCE	
PROCESS AND MANUFACTURING OPERATIONS					
Primary Crusher	0.50 lb/ton	0.05 lb/ton	0.0147 lb/ton	AP 42 Volume 1, Fifth Edition, Table 11.24.2	
	lb/ton	lb/ton	Note 1 for PM2.5 Emission Factors	PM2.5 EF is estimated using EFs from AP42 Tbl 11.24-2, Table B.2.2 Category 3 - Mechanically Generated Aggregate Material & Unprocessed Ores, shows PM10 to be 51% of the particle distribution and PM2.5 to be 15%. Therefore, PM2.5 is estimated to be 29% of PM10 for operations, including matl handling & processing of aggregate and unprocessed ore such as milling, grinding, crushing, screening, conveying, cooling, & drying.	0.294117647
Overland Conveyor	0.12 lb/ton	0.06 lb/ton	0.0176 lb/ton	AP 42 Volume 1, Fifth Edition, Section 11.24.2, Table 11.24-2	
	lb/ton	lb/ton	lb/ton	For PM2.5 See Note 1 above	
East and West Ore Feeders	0.12 lb/ton	0.06 lb/ton	0.0176 lb/ton	AP 42 Volume 1, Fifth Edition, Section 11.24.2, Table 11.24-2	
	lb/ton	lb/ton	lb/ton	For PM2.5 See Note 1 above	
Holoflita Dryer #1	4.93 lb/ton	1.97 lb/ton	0.5794 lb/ton	Request for Permit Modification, Thompson Creek Mining Company, March 1996 (Brown and Caldwell), Section D, Emissions Estimates.	
	lb/ton	lb/ton	lb/ton	For PM2.5 See Note 1 above	
Leach Plant	0.003 lb/hr			HCI Emission Rate, Stack Sampling, AMTEST AIR QUALITY, LLC, October 28, 1998	
	lb/hr				
Lube Grade Dryer Stack	0.001 lb/hr	0.001 lb/hr	0.001 lb/hr	Stack Sampling, AMTEST AIR QUALITY, LLC, February 28, 2000.	
Holoflita Dryer #2/Rotary Kill	lb/hr			For PM2.5 assume = to PM10	
Rotary Kiln					
Jet Mill Baghouse	0.016 lb/hr	0.016 lb/hr	0.006 lb/hr	Stack Sampling, AMTEST AIR QUALITY, LLC, October 27-28, 1998.	
Tech Fine Packaging Bin BH	0.013 lb/hr	0.013 lb/hr	0.005 lb/hr	Stack Sampling, AMTEST AIR QUALITY, LLC, October 27-28, 1998.	
	lb/hr	lb/hr	Note 2 for PM2.5 Emission Factors	PM2.5 EF is estimated using AP42 Table B.2.2 Category 4 - Mechanically Generated Aggregate Material & Unprocessed Ores, shows PM10 to be 51% of the particle distribution and PM2.5 to be 15%. Therefore, PM2.5 is estimated to be 29% of PM10 for operations, including matl handling & processing of aggregate and unprocessed ore such as milling, grinding, crushing, screening, conveying, cooling, & drying.	0.352941176
Pancake Mill Feed Bin BH	0.001 lb/hr	0.001 lb/hr	0.0004 lb/hr	Stack Sampling, AMTEST AIR QUALITY, LLC, May 25, 1999.	
Super Fine Packaging Bin BH	0.024 lb/hr	0.024 lb/hr	0.006 lb/hr	Stack Sampling, AMTEST AIR QUALITY, LLC, May 26, 1999.	
	lb/hr	lb/hr	lb/hr	For PM2.5 See Note 2 above	
Pebble Lime Baghouse	0.61 lb/ton	0.61 lb/ton	0.22 lb/ton	Ap-42, Fifth Edition, Table 11.17-4.	
	lb/ton	lb/ton	lb/ton	For PM2.5 See Note 2 above	

**THOMPSON ECK MINE
EMISSION FACTORS**

SOURCE	EMISSION FACTOR TSP OR OTHER	EMISSION FACTOR PM ₁₀	EMISSION FACTOR PM _{2.5}	FACTOR REFERENCE	
Process Water Lime Silo	0.61 lb/ton lb/ton	0.61 lb/ton lb/ton	0.22 lb/ton lb/ton	Ap-42, Fifth Edition, Table 11.17-4. For PM2.5 See Note 2 above	
FUEL BURNING EQUIPMENT					
Waste Oil Heaters	41.60 lb/kgal lb/1000 gal	33.15 lb/kgal lb/1000 gal	33.15 lb/kgal lb/1000 gal	Ap-42, Fifth Edition, Table 1.11-1. For PM2.5 assume = to PM10 A = 0.65 (ash at 0.65%)	0.65
Boilers					
Boiler #1	0.0 lb/kgal	2.30 lb/kgal	1.54 lb/kgal	Ap-42, Fifth Edition, Table 1.3-2. [(2)*0.50] + (1.3) = lbs PM10/kgal;	
Hot Oil Boiler	0.0 lb/kgal lb/1000 gal	2.30 lb/kgal lbs/1000 gals	1.54 lb/kgal lbs/1000 gals	[(2)*0.12] + (1.3) = lbs PM2.5/kgal	
LPG Heating	0.0 lb/kgal lb/1000 gal	0.4 lb/kgal lb/1000 gal	0.4 lb/kgal lb/1000 gal	Ap-42, Fifth Edition, Table 1.5-1. For PM2.5 assume = to PM10	
FUEL BURNING EQUIPMENT	NOx				
Waste Oil Heaters	11.0 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.11.2	
Boilers					
Boiler #1	20.0 lb/kgal			Ap-42, Fifth Edition, Table 1.3-1.	
Hot Oil Boiler	20.0 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-1.	
LPG Heating	14.0 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.5-1.	
FUEL BURNING EQUIPMENT	SOx	S =	0.5		
Waste Oil Heaters	73.5 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.11.2	
Boilers		S =	0.0015 wt %		
Boiler #1	0.213 lb/kgal			Ap-42, Fifth Edition, Table 1.3-1.	
Hot Oil Boiler	0.213 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-1.	
LPG Heating	0.014 lb/kgal lb/1000 gal	0.14	gr/100 ft3	Ap-42, Fifth Edition, Table 1.5-1.	
FUEL BURNING EQUIPMENT	CO				
Waste Oil Heaters	5.0 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-2.	
Boilers					

**THOMPSON DEK MINE
EMISSION FACTORS**

SOURCE	EMISSION FACTOR TSP OR OTHER	EMISSION FACTOR PM ₁₀	EMISSION FACTOR PM _{2.5}	FACTOR REFERENCE	
Boiler #1	5.0 lb/kgal			Ap-42, Fifth Edition, Table 1.3-2.	
Hot Oil Boiler	5.0 lb/kgal			Ap-42, Fifth Edition, Table 1.3-2.	
	lb/1000 gal				
LPG Heating	1.9 lb/kgal			Ap-42, Fifth Edition, Table 1.5-1.	
	lb/1000 gal				
ELECTRIC POWER GENERATORS	NOx				
Motivator	0.024 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
Mill Auxiliary	0.031 lb/hp-hr			AP-42, Fifth Edition, Table 3.3-1	
Pumpback	0.031 lb/hp-hr			AP-42, Fifth Edition, Table 3.3-1	
Tailings Pump 1	6.40 g/kW-hr			NSPS IIII	
Tailings Pump 2	6.40 g/kW-hr			NSPS IIII	
ELECTRIC POWER GENERATORS	CO				
Motivator	0.0055 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
Mill Auxiliary	0.0068 lb/hp-hr			AP-42, Fifth Edition, Table 3.3-1	
Pumpback	0.0068 lb/hp-hr			AP-42, Fifth Edition, Table 3.3-1	
Tailings Pump 1	3.50 g/kW-hr			NSPS IIII	
Tailings Pump 2	3.50 g/kW-hr			NSPS IIII	
ELECTRIC POWER GENERATORS	SOx	S =	0.0015 wt %		
Motivator	0.0000121 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
Mill Auxiliary	0.0000121 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
Pumpback	0.0000121 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
Tailings Pump 1	0.0000121 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
Tailings Pump 2	0.0000121 lb/hp-hr			AP-42, Fifth Edition, Table 3.4-1	
GHG Factors					
FUEL BURNING EQUIPMENT	CO2				
Waste Oil Heaters	22,000.0 lb/kgal			Ap-42, Fifth Edition, Table 1.11.3.	
	lb/1000 gal				
Boilers					
Boiler #1	22,300.0 lb/kgal			Ap-42, Fifth Edition, Table 1.3-12.	
Hot Oil Boiler	22,300.0 lb/kgal			Ap-42, Fifth Edition, Table 1.3-12.	
	lb/1000 gal				
LPG Heating	12,500.0 lb/kgal			Ap-42, Fifth Edition, Table 1.5-1.	
	lb/1000 gal				

**THOMPSON ZEK MINE
EMISSION FACTORS**

SOURCE	EMISSION FACTOR TSP OR OTHER	EMISSION FACTOR PM ₁₀	EMISSION FACTOR PM _{2.5}	FACTOR REFERENCE	
FUEL BURNING EQUIPMENT	CH₄				
Waste Oil Heaters	0.216 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-3.	
Boilers					
Boiler #1	0.216 lb/kgal			Ap-42, Fifth Edition, Table 1.3-3.	
Hot Oil Boiler	0.216 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-3.	
LPG Heating	0.20 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.5-1.	
FUEL BURNING EQUIPMENT	N₂O				
Waste Oil Heaters	0.26 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-8.	
Boilers					
Boiler #1	0.26 lb/kgal			Ap-42, Fifth Edition, Table 1.3-8.	
Hot Oil Boiler	0.26 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.3-8.	
LPG Heating	0.90 lb/kgal lb/1000 gal			Ap-42, Fifth Edition, Table 1.5-1.	
ELECTRIC POWER GENERATORS	PM₁₀				
Motivator		0.0007 lb/hp-hr	0.0007 lb/hp-hr	AP-42, Fifth Edition, Table 3.4-1	
Mill Auxiliary	0	0.0022 lb/hp-hr	0.0022 lb/hp-hr	AP-42, Fifth Edition, Table 3.3-1	
Pumpback	0	0.0022 lb/hp-hr	0.0022 lb/hp-hr	AP-42, Fifth Edition, Table 3.3-1	
Tailings Pump 1	0	0.20 g/kW-hr	0.20 g/kW-hr	NSPS IIII	
Tailings Pump 2	0	0.20 g/kW-hr	0.20 g/kW-hr	NSPS IIII	
	lb/hp-hr				

Thompson Creek Mine Metal Concentrations

Ore Concentrations				Boiling Point (C)	Max Dryer Temp (C)
Metal	ppm	%	Data Source		
Sb	0.20	0.000020	EIS	1750	677
As	76.00	0.007600	Blast hole analysis and EIS	707	677
Ba	30.00	0.003000	EIS	1400	677
Be	0.11	0.000011	EIS	2970	677
Cd	2.10	0.000210	EIS	765	677
Cr	130.00	0.013000	EIS	2672	677
Co	0.10	0.000010	EIS	1495	677
Cu	40.00	0.004000	EIS	2567	677
Pb	35.00	0.003500	Blast hole analysis and EIS	1740	677
Mn	185.00	0.018500	EIS	1982	677
Hg	0.00	0.000000	EIS	357	677
Mo	1148.00	0.114800	Blast hole analysis	5560	677
Ni	13.00	0.001300	EIS	2730	677
Se	0.00	0.000000	EIS	685	677
Ag	13.00	0.001300	EIS	2212	677
Tl	0.20	0.000020	EIS	1457	677
Zn	36.00	0.003600	EIS	907	677

Concentrate Concentrations

Cu	Pb	As	TCM Concentrate Analysis
ppm	ppm	ppm	
212.91	195.61	85.57	
%	%	%	
0.0213	0.0196	0.0086	

**THOMPSON CREEK MINE
FUGITIVE EMISSION FACTORS**

SECTION 8: FUGITIVE EMISSIONS				
EMISSION FACTORS	TSP	PM₁₀	PM_{2.5}	
				Compilation of Air Pollutant Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 8.24, Western Surface Coal Mining, Updated Sept. 1988, Table - 8.24-4, Page 8.24-8.
Drilling	1.3	0.0035	0.0035	
	lb/hole	lb/hole	lb/hole	
Blasting	58.5	23.4	1.755	Fugitive Dust Control Technology, General Fugitive Dust Emission Sources, Table 2.2.4-4, Page 54.
	lb/blast	lb/blast	lb/blast	
Overburden Removal				Fugitive Dust Emissions Factors for the Mining Industry, July 1983, American Mining Congress, Page 49.
25 yard shovel	0.0007	0.0007	0.000074	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
15 yard shovel	0.0004	0.0004	0.000042	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
loader	0.0004	0.0004	0.000042	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
	lb/ton	lb/ton	lb/ton	
Ore Mining				Fugitive Dust Emissions Factors for the Mining Industry, July 1983, American Mining Congress, Page 49.
25 yard shovel	0.0007	0.0007	0.000074	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
15 yard shovel	0.0004	0.0004	0.000042	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
loader	0.0004	0.0004	0.000042	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
	lb/ton	lb/ton	lb/ton	
Overburden Dumping	0.0032	0.0015	0.00017	Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 13.2.4 Aggregate Handling and Storage Piles, Equation 1. k = 0.053 for PM2.5
	lb/ton	lb/ton	lb/ton	
Hauling/Access Road				
				Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 13.2.22 Unpaved Roads, Equation 1, k = 0.15 for PM2.5
haul trucks	25.5	11.54	3.825	
small vehicles	0.39	0.19	0.0585	
	lb/VMT	lb/VMT	lb/VMT	
Grading				Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 8.24, Western Surface Coal Mining, Updated Sept. 1988, Table 8.24-2, Page 8.24-5.
	19.5	9.98	0.8046	AP42 Tbl 11.9-1 - k = 0.031 for PM2.5
	lb/VMT	lb/VMT	lb/VMT	
Buildoing				Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 8.24, Western Surface Coal Mining, Updated Sept. 1988, Table 8.24-2, Page 8.24-5.
	8.65	4.32	0.90825	AP42 Tbl 11.9-1 - k = 0.105 for PM2.5
	lb/hour	lb/hour	lb/hour	

**THOMPSON CREEK MINE
FUGITIVE EMISSION FACTORS**

SECTION 8: FUGITIVE EMISSIONS					
EMISSION FACTORS	TSP	PM ₁₀	PM _{2.5}		
Wind Erosion				Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 11.27, Industrial Wind Erosion Updated sept. 1988, Page 11.2.7-4.	
Total exposed acreage 1260 acres	0.38	0.19	0.0114		
	lb/acre	lb/acre	lb/acre		
MOBIL EQUIPMENT COMBUSTION					
Mobil Equipment Combustion				Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section II-7, Heavy Duty Construction Equipment, Table II-7.1, Page II-7-4&5.	
Haul Trucks	0	0.256	0.256	assume PM2.5 = PM10	
Dozers	0	0.112	0.112		
Wheeled Loaders	0	0.172	0.172		
Motor Graders	0	0.081	0.081		
Wheeled Dozers	0	0.165	0.165		
Misc.	0	0.139	0.139		
	lb/hour	lb/hour	lb/hour		
Ore drop to Mill Stockpile (low moisture ore)	0.0032	0.0015	0.00017	Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 13.2.4 Aggregate Handling and Storage Piles, Equation 1. k = 0.053 for PM2.5	
	lb/ton	lb/ton	lb/ton		
Truck dumping into Crusher	0.0092	0.0015	0.00017	Compilation of Air Pollutants Emission Factors, Vol. 1, Stationary Point and Area Sources, Fourth Edition, Sept. 1985, Section 13.2.4 Aggregate Handling and Storage Piles, Equation 1. k = 0.053 for PM2.5	
	lb/ton	lb/ton	lb/ton		
Portable Crusher					0.294117847
Truck unloading	0.0001	0.0001	0.00003	AP 42 Volume 1, Fifth Edition, Table 11.19.2-2	
Screening	0.025	0.0087	0.00256	AP 42 Volume 1, Fifth Edition, Table 11.19.2-2	
Primary Crushing	0.5	0.06	0.01471	AP 42 Volume 1, Fifth Edition, Table 11.24.2	
Screening	0.025	0.0087	0.00256	AP 42 Volume 1, Fifth Edition, Table 11.19.2-2	
Conveying	0.003	0.0011	0.00032	AP 42 Volume 1, Fifth Edition, Table 11.19.2-2	
Secondary Crushing	0.5	0.06	0.01471	AP 42 Volume 1, Fifth Edition, Table 11.24.2	
Conveying	0.003	0.0011	0.00032	AP 42 Volume 1, Fifth Edition, Table 11.19.2-2	
Drop process	0.003	0.0011	0.00032	AP 42 Volume 1, Fifth Edition, Table 11.19.2-2	
	lbs/ton	lbs/ton	lbs/ton		

PM2.5 EF is estimated using EFs from AP42 Tbl 11.24-2, Table 8.2.2 Category 3 - Mechanically Generated Aggregate Material & Unprocessed Ore, shows PM10 to be 51% of the particle distribution and PM2.5 to be 15%. Therefore, PM2.5 is estimated to be 29% of PM10 for operations, including mat handling & processing of aggregate and unprocessed ore such as milling, grinding, crushing, screening, conveying, cooling, & drying.

**THOMPSON CREEK MINE
SOURCE GENERAL INFORMATION**

SECTION 2: FUEL BURNING EQUIPMENT											
SOURCE	DESCRIPTION	DATE INSTALLED	DATE LAST MODIFIED	MANUFACTURER	MAKE/MODEL	USED FOR PROCESS %	USED FOR SPACE HEAT %	FUEL TYPE	FUEL CODE	HEAT CONTENT Btu/gal	
Waste Oil Heaters						0	100		O2	137000	
Boilers											
Boiler #1	steam boiler	2007		Bryen Boiler	RV600-S-150-FDGO	100	0	fuel oil	O2	148600	
Hot Oil Boiler	Hot oil boiler	2007		Parker	HT1820	100	0	fuel oil	O2	137000	
LPG Heating							100				
GENERATORS											
Motivator	emergency power generator	1981		Cummins		100	0	fuel oil	O2	137000	
Mill Auxiliary	emergency power generator	1981		Caterpillar	SR4 ARR-5N5080	100	0	fuel oil	O2	137000	
Pumpback	emergency power generator	1981		Caterpillar	SR4 ARR-1W0739	100	0	fuel oil	O2	137000	
Tailings Pumps (New) #1	emergency power generator	2010		MTU Detroit Diesel	T1238A36	100	0	fuel oil	O2	137000	
Tailings Pumps (New) #2	emergency power generator	2010		MTU Detroit Diesel	T1238A36	100	0	fuel oil	O2	137000	
SECTION 3: PROCESS AND MANUFACTURING OPERATIONS											
POLLUTION CONTROL EQUIPMENT											
SOURCE	DESCRIPTION	DATE INSTALLED	DATE LAST MODIFIED	MANUFACTURER	MAKE/MODEL	DESCRIPTION	QUANTITY	TYPE	CODE	MANUFACTURER	MAKE/MODEL
Primary Crusher	Gyratory Crusher	1981		GATX-Fuller		Baghouse	1	baghouse	O18	American Air Filter	jet pulse modular Fabripak
Overland Conveyor Drive 1	conveyor transfer point	1981		GATX-Fuller		Baghouse	1	baghouse	O18	American Air Filter	jet pulse modular Fabripak
East and West Ore Feeders	apron feeders	1981				Wet Scrubber	2	Venturi	O53	Ducon	multivane, Model IV
Holofite Dryer #1	Holofite Dryer	1981		Joy-Denver	D-1218-5	Wet Scrubber	1	Venturi	O53	Lufrol	UW-4-4
		1989				Smog Hog	1	ESP	O10	United Air Specialists	SHN-10
Leach Plant	Leach fume collection	1981				Caustic Scrubber	1	Packed	O70	Cellcoats	SPT-82
Lube Grade Dryer Stack		1989				Smog Hog	1	ESP	O10	United Air Specialists	SHN-10
Holofite Dryer #2	Holofite Dryer	1989		Joy-Denver	D-1218-5	Wet Scrubber	1	Venturi	O53	Lufrol	KVS4-14
Rotary Kiln	Rotary kiln dryer	1989		Christian	12-13-16-UNI	Wet Scrubber	1	Venturi	O54	Lufrol	KVS4-14
Jet Mill/Jet Mill Baghouse	pneumatic mill	1989		PulvaJet Mill	AJet Model 810 CIHL	Baghouse	1	baghouse	O18	Millro Pulseaire	36-S-10-30
Tech Fine Packaging Bin	packaging	1989				Baghouse	1	baghouse	O18	Mag-Pac	52-85
Pancake Mill Feed Bin	feed bin	1982				Baghouse	1	baghouse	O18	American Air Filter	AR35
Pancake Mill	pneumatic mill	1982		Jet Pulverizer	Micron-Master						
Super Fine Packaging Bin	packaging	1982				Baghouse	1	baghouse	O18	Mag-Pac	52-85
Pebble Lime Baghouse	pneumatic transport system	1981				Baghouse	1	baghouse	O18	Delamata	
Portable Crusher	gravel crusher	1981		Pioneer	2036	Water Sprays		water spray	O81		
SECTION 5: STORAGE AND HANDLING OF LIQUID SOLVENTS & OTHER VOLATILE COMPOUNDS											
DESCRIPTION	TANK TYPE	CONTENTS	TANK CAPACITY (gal)	VENT TYPE	LOCATION						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	80,000	open, turned down	Pat Hughes Dump						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	20,000	open, turned down	7900 Hot Start						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	10,000	open, turned down	east end Mill						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	1,000	open, turned down	south of Mill Lab						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	10,000	open, turned down	Upper Mill						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	500	open, turned down	Kelly Building						
Diesel fuel storage, fueling	Horizontal cylinder, fixed roof	diesel fuel	1,500	open, turned down	Kelly Building						
gasoline storage, fueling	Horizontal cylinder, fixed roof	gasoline	10,000	open, turned down	Kelly Building						

THOMPSON CREEK MINE STACK INFORMATION

STACK/SOURCE	HEIGHT (ft)	I.D. (in)	EXIT TEMP (F)	FLOWRATE (acfm)	DIRECTION	COVERED
PROCESS AND MANUFACTURING OPERATIONS						
Primary Crusher Stack	65.58	27.96	ambient	18000	vertical	no
Overland Conveyor Stack	10	18	ambient	10000	horizontal	no
East Ore Feeders Stack	85.33	18.5	ambient	6540	vertical	no
West Ore Feeders Stack	85.33	18.5	ambient	6540	vertical	no
Holoflute Dryer #1 Stack	81	11.75	ambient	650	vertical	no
Leach Fume Scrubber Stack	90.25	16	ambient	5341	vertical	no
Lube Grade Dryer Stack	90.25	8	ambient	500	vertical	no
Jet Mill Baghouse Stack	37.5	19.5	ambient	2300	vertical	yes
Tech Fine Packaging Baghouse Stack	38	6	ambient	150	horizontal	no
Pancake Mill Feed Bin Baghouse Stack	14.75	8.25	ambient	1500	horizontal	no
Super Fine Packaging Bin Baghouse Stack	25	6	ambient	593.7	horizontal	no
Pebble Lime Baghouse	68.88	12	ambient	2000	vertical	yes
FUEL BURNING EQUIPMENT						
Waste Oil Heaters						
Truck Shop 1	25	8	270	850	horizontal	no
Truck Shop 2	25	8	270	850	horizontal	no
Wash Bay 1	25	8	270	850	horizontal	no
Wash Bay 2	25	8	270	850	horizontal	no
Boilers						
Boiler #1	84	12	500	1427	vertical	no
Hot Oil Boiler	84	12	500	401	vertical	no
GENERATORS						
Motivator	15	4	900	2325	vertical	no
Mill Auxiliary	20	6	1200	1570	vertical	yes
Pumpback	12	6	900	2430	vertical	no
Tailings Pump #1	15	10	869	12925	horizontal	yes
Tailings Pump #2	15	10	869	12925	horizontal	yes

**THOMPSON CREEK MINE
PCE DATA**

SCRUBBER/SOURCE	PRESSURE DROP (" H2O)	LOW	HIGH	WATER FLOW RATE (gpm)	LOW	HIGH
East Ore Feeders Reclaim Dust Scrubber		6	16		14	17
West Ore Feeders Reclaim Dust Scrubber		6	16		14	17
Holofite Dryer #1 Venturi Scrubber		0.13	0.23		6	12
Leach Fume Caustic Scrubber		2	10		N/A	58
Holofite Dryer #2 Venturi Scrubber		0.13	0.23		6	12
Rotary Kiln Venturi Scrubber		0.12	0.22		7	13
BAGHOUSE/SOURCE	PRESSURE DROP (" H2O)	LOW	HIGH	AIR-TO- CLOTH RATIO		
Primary Crusher Baghouse		3	6	10:01		
Overland Conveyor Baghouse		1	6	7:01		
Jet Mill Baghouse		1	6	10:01		
Tech Fine Packaging Bin Baghouse		0.4	5	2:01		
Pancake Mill Feed Bin Baghouse		0.2	8	5:01		
Super Fine Packaging Bin Baghouse		1	6	1:01		
Pebble Lime Baghouse		0.3	5	9:01		
ESP						
Holofite Dryer #1 Smog Hog	Triple Pass					
Lube Grade Dryer Stack Smog Hog	Triple Pass					

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM DRAFT

DATE: September 18, 2013

TO: Darrin Pampaian, Permit Writer, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: P-2013.0014 PROJ61161 PTC Application for the Thompson Creek Mining Company Permit to Construct for Modifications to their Molybdenum Disulfide Mining, Milling, and Concentration Facility in Idaho

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs)

1.0 Summary

Thompson Creek Mining Company (TCMC) submitted a Permit to Construct (PTC) application to convert their Tier II Operating Permit to a PTC for their mining, milling, and concentration facility, located near Clayton, Idaho, in Custer County. The PTC application also addressed modifications to the facility made since the issuance of the previous Tier II Operating Permit. Conversion of the Tier II Operating Permit to a PTC does not require an air impact analysis, but the portion of the PTC authorizing modifications does require air impact analyses. Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the modification project were submitted to DEQ to demonstrate that the modification would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). AECOM Technical Services, Inc. (AECOM), TCMC's permitting consultant, submitted the analyses and applicable information and data enabling DEQ to evaluate potential impacts to ambient air.

AECOM performed project-specific air quality impact analyses to demonstrate compliance of the modification project with air quality standards. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the pollutant dispersion modeling analyses used to demonstrate that the estimated emissions associated with operation of the proposed facility or modification will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. This modeling review also did not evaluate the accuracy of emissions estimates. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the DEQ Statement of Basis.

The submitted air quality impact analyses: 1) utilized appropriate methods and models according to established DEQ/EPA rules, policies, guidance, and procedures; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from applicable emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from applicable emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP)

emissions increases associated with the project do not result in increased ambient air impacts exceeding allowable TAP increments. Table 1 presents key assumptions and results to be considered in the development of the permit.

Table 1. KEY CONDITIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	Explanation/Consideration
The increase in daily throughput for the East/West Ore Feeders will not increase emissions at any other emissions points at the facility.	Increased emissions from the East/West Ore Feeders were assessed, but no other emissions increases were identified as a result of the throughput increase.
Operational testing of new tailings pump engine will meet the following: 1) testing will not occur more frequently than once each week; 2) testing duration will not occur more than one hour.	At this level of testing the source can still be confidently excluded from the 1-hour NO ₂ impact analyses as an inconsequential source.
Cumulative project-specific TAP emissions are all below applicable emissions screening levels (ELs).	TAPs modeling was not performed for the modification.
Emissions rates used in the modeling analyses, as listed in this memorandum, represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates or changes in emissions rates greater than those used in the modeling analyses.

The proposed project involves the following: 1) two new replacement boilers; 2) one new tailings pump; 3) increase in daily throughput from 40,000 ton/day to 44,500 ton/day for the East/West Ore Feeders.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department, using DEQ/EPA established guidance, policies, and procedures, that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

2.0 Background Information

2.1 Permit Requirements for Tier 2 Operating Permits and Permits to Construct

The submitted application proposes two actions: 1) convert the existing Tier II Operating Permit to a PTC; 2) authorize specified modifications to the facility.

2.1.1 Impact Analysis Requirements for Tier II Operating Permits

TCMC has a facility-wide Tier II Operating Permit. In the case of a facility-wide Tier II Operating Permit, Idaho Air Rules Section 403.02 requires that emissions from the facility not cause or significantly contribute to a violation of an air quality standard. Tier II permits must be renewed every five years, and each renewal of a facility-wide Tier II must show compliance with Section 403.02 for all applicable standards on a facility-wide basis.

2.1.2 Impact Analysis Requirements for Permits to Construct

PTCs are issued to authorize the construction of a new source or modification of an existing source. Idaho Air Rules Section 203.02 requires that emissions from the new source or modification not cause or significantly contribute to a violation of an air quality standard. This may or may not require consideration of existing emissions at a facility where a modification is proposed, as explained in Section 2.2.3.

PTCs do not expire, but provisions may be superseded by a PTC revision/modification or by a Tier II Operating Permit.

2.1.3 Impact Analysis Requirements for Converting a Tier II Operating Permit to a PTC

An air impact analysis is not required to issue a PTC that will replace a facility-wide Tier II Operating Permit. Air impact analyses for PTCs only address changes in emissions through addition of new sources or modification of existing sources. Facility-wide compliance with applicable air quality standards was assured with issuance of the existing Tier II Operating Permit, and if no subsequent changes are made that were not assessed by the Tier II or subsequent PTC, then issuance of the new PTC for replacement of the Tier II will not require any additional air impact analyses.

2.2 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality standards and analyses used to demonstrate compliance with air quality standards.

2.2.1 Area Classification

The proposed project is conversion of a facility-wide Tier II Operating Permit to a PTC and a modification to the TCMC stationary facility. The facility is located about 6.6 miles northwest of Clayton, Idaho, in Custer County. The area is designated as attainment or unclassifiable for all pollutants.

2.2.2 Modeling Applicability for Criteria Pollutants

Idaho Air Rules Section 203.02 state that a PTC cannot be issued unless the application demonstrates to the satisfaction of DEQ that the new source or modification will not cause or significantly contribute to a NAAQS violation. Atmospheric dispersion modeling is used to evaluate the potential impact of a proposed project to ambient air and demonstrate NAAQS compliance. However, if the emissions associated with a project are very small, project-specific modeling analyses may not be necessary.

If the emissions increases associated with a project are below modeling applicability thresholds established in the *Idaho Air Modeling Guideline* ("State of Idaho Guideline for Performing Air Quality Impact Analyses," available at <http://www.deq.idaho.gov/media/355037-modeling-guideline.pdf>), then a project-specific analysis is not required. Modeling applicability emissions thresholds were developed by DEQ based on modeling of a hypothetical source and are designed to reasonably ensure that impacts are below the applicable SIL. DEQ has established two threshold levels: Level 1 thresholds are unconditional thresholds, requiring no approval for use by DEQ; Level 2 thresholds are conditional upon DEQ approval,

which depends on evaluation of the project and the site, including emissions quantities, stack parameters, number of sources emissions are distributed amongst, distance between the sources and the ambient air boundary, and the presence of sensitive receptors near the ambient air boundary.

Section 3.2.1 provides results of the modeling applicability analysis.

2.2.3 Significant and Cumulative NAAQS Impact Analyses

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or the emissions increase associated with a modification exceed the SILs of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis may also be required for permit revisions driven by compliance/enforcement actions, any correction of emissions limits or other operational parameters that may affect pollutant impacts to ambient air, or other cases where DEQ believes NAAQS may be threatened by the emissions associated with the proposed project.

The SIL analyses for a facility modification involves modeling the increase in allowable or potential emissions that results from the proposed modification. Any decreases in emissions are modeled as negative values to account for the reduction in impacts to ambient air.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts, according to established DEQ/EPA guidance, policies, and procedures, from applicable facility-wide emissions and emissions from any nearby co-contributing sources. A DEQ-approved background concentration value is then added to the modeled result that is appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis.

If the cumulative NAAQS impact analysis shows a violation of the standard, the permit cannot be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. The project does not have a significant contribution to a violation if impacts are below the SIL at all specific receptors showing violations during the time periods when modeled violations occurred.

Compliance with Idaho Air Rules Section 203.02 is demonstrated if : a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) modeled design values of the cumulative NAAQS impact analysis (modeling applicable emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or c) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Impact Levels ^a (µg/m ³) ^b	Regulatory Limit ^c (µg/m ³)	Modeled Design Value Used ^d
PM ₁₀ ^e	24-hour	5.0	150 ^f	Maximum 6 th highest ^g
PM _{2.5} ^h	24-hour	1.2	35 ⁱ	Mean of maximum 8 th highest ^j
	Annual	0.3	15 ^k	Mean of maximum 1 st highest ^l
Carbon monoxide (CO)	1-hour	2,000	40,000 ^m	Maximum 2 nd highest
	8-hour	500	10,000 ^m	Maximum 2 nd highest
Sulfur Dioxide (SO ₂)	1-hour	3 ppb ⁿ (7.8 µg/m ³)	75 ppb ^o (196 µg/m ³)	Mean of maximum 4 th highest ^p
	3-hour	25	1,300 ^m	Maximum 2 nd highest
	24-hour	5	365 ^m	Maximum 2 nd highest
	Annual	1.0	80 ^q	Maximum 1 st highest
Nitrogen Dioxide (NO ₂)	1-hour	4 ppb ⁿ (7.5 µg/m ³)	100 ppb ^r (188 µg/m ³)	Mean of maximum 8 th highest ^s
	Annual	1.0	100 ^q	Maximum 1 st highest
Lead (Pb)	3-month ^t	NA	0.15 ^q	Maximum 1 st highest
	Quarterly	NA	1.5 ^q	Maximum 1 st highest

- a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
- b. Micrograms per cubic meter.
- c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
- d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
- e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- f. Not to be exceeded more than once per year on average over 3 years.
- g. Concentration at any modeled receptor when using five years of meteorological data.
- h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- i. 3-year average of the upper 98th percentile of the annual distribution of 24-hour concentrations.
- j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. The 5-year mean of the 1st highest value from each year is used for the SIL analysis.
- k. 3-year average of annual concentration. The NAAQS was revised to 12 µg/m³ on December 14, 2012. However, this standard will not be applicable for permitting purposes in Idaho until it is incorporated by reference *sine die* into Idaho Air Rules (Spring 2014).
- l. 5-year mean of annual averages for both the SIL and cumulative NAAQS impact analyses.
- m. Not to be exceeded more than once per year.
- n. Interim SIL established by EPA policy memorandum.
- o. 3-year average of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
- p. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the SIL analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
- q. Not to be exceeded in any calendar year.
- r. 3-year average of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
- s. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the SIL analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
- t. 3-month rolling average.

NO₂ and SO₂ short-term standards have recently been promulgated by EPA. The standards became applicable for permitting purposes in Idaho when they were incorporated by reference *sine die* into Idaho Air Rules (Spring 2011).

The PM_{2.5} annual standard was changed from 15 µg/m³ to 12 µg/m³ on December 14, 2012. The revised standard will not become applicable for permitting purposes until it is incorporated *sine die* into Idaho Air Rules (Spring 2014).

2.2.4 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Per Section 210, if the total project-wide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

2.3 Background Concentrations

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Since the increase in emissions were below applicable modeling thresholds or results for the SIL analyses were below applicable SILs, cumulative NAAQS analyses were not required and background concentration values were not necessary.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

This section describes the modeling methods used by the applicant's consultant, AECOM, to demonstrate compliance with applicable air quality standards.

3.1.1 Overview of Analyses

AECOM performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the modification project, using established DEQ policies, guidance, and procedures.

Results of the submitted analyses demonstrated compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 3 provides a brief description of parameters used in the modeling analyses.

Table 3. MODELING PARAMETERS		
Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Northwest of Clayton, ID	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 12345.
Meteorological Data	Boise	2004-2008. See Section 3.1.4 of this memorandum. 2008-2012 for DEQ verification analyses.
NOx Chemistry	Ambient Ratio Method	80% of NOx assumed to be NO ₂ – as per the EPA specified default
Terrain	Considered	Receptor, building, and emissions source elevations were determined using USGS 1/3 arc second NAD83 National Elevation Dataset (NED) files.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility.
Receptor Grid	Grid 1	25-meter spacing in area of maximum modeled impact to resolve maximum
	Grid 2	50-meter spacing out to at least 100 meters.
	Grid 3	100-meter spacing out to at least 1,000 meters.
	Grid 4	250-meter spacing out to at least 5,000 meters
	Grid 5	500-meter spacing out to at least 10,000 meters

3.1.2 Modeling protocol and Methodology

A modeling protocol was submitted to DEQ prior to the application. The protocol was submitted by AECOM and DEQ provided an electronic protocol approval letter. Project-specific modeling was generally conducted using data and methods described in the protocol and in the *Idaho Air Modeling Guideline*.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD version 12345, the current version at the time the application was received by DEQ, was used for the modeling analyses to evaluate impacts of the facility.

3.1.4 Meteorological Data

DEQ provided AECOM with model-ready meteorological data processed from Boise surface and upper air meteorological data. DEQ determined these data were reasonably representative for the Thompson Creek site. More representative data of sufficient quality for use in dispersion models were not available for the area.

DEQ processed more recent Boise meteorological data after providing AECOM with model-ready meteorological data. The data were processed using AERMINUTE with the wind threshold set to 0.5 meters/second to prevent potential problems in AERMOD associated with model results for low wind speeds. DEQ performed verification analyses using these data.

3.1.5 *Terrain Effects*

AECOM used 1/3 arc second National Elevation Dataset (NED) files, in the North American Datum 1983 (NAD83), to calculate elevations of receptors. The terrain preprocessor AERMAP was used to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. The model AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

Locations of receptors, buildings, and emissions sources in the model were specified in the NAD27 datum, consistent with the previous TCMC permitting projects.

3.1.6 *Building Downwash*

Potential downwash effects on the emissions plume were accounted for in the model by using building parameters as described by AECOM. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and release parameters for input to AERMOD.

3.1.7 *Ambient Air Boundary*

The ambient air boundary used in the submitted air impact analyses was based on TCMC's patented and unpatented mill sites. DEQ agreed that public access is reasonably precluded, as described in the application, by gated and/or guarded access roads, fencing, posting, and the physical barrier imposed by the steep terrain of the area.

3.1.8 *Receptor Network*

Table 3 describes the receptor network used in the submitted modeling analyses. DEQ contends that the receptor network was adequate to reasonably assure compliance with applicable air quality standards at all ambient air locations.

3.2 *Emission Rates*

Emissions rates of criteria pollutants and TAPs for the proposed project were provided by the applicant for various averaging periods corresponding to the averaging periods of applicable air quality standards. DEQ modeling review, described in this memorandum, did not include review of emissions rates for accuracy. Review and approval of estimated emissions was the responsibility of the DEQ permit writer. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model.

3.2.1 Criteria Pollutant Emissions Rate

Table 4 lists criteria pollutant emissions rates used to evaluate the requirement for project-specific air impact analyses and used for the project-specific modeling analyses for all applicable averaging periods. These rates represent the change in emissions resulting from the proposed project.

Table 4. TCMC CRITERIA POLLUTANT EMISSIONS USED IN MODELING ANALYSES			
Emissions Point in Model	Pollutant	Averaging Period	Emissions Rate^a
BOILER#1 – Boiler #1	PM _{2.5} ^b	24-hour	0.02112 lb/hr (0.07194 – 0.05082)
		Annual	0.09251 ton/yr (0.3151 – 0.2226)
	PM ₁₀ ^c	24-hour	0.03155 lb/hr (0.1074 – 0.07590)
	NOx ^d	1-hour	0.2743 lb/hr (0.9343 – 0.6600)
		Annual	1.201 ton/yr (4.092 – 2.891)
	SO ₂ ^e	1-hour, 3-hour, 24-hour	-2.333 lb/hr (0.009950 – 2.343)
HOTOIL – Hot Oil Boiler	PM _{2.5}	24-hour	0.06858 lb/hr (0.2336 – 0.1650)
		Annual	-0.0005564 lb/hr (0.02023 – 0.02079)
	PM ₁₀	24-hour	-0.002437 ton/yr (0.08862 – 0.09106)
	NOx ^b	1-hour	-0.0008310 lb/hr (0.03022 – 0.03105)
		Annual	-0.007226 lb/hr (0.2628 – 0.2700)
	SO ₂	1-hour, 3-hour, 24-hour	-0.03165 ton/yr (1.151 – 1.183)
TAILPUMP – New TP#2 Engine	PM _{2.5}	24-hour	-0.9557 lb/hr (0.002799 – 0.9585)
		Annual	-0.001807 lb/hr (0.06569 – 0.06750)
	PM ₁₀	24-hour	0.8422 lb/hr ^g
	NOx	1-hour	0.2105 ton/yr ^h
		Annual	0.8422 lb/hr ^g
	SO ₂	1-hour, 3-hour, 24-hour	26.95 lb/hr ⁱ
EASTORE – East Ore Feeder	PM _{2.5}	24-hour	6.737 ton/yr ^h
		Annual	0.02639 lb/hr
	CO	1-hour, 8-hour	14.74 lb/hr
WESTORE – West Ore Feeder	PM _{2.5}	24-hour	0.08270 lb/hr (0.8180 – 0.7355)
		Annual	0.3623 ton/yr (3.583 – 3.221)
	PM ₁₀	24-hour	0.2813 lb/hr (2.782 – 2.500)
WESTORE – West Ore Feeder	PM _{2.5}	24-hour	0.08270 lb/hr (0.8180 – 0.7355)
		Annual	0.3623 ton/yr (3.583 – 3.221)
	PM ₁₀	24-hour	0.2813 lb/hr (2.782 – 2.500)

- a. The change in emissions is listed with future allowable emissions minus current allowable emissions in parentheses.
- b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- d. Nitrogen oxides.
- e. Sulfur dioxide.
- f. Carbon Monoxide.
- g. Maximum hourly rate, not accounting for intermittent operation of the source.
- h. Assuming 500 hr/yr operation.
- i. Excluded from the SIL analysis on the basis of operational frequency and duration, distance to ambient air, and distance from other NOx sources associated with the project.

Table 5 provides the emissions-based modeling applicability summary. Modeling thresholds are provided in the *Idaho Air Modeling Guideline* and were based on ensuring an ambient impact of less than the established SIL for that specific pollutant and averaging period. DEQ determined that Level II modeling thresholds were appropriate for the project because:

- The large distance between emissions sources and the ambient air boundary.
- The large distance between emissions sources.
- Emissions sources have good dispersion characteristics – tall stacks, hot release temperatures, and/or high stack exit velocities.
- There are no sensitive receptors nearby (residences, parks, schools, hospitals, etc).

The proposed allowable emissions increase from the modified sources (ore feeders, Boiler #1, Hot Oil Boiler, and the new TP#2 engine) were added together and compared to modeling thresholds. The decreases in emissions from sources were not considered because it could artificially mask potential impacts from other individual sources.

Pollutant	Averaging Period	Project Emissions Increases	Level I Modeling Thresholds	Level II Modeling Thresholds	Modeling Required
PM _{2.5} ^a	24-hour	1.03 lb/hr	0.054	0.63	Yes
	Annual	1.03 ton/yr	0.35	4.1	No
PM ₁₀ ^b	24-hour	1.60 lb/hr	0.22	2.6	No
NOx ^c	1-hour	27.22 lb/hr (0.27 lb/hr) ^g	0.2	2.4	Yes (No) ^g
	Annual	7.94 ton/yr	1.2	14	No
SO ₂ ^d	1-hour, 3-hour, 24-hour	0.0264 lb/hr	0.21	2.5	No
	Annual	0.06244 ton/yr	1.2	14	No
CO ^e	1-hour, 8-hour	14.81 lb/hr	15	175	No
Pb ^f	monthly	<<14 lb/month	14	14	No

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

c. Nitrogen oxides.

d. Sulfur dioxide.

e. Carbon monoxide.

f. Lead

g. Value excluding emissions from the new TP#2 engine.

DEQ is currently revising the preferred modeling approach for intermittent NOx emissions from periodic testing of emergency engines. Research performed by DEQ indicated that intermittent NOx sources, generally defined as operations of equal to or less than one hour every week, can generally be excluded from the modeling applicability assessment and the SIL analyses. DEQ research showed that emissions from intermittent testing of emergency engines typically only have a substantial contribution to a 1-hour NO₂ NAAQS violation in specific areas where other continuous sources have a substantial impact. Testing emissions from these engines by themselves are unlikely to cause a violation of the 1-hour NO₂ standard because of the intermittent nature of the emissions and the probabilistic form of the standard. Any high concentrations caused by operating the engine simply do not occur frequently enough to violate the NAAQS without other sources to elevate the base pollutant load. Since modeling thresholds are designed to ensure project impacts are below the SIL, sources excluded from the SIL analyses can also be excluded from the project total 1-hour NOx emissions used for modeling applicability.

TMMC submitted a 1-hour NO₂ SIL analysis with emissions from the engine excluded. Since DEQ's revised method for assessing modeling applicability for 1-hour NO₂ would have allowed the project to be exempted from a project-specific 1-hour NO₂ SIL analysis, DEQ accepted the submitted SIL analysis without further review.

The 24-hour PM_{2.5} SIL analysis was performed using the change in emissions resulting from the identified modification project. Changes in emissions for a given source were modeled from a single emissions point, rather than modeling previous allowable emissions as negative values and future allowable emissions as positive values, with different modeled release parameters specified for the pre- and post-modified source. The change in emissions resulting from a modification can be modeled from the single source modified provided the location of the emissions do not change and the release parameters do not substantially change as a result of the modification. Section 3.3 discusses the release parameters used in the modeling analyses.

3.2.2 TAP Emissions Rates

AECOM asserted in the submitted application that no cumulative TAPs emissions associated with the proposed project exceeded the emissions screening levels (ELs) of Idaho Air Rules Section 585 and 586.

3.3 Emission Release Parameters and Plant Criteria

Table 6 lists emissions release parameters for sources modeled. Parameters appeared to be within normally expected ranges for the source types modeled. AECOM's modeling report did not provide detailed documentation/justification of stack parameters used in the analyses. DEQ determined that compliance with applicable standards was still adequately demonstrated since the parameters appeared within expected ranges for the types of sources modeled, the long distance to ambient air minimizes the effect of small changes to stack parameters, and modeled impacts are well below the SILs.

Table 6. EMISSIONS RELEASE PARAMETERS					
Release Point /Location	Source Type	Stack Height (m) ^a	Modeled Diameter (m)	Stack Gas Temp. (K) ^b	Stack Gas Flow Velocity (m/sec) ^c
BOILER#1	Point	25.6	0.305	533.2	9.23 ^d
HOTOIL	Point	25.6	0.305	533.2	2.60 ^d
TAILPUMP	Point	4.27	0.457	738.2	37.16 ^e
EASTORE	Point	26.0	0.47	0.0 ^f	17.80
WESTORE	Point	26.0	0.47	0.0 ^f	17.80

a. Meters.

b. Kelvin.

c. Meters per second.

d. AERMOD beta option for a capped release used to prevent momentum flux while allowing buoyancy flux to be considered in plume rise calculations. Stack tip downwash is also considered.

e. AERMOD beta option for a horizontal release used to prevent momentum flux while allowing buoyancy flux to be considered in plume rise calculations. Stack tip downwash is disabled with this option.

f. Set at 0.0 in the model to direct the model to use the ambient air temperature.

Section 3.2.1 stated that the change in emissions were modeled from a single source rather than offsetting the allowable emissions from the modified source with the allowable emissions from the existing source. Modeling the change from a single source is only valid if the emissions release location does not change and release parameters do not change substantially. The sources modified included Boiler #1, the Hot Oil Boiler, the East Ore Feeder, and the West Ore Feeder. DEQ reviewed the previously performed air impact analysis supporting the Tier II Operating Permit issued in 2008 and found that release parameters used were effectively identical to those used for emissions source analyses addressed for this proposed project.

3.4 Results for Significant Impact Level and Cumulative NAAQS Analyses

Table 7 provides results for the 24-hour PM_{2.5} and 1-hour NO₂ SIL analyses. Emissions increases of other criteria pollutants resulting from the proposed project were below applicable DEQ modeling thresholds that trigger site-specific analyses.

DEQ verified the PM_{2.5} modeling results by rerunning the model. Terrain heights for receptors, obtained by running the preprocessor AERMAP with NED data obtained from the USGS, were not regenerated by DEQ for the verification analysis. The DEQ verification 24-hour PM_{2.5} analysis was performed using more-recently processed meteorological data. The submitted analysis used 2004-2008 data from Boise, Idaho, and DEQ's analysis used data for 2008-2012. The maximum modeled impact occurred at the same receptor location for both analyses. The DEQ verification analysis, using recent meteorological data, predicted somewhat higher impacts (0.46 µg/m³ vs 0.37 µg/m³). However, both analyses predicted maximum impacts well below the 1.2 µg/m³ SIL.

Table 7. RESULTS FOR SIL ANALYSES				
Pollutant	Averaging Period	Maximum Modeled Concentration (µg/m ³) ^a	SIL ^b (µg/m ³)	Percent of SIL
PM _{2.5} ^c	24-hour	0.37 ^d (0.46 ^{d,e})	1.2	31%
NO ₂ ^f	1-hour	1.71 ^g	7.5	23%

^a. Micrograms per cubic meter.

^b. Significant impact level.

^c. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

^d. Five-year average of the 1st high modeled 24-hour average for each year.

^e. Value obtained from DEQ verification modeling analysis using more-recent meteorological data.

^f. Nitrogen dioxide.

^g. Five-year average of the 1st high of daily maximum 1-hour concentrations for each year. The value accounts for the assumption that 80% of NO_x is NO₂.

3.5 Results for Toxic Air Pollutant Analyses

TAPs modeling was not performed because the emissions increase for all TAPs were below the applicable ELs.

4.0 Conclusions

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the identified modifications will not cause or significantly contribute to a violation of any ambient air quality standard.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on December 9, 2013:

Facility Comment on the Modeling Memo: The IDEQ (Kevin Schilling) verified the modeling completed on TCMC's behalf by AECOM by using updated meteorological data, including data for low wind speeds that were not accounted for in dataset the agency provided to AECOM during modeling protocol approval phase of the project. The IDEQ modeling with the new meteorological data produced somewhat higher impacts which, nonetheless, remained below the applicable significant impact levels ("SILs"). The manner in which the verification was completed fully confirms there are no adverse ambient air impacts associated with the permitted sources.

DEQ Response: No response by DEQ is required.

Facility Comment on the Statement of Basis: As a general matter, the Statement of Basis appears to be accurate, but we concentrated our review efforts on the permit itself and the Statement of Basis may require some revisions. For example, we identified MACT Subpart JJJJJ as applicable to Boiler No. 1 and the Hot Oil Boiler (see proposed revisions to Condition 3 of the draft permit), which requirements are not addressed in the Statement of Basis. Similarly, we are proposing revisions to Condition 10 of the permit to more clearly state the NSPS Subpart IIII and MACT Subpart ZZZZ requirements that apply to the IC Engines. These are complicated requirements and the Statement of Basis discussion of the requirements is somewhat difficult to understand.

Finally, AECOM identified discrepancies in the Motivator IC engine emission rates and cannot reproduce the rates IDEQ included in the Table 3 of the Statement of Basis. AECOM calculated the emissions from the Motivator on 500 hours/year operation, whereas the draft permit limits the Motivator to 3,000 hours/year of operation. Even using the 3000 hour/year level of operation, AECOM cannot duplicate the emissions specified in the table. In addition, the CO_{2e} emissions in the table for the Motivator are listed at 426.6 tpy, which coincides with the information supplied to IDEQ in the permit application based on 500 hours/year of operation (not 3,000 hours/year which seems to have been used for the criteria pollutants). TCMC is therefore requesting that the CO_{2e} limit in Table 3 of Statement of Basis the Motivator engine be increased from 426.6 tpy to 2,559.5 tpy.

DEQ Response: The EI inventory will be corrected to what was submitted in the application for the Motivator IC engine.

Facility Comment: Permit Condition 1.1 – First Sentence, second line, delete the word "identical" and replace with "similar" because the replacement Parker boiler is not identical to the Parker boiler it replaced. The word "new" was deleted from Table 1.1.

DEQ Response: The requested change will be made to the permit.

Facility Comment: General Comment Regarding Table 1.1 – The age of the various emission units at TCMC means that information regarding the "Type" and "control efficiency" of the various pieces of equipment are often unknown. This fact has not changed from prior iterations of the Tier II Operating Permit which have authorized operations for many years. Given this fact, Table 1.1 and the equipment specific tables in Conditions 3-9 of the permit should be revised to delete references to "Type" (where this is unknown) and control efficiency. With respect to the latter, attached to this letter you will find a summary of the control efficiencies used in the permit application. We respectfully request that these control efficiencies not be referenced in the permit itself.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Section 3 of Table 1.1 references Waste Oil Heaters, but these emission units are not mentioned elsewhere in the permit. If these units are not subject to regulation, they should either be removed from the permit or the permit should clarify they are not subject to any applicable requirements.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Section 4 of Table 1.1 pertains to the Pioneer Crusher and includes a parenthetical that states, "(May be replaced by a different crusher)." Since this possible eventuality is only conjecture, at best, we suggest this parenthetical be deleted.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Sections 5-9 and 11 of Table 1.1 list a "Pressure drop" range, while Sections 6-8 also list a "Liquid flow rate" range. TCMC has reviewed these and, as a general matter, agrees with the low value expressed in the range as those are consistent with values expressed in the Tier II Operating Permit. TCMC has no understanding of how IDEQ generated the high value in the expressed ranges and requests that those be deleted where indicated. TCMC therefore requests that the upper values of the "Pressure drop" and "Liquid flow rate" ranges be deleted from Table 1.1 (and from equipment specific tables in Conditions 5-9 of the permit) so that it conforms more closely to the Tier II Operating Permit. The revision proposed is as follows:

- liquid flow rate be expressed as "Greater than or equal to XX gpm"; and
- pressure drop be expressed as "Maintain at or above XX inches of water" ..

DEQ Response: The requested changes will be made to the permit.

Facility Comment: The "Liquid flow rate" expressed in Section 11 of Table 1.1 should be expressed as a range of 40 to 60 gpm (as provided in the prior Tier II Operating Permit), instead of simply 58 gpm.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 2.1 – TCMC intends to meet this requirement by reviewing and updating, as necessary, the current Fugitive Dust Control Plan within the timeframe indicated in the draft permit (i.e., with 45 days of permit issuance). The word "considerations" in the second sentence of Condition 2.1 should be "consideration." In addition, the word "Permittee" in the first sentence after the bullets should be revised to "permittee" to conform to the rest of the draft permit. Finally, the use of bullets in this permit condition was continued as it seemed to better fit the overall organization of the draft permit.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Permit Condition 2.1 – Revise the second sentence as follows: "Monitoring records shall be maintained in accordance with the Monitoring and Recordkeeping General Provision.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 2.1 – Third line, the word "Plan" should be restated as "plan" to conform with the other references to the same in the permit.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Conditions 2.7 and 2.8 – TCMC will ensure an EPA Reference Method 9 opacity reader conducts quarterly facility-wide inspection of potential sources of visible emissions.

DEQ Response: No response by DEQ is required.

Facility Comment: Permit Condition 2.11, revise as follows: "Receiving a ~~Tier II operating permit to construct~~ shall not relieve any owner or operator of the responsibility to comply with all applicable local, state, and federal rules and regulations."

DEQ Response: The requested change will be made to the permit.

Facility Comment: Revise Permit Condition 2.15 as follows: "Emissions of any single ~~H~~azardous ~~A~~ir ~~P~~ollutant (HAP) from the entire facility shall not equal or exceed 10 tons per any consecutive-12 calendar-month period."

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 3.1 – Boiler No. 1 and Hot Oil Boiler – Delete current Process Description language and replace with the following: "The Boiler No. 1 ~~is are~~ used to provide hot water for the leaching processes at the facility. The Hot Oil Boiler heats oil that is used in the Holo-flite dryer to dry concentrate at the facility.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Table 3.1 – Revise first entry in Table as: Boiler #No. 1 ~~(new)~~:

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 3.5 – Revise the title heading as follows: “Boiler No. 1 and the Hot Oil Boiler Fuel Use”.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Revise Permit Condition 3.5 as follows: “Boiler No. 1 and the Hot Oil Boiler shall only combust ultra-low sulfur diesel fuel which has a maximum sulfur content of 0.0015% (15 ppm) by weight.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Insert new Permit Condition 3.7 to address NESHAP (MACT) 40 C.F.R. Part 63, Subpart JJJJJ, for Industrial, Commercial and Institutional Boilers Area Sources. Note that this MACT standard has been subject to significant litigation and revision over the past several years, with the most recent revisions being promulgated by EPA on February 1, 2013 at 78 Fed. Reg. 7488.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Table 4.1 – Delete parenthetical “(May be replaced by different crusher)”.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 4.4 – The word “sprays” in the last should read “spray”.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 4.5 – Revise final sentence as follows: “Written notice of ~~the~~ any replacement of this equipment shall be provided to IDEQ within 14 days of the change.”

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 4.6 – Revise as follows: “The permittee shall monitor and record the tons of material processed through the portable crusher each month and for the most recent rolling 12-month period ~~consecutive 12-calendar month period~~.”

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 5.1 – Revised Process Description as follows: “Mined ore is transported to the primary gyratory crusher by haul trucks. Primary crushing reduces the ore from 24 inches or greater in diameter to less than 8 eight inches.”

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Table 5.1 – Revise by deleting “Type” and PM₁₀ control efficiency and pressure drop and liquid flow rate issue.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Permit Condition 5.6 – TCMC intends to meet this requirement by reviewing and updating, as necessary, the current operations and maintenance (O&M) manual for the primary crusher and overland conveyor transfer point baghouses.

DEQ Response: No response from DEQ is required.

Facility Comment: Permit Condition 5.5 – Revise daily throughput limit as follows: 44,500 ~~406,800~~.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 5.6 – Revise 4th sentence as follows: “The inspections shall include, but not be limited to, checking the bags for structural integrity and checking that they are appropriately secured in place.”

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 5.8 – Revise 1st sentence as follows: “The permittee shall maintain documentation on site of the results of the semiannual baghouse inspections required by the Baghouse Operations and Maintenance O&M manual.”

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Table 6.1 – Revise to include “Model,” and “Type” information and revise liquid and pressure performance metrics.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Revise Permit Condition 6.6 – Second sentence of second paragraph should be revised as follows: “The performance test shall be conducted in accordance with the Test Methods and procedures specified in the Rules (IDAPA 58.01.01.157).”

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Table 7.1 – Revise as follows: “Holo Flite Dryer #No. 1”.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Table 7.2 – Revise as follows: “Holo Flite Dryer #No. 1”.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 7.5 – Revise as follows: “The throughput into the Holo Flite Dryer #No. 1 shall not exceed:

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 7.5 – Revise annual throughput as follows: “81,030 tons per rolling 12-month period ~~any consecutive 12 calendar month period~~.”

DEQ Response: The requested changes will be made to the permit with a minor change.

Facility Comment: Permit Condition 7.5 – Revise as follows: “. . . Holo Flite Dryer #No. 1 . . .

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 7.7 –Revise as follows: “. . . Holo Flite Dryer #No. 1 . . .”.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Permit Condition 7.10 – Retitle as follows: “ESP Monthly Annual Inspection” as this conforms to monthly inspection frequency referenced in the narrative of the condition.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 7.12 – Revise as follows: “. . . Holo Flite Dryer #No. 1 . . .” Also, restate second bullet as follows: “Maintain a record documenting throughput on a rolling 12-month basis ~~Each month record the throughput during the most recent consecutive 12 calendar month period.~~”

DEQ Response: The requested changes will be made to the permit with a minor change.

Facility Comment: Table 8.1 – Revise as provided in comment on Table 1.1 and attached redline comments.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Permit Conditions 8.6, 8.7, 8.8 and 8.12 – see attached redline for minor revisions.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there are no corrections to be made.

Facility Comment: Permit Condition 8.10 – Reference to NSPS LL in the permit condition and revise the reference to “40 CFR 60.384” at the beginning of the first sentence of this permit condition to “40 CFR §§ 60.384(a) and (b).” TCMC intends to meet the requirement of NSPS LL Section 60.384(a) and (b) by continuing the current operation of monitoring devices for continuous measurement of the change in pressure of the gas stream and of the scrubbing liquid flow rate to the scrubbers.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Additionally, the reference to “40 CFR 60.385” in the second paragraph in Paragraph 8.10 should be changed to “40 CFR § 60.385(b).”

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Permit Condition 8.11 – The reference to NSPS LL “40 CFR 60.385” in the first sentence of Condition 8.11 should be changed to “40 CFR §§ 60.385(c) and (d).”

DEQ Response: The requested change will be made to the permit.

Facility Comment: Table 9.1 – Revise as provided in comment on Table 1.1 and revise to remove “Type” and PM₁₀ control efficiency and insert “Model” for the Pebble Lime Baghouse (i.e., DLM-V-20-10F6).

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 9.6 – Revise first sentence as follows: “The permittee shall have developed and maintained an ~~Operations and Maintenance Plan~~ (O&M) ~~m~~Manual for the baghouses . . .”.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Revise third sentence in Condition 9.6 as follows: “The inspections shall include, but not be limited to, checking the bags or cartridges for structural integrity and checking that they are appropriately secured in place.”

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 9.7 – Revised first sentence as follows: The permittee shall maintain documentation on site of the results of the semiannual baghouse inspections required by the Baghouse ~~Operations and Maintenance~~ O&M Manual.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Table 10.1 – Remove the word [Draft] from the table and minor revisions in attached redline.

DEQ Response: The document was reviewed improperly by the Applicant in Word and there is no correction to be made.

Facility Comment: Reorganized to state MACT ZZZZ and NSPS IIII requirements so as to ensure compliance requirements are accurately and completely reflected in the permit.

DEQ Response: The requested change will be made to the permit.

The following comments were received from the facility on March 21, 2014:

Facility Comment: In the Permit Table 1.1 for the pressure drop listed for the Primary Crusher Baghouse include "Maintain at or above 3 in H₂O and remove the PM₁₀ control efficiencies for the Primary Crusher Baghouse and the Overland Conveyor Baghouse.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Multiple changes to clarify and remove non-applicable requirements to permit condition 3.7.

DEQ Response: Most of the requested changes will be made to the permit.

Facility Comment: Multiple changes to clarify and remove non-applicable requirements to permit condition 3.8.

DEQ Response: Most of the requested changes will be made to the permit.

Facility Comment: In the Permit Table 5.1 for the pressure drop listed for the Primary Crusher Baghouse include "Maintain at or above 3 in H₂O and remove the PM₁₀ control efficiencies for the Primary Crusher Baghouse and the Overland Conveyor Baghouse.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Remove the PM₁₀ control efficiency in Permit Table 6.1.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Remove the PM₁₀ control efficiency in Permit Table 8.1.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: In the Permit Table 9.1 for the pressure drop listed for the Jet Mill, Tech Fine Packaging, Pancake Mill, Super Fine and the Pebble Lime Baghouse include "Maintain at or above 1, 0.4, 0.2, 1 or 0.3 respectively in H₂O and remove the PM₁₀ control efficiencies for all five Baghouses.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Correct the Subpart ZZZZ required in Permit Condition 10.5.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Remove non-applicable requirements to the emergency IC engines in Permit Condition 10.6.

DEQ Response: The requested changes will not be made to the permit as they may be applicable in the future.

Facility Comment: Include both Tailings Pump IC engines in Permit Condition 10.11.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Include both Tailings Pump IC engines in Permit Condition 10.15.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Include a table specifying the General Provisions requirements of Subpart ZZZZ.

DEQ Response: The requested change will not be made to the permit as Permit Condition 10.17 incorporates the requirements of Subpart ZZZZ by reference.

Facility Comment: Remove the Construction and Operation Notification requirements from the General Provisions of the permit.

DEQ Response: The requested change will not be made to the permit as these are boilerplate conditions included in the General Provisions of PTCs.

The following comments were received from the facility on May 12, 2014:

Facility Comment: Delete all references to "[DRAFT]" in the final permit.

DEQ Response: All new and modified permit conditions are marked "[DRAFT]" until final permit issuance so the Applicant will know which permit conditions are new and/or modified. Upon final permit issuance these permit conditions will be dated to the final issuance date.

Facility Comment: In the Permit Table 1.1, Permit Section 7, Holo Flite Dryer No. I - Delete "Combined PM₁₀ control efficiency: 99%" to conform with both DEQ responses to December 19, 2013 TCMC comments and Condition 7, Table 7.1

DEQ Response: The requested change will be made to the permit.

Facility Comment: In the Permit Table 1.1, Permit Section 8, Lube Grade Dryer Stack - Delete "Combined PM₁₀ control efficiency: 99%" to conform with both DEQ responses to December 19, 2013 TCMC comments and to Condition 8, Table 8.1.

DEQ Response: The requested change will be made to the permit.

Facility Comment: Permit Condition 3.8, third bullet, first line requires boiler maintenance/tune-up records be supplied to the "Administrator" if requested. Please clarify whether DEQ has been delegated authority to enforce MACT JJJJJ for boilers and, if it has, reference to the "Administrator" should be changed to "DEQ".

DEQ Response: At this time DEQ has not been delegated authority to enforce NESHAP Subpart 63, JJJJJ. Therefore, the requested change will not be made to the permit.

Facility Comment: Permit Condition 3.9, second line, confirm that the reference to "40 CFR Part 60, Subpart III" (this is an engine NSPS, see e.g., Condition 10.7) has been deleted and replaced with "40 CFR Part 63, Subpart JJJJJ" (which is the boiler MACT) in the final version of the permit.

DEQ Response: The requested changes will be made to the permit.

Facility Comment: Condition 10.6, delete the third to last and second to last bullets on this page and delete the last sentence of the last bullet on page 31 as provided in the attached draft permit.

DEQ Response: The requirements listed in the permit were taken directly from NESHAP Subpart ZZZZ and specify how the IC engines may be operated. Therefore, the requested changes will not be made to the permit.

Facility Comment: Conditions 12.5 and 12.6, confirm these provisions are deleted from the final version of the permit since TCMC is an existing facility.

DEQ Response: As discussed the previous time this comment was submitted by the facility, these are boilerplate conditions included in the General Provisions of PTCs. Therefore, the requested changes will not be made to the permit.

APPENDIX D – PROCESSING FEE

PTC Fee Calculation

Instructions:

Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Cyprus Thompson Creek Mining Co.
Address: P.O. Box 62
City: Clayton
State: ID
Zip Code: 83227
Facility Contact: Bert Doughty
Title: Environmental Manager
AIRS No.: 037-00001

N

Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y

Did this permit require engineering analysis? Y/N

N

Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	55.62	-55.6
SO ₂	0.0	20.05	-20.1
CO	0.0	7.7	-7.7
PM10	14.6	0	14.6
VOC	0.0	4.56	-4.6
TAPS/HAPS	0.0	0	0.0
Total:	0.0	87.93	-73.4
Fee Due	\$ 1,000.00		

Comments:



Air Quality Permitting Response to Public Comments

May 28, 2014

Permit to Construct No. P-2013.0014

**Cyprus Thompson Creek Mining Company
Clayton, Idaho**

Facility ID No. 037-00001

Prepared by:
Darrin Pampaian, PE, Permit Writer
Kevin Schilling, Modeling Coordinator
AIR QUALITY DIVISION

D.P.

Final

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BACKGROUND

The Idaho Department of Environmental Quality (DEQ) provided for public comment on the proposed permit to construct for Cyprus Thompson Creek Mining Company from April 10, 2014 through May 12, 2014, in accordance with IDAPA 58.01.01.209. During this period, comments were submitted in response to DEQ's proposed action. Each comment and DEQ's response is provided in the following section. All comments submitted in response to DEQ's proposed action are included in the appendix of this document.

PUBLIC COMMENTS AND RESPONSES

Public comments regarding the technical and regulatory analyses and the air quality aspects of the proposed permit are summarized below. Questions, comments, and/or suggestions received during the comment period that did not relate to the air quality aspects of the permit application, the Department's technical analysis, or the proposed permit are not addressed. For reference purposes, a copy of the Rules for the Control of Air Pollution in Idaho can be found at:

<http://adminrules.idaho.gov/rules/current/58/0101.pdf>

- Comment 1:** Emissions estimates are not accurately representative of the facility and proposed changes. DEQ must provide more details regarding the source of emissions estimates provided within the proposed PTC. Prior permits for this facility were unavailable on the DEQ website and no other source for these emissions estimates are provided.
- Response 1:** A detailed emissions inventory (EI) was provided in Appendix A of the Statement of Basis for this project. The EI used accepted emissions factors from EPA's AP-42 publication and source testing performed at the facility, accepted control efficiencies for emissions control equipment employed at the facility, as well as enforceable throughput and annual operation limits that were included in the proposed permit. These are all standard procedures for establishing an EI for a facility. As for the current permit it was posted to DEQ's website in the "Air - Tier II - PTC" permit section and was available for review by any member of the public during the public comment period. For questions or assistance in locating issued permits, contact DEQ's permit hotline at 1-877-5PERMIT.
- Comment 2:** The modeling analysis for the proposed changes does not sufficiently demonstrate that predicted pollutant concentrations will be below the Significant Impact Levels or other regulatory thresholds. The Cyprus Thompson Creek Mining facility is located in a mountainous region of central Idaho. The modeling analysis provided within the Statement of Basis uses meteorological data from Boise, Idaho. These two locations are over 160 miles apart and demonstrate significantly different meteorological conditions. Meteorological data from Boise is not appropriately used to demonstrate ambient air conditions within and around the facility. Topography, climate, and wind conditions would differ dramatically between Boise, Idaho and the facility location. Because these data originate from an inappropriate location, the resulting model cannot be used to demonstrate compliance with regulatory thresholds. DEQ cannot defensibly assert that a significant change will not occur as a result of the proposed project based on modeled assumptions. DEQ must provide better meteorological data to adequately describe ambient air impacts based on the proposed changes. It would not be unreasonable to set up the necessary monitoring equipment in proximity to this facility and require one year of monitoring prior to issuing any permit that increases throughput. The Cyprus Thompson Creek Mine has been in operation for almost 30 years. This permitting actions, and any subsequent permit changes, will be better informed with such meteorological data.

Response 2: A modeling analysis was only required for 24-hour PM_{2.5} and 1-hour NO₂ emissions from the proposed Cyprus Thompson Creek Mining Company modification. The maximum modeled impacts were 31% of the PM_{2.5} significant impact level (SIL) and 23% of the NO₂ SIL. DEQ contends that it is very unlikely that values exceeding the SIL would result if a more-representative meteorological dataset were used in the analyses.

DEQ's general policy is to not require minor source permit applicants to collect site-specific meteorological data for use in air impact analyses. Minor source permitting projects are new facilities or modifications at existing minor facilities with emissions below 250 ton/year of criteria pollutants or 100 ton/year if the source is a designated facility, and modifications at major facilities that result in an emissions increase that is less than the significant net emissions increase. In cases where DEQ is not satisfied that the meteorological data provided is reasonably representative and/or impacts are very near a standard or the SIL, DEQ may require the applicant to perform additional modeling using a second set of meteorological data.

A higher degree of assurance that proposed projects will not cause or contribute to a violation of air quality standards would certainly be achieved if DEQ required the collection of onsite meteorological data. However, DEQ determined this is not a reasonable requirement for minor source permitting projects, as it would require a substantial cost in equipment, maintenance, and data processing, and it would unreasonably delay many proposed projects.

Comment 3: Intermittent sources, like the TP#2 should be included within the 1-hour NO_x modeling assessment. In addition, it is not clear why the TP Engine #2 was excluded from the 1-hour NO_x analysis. According to DEQ's preferred modeling approach, intermittent sources that operate for less than one hour a week are not included in modeling assessments. The TP Engine #2 is proposed to operate under this PTC for 500 hours a year, which is an average of a little less than 10 hours a week. Therefore, this intermittent source should not be excluded from the 1-hour NO_x modeling analysis.

Response 3: The following is DEQ's policy for excluding emissions from the testing of emergency engines, as presented in the State of Idaho Guideline for Performing Air Quality Impact Analyses, Appendix A Guidance for 1-Hour NO₂ Modeling of Intermittent Sources:

Certain industrial facilities have internal combustion (IC) engines that are used only to power emergency generators or fire-suppression pumps. These engines only operate for periodic testing and during an actual emergency. As such, these sources with intermittent emissions are difficult to model in a way that accounts for impacts in a reasonably accurate but conservative manner. As a result, Tyler Fox, leader of Environmental Protection Agency's (EPA) Air Quality Modeling Group, developed a memorandum entitled "Additional Clarification Regarding Application of Appendix W Modeling Guideline for the 1-hour NO₂ National Ambient Air Quality Standard, dated March 1, 2011. The memo provides states with the flexibility to exclude certain types of sources with intermittent emissions from Appendix W modeling.

Upon a review of other states' application of the Tyler Fox memo, comments from the public and Idaho industry, an internal review of Idaho sources, NO₂ background levels, and various sample model runs; DEQ has determined that Nitrogen Oxides (NO_x) emissions from the intermittent operational testing of engines powering emergency generators or fire-suppression water pumps may be excluded from the project-specific significant impact level (SIL) analysis

and the cumulative NAAQS analysis for 1-hour NO₂, providing the annual hours of operation from testing and maintenance are less than or equal to 100 hours.

This determination is applicable to minor source air permitting projects and is not limited to any specific number of engines present at a facility. The Director may require deviation from this guidance if deemed appropriate to assure compliance with 1-hour NO₂ NAAQS and IDAPA 58.01.01.203 or 01.403. DEQ will determine how emergency engines are included in permits for major sources, specifically those applicable to the Prevention of Significant Deterioration (PSD) program, on a case-by-case basis.

This guidance does not have the force and effect of a rule and is not intended to supersede statutory or regulatory requirements or recommendations of the state of Idaho or EPA. This guidance may be altered upon new or revised guidance from EPA, development of new methods to appropriately handle such emissions, or new information gained from technical analyses.

Contact the DEQ stationary source air modeling coordinator at (208) 373-0112 for any questions or additional information regarding data and methods for assessing air quality impacts from intermittently operated sources.

The 500 hour limitation for the emergency engine consists of both testing hours and potential operational hours during an actual emergency. The unit will not operate for testing and maintenance purposes more than 100 hours per year. Emissions during emergency operations are not typically modeled by DEQ to evaluate compliance with short-term standards. DEQ determined it is not reasonably feasible to estimate the manner in which emissions could occur during an emergency situation.

Comment 4: DEQ doesn't adequately demonstrate a significant increase in regulated pollutants will be prevented by the proposed throughput increases. ICL asserts a prevention of significant deterioration (PSD) of air quality analysis is warranted. The Cyprus Thompson Creek Mining facility has been classified as a "Synthetic Minor" source for NO_x, PM, PM₁₀, and THAP. By definition this classification places a limit on the facility that prevents major source classification. In increasing the throughput limits at this facility by 10%, DEQ is relaxing controls that prevented major source classification and the need for PSD analysis in previous permitting activities. The proposed permit package does not adequately discuss why PSD analysis is not required as a result of this increase in throughput. Furthermore, this relaxation in enforceable controls require DEQ to conduct a PSD analysis for this action in accordance with Section 52.21(r)(4):

"At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980 on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then (PSD) shall apply to the source or modification as though construction had not yet commenced on the source or modification."

According to EPA, “a source that is a minor because of operation restrictions in a construction permit later applies for a relaxation of that construction permit which would make the source major, Section 52.21(r)(4) prescribes a methodology for determining the best available control technology.”

Response 4: As presented in the Statement of Basis for this project the facility is not becoming a Prevention of Significant Deterioration (PSD) Major Source as a result of this project as the facility-wide Potential to Emit for all point sources of criteria pollutant emissions are below the PSD Major Source thresholds.

In addition, 40 CFR 52.21 (b)(1)(c)(iii) states that “The fugitive emissions of a stationary source shall not be included in determining for any of the purposes of this section whether it is a major stationary source, unless the source belongs to one of the following categories of stationary sources:

- Coal cleaning plants (with thermal dryers);

- Kraft pulp mills;

- Portland cement plants;

- Primary zinc smelters;

- Iron and steel mills;

- Primary aluminum ore reduction plants;

- Primary copper smelters;

- Municipal incinerators capable of charging more than 250 tons of refuse per day;

- Hydrofluoric, sulfuric, or nitric acid plants;

- Petroleum refineries;

- Lime plants;

- Phosphate rock processing plants;

- Coke oven batteries;

- Sulfur recovery plants;

- Carbon black plants (furnace process);

- Primary lead smelters;

- Fuel conversion plants;

- Sintering plants;

- Secondary metal production plants;

- Chemical process plants—The term chemical processing plant shall not include ethanol production facilities that produce ethanol by natural fermentation included in NAICS codes 325193 or 312140;

- Fossil-fuel boilers (or combination thereof) totaling more than 250 million British thermal units per hour heat input;

- Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels;

- Taconite ore processing plants;

- Glass fiber processing plants;

- Charcoal production plants;

- Fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, and

- Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.”

This facility is a Molybdenum Processing Facility regulated by Subpart LL – Standards of Performance for Metallic Mineral Processing Plants, which was promulgated February 21, 1984. As this facility is not a listed stationary source and was regulated after August 7, 1980, fugitive emissions sources were not included in the Major Stationary Source determination.

Thus, as a result of this project this facility did not become a PSD Major Stationary Source. Therefore, a PSD air quality analysis was not warranted for this project.

Comment 5: DEQ should assess whether or not the proposed actions would result in “debottlenecking.” In addition, DEQ does not provide evidence to indicate that this increase in operating production rate is not considered “debottlenecking.” If the proposed increase in throughput is not considered a “debottleneck” DEQ must provide a discussion on how such a conclusion was reached and why New Source Review is not triggered and a Best Available Control Technology assessment is not needed.

Response 5: Debottlenecking is applied by EPA policy to PSD Major Sources. As discussed previously, this facility is not a PSD Major Source and is not becoming a PSD Major Stationary Source as a result of this project.

Appendix

Public Comments Submitted for

Permit to Construct

P-2013.0014



Darrin Pampaian
Air Quality Division
DEQ State Office
1410 N. Hilton
Boise, ID 83706

RE: Proposed Modified Air Quality Permit for Construct for Cyprus Thompson Creek Mining Company, Clayton, Idaho.

Dear Mr. Pampaian,

Thank you for the opportunity to comment on the proposed modified air quality permit to construct (PTC) for Cyprus Thompson Creek Mining Company. Since 1973, the Idaho Conservation League (ICL) has been Idaho's voice for clean water, clean air, and wilderness—values that are the foundation to Idaho's extraordinary quality of life. ICL works to protect these values through public education, outreach, advocacy and policy development. As Idaho's largest state-based conservation organization, we represent over 25,000 supporters who have a deep personal interest in protecting air quality.

ICL has reviewed the proposed permit package and is concerned with the following:

- Emissions estimates are not accurately representative of the facility and proposed changes.
- The modeling analysis for the proposed changes does not sufficiently demonstrate that predicted pollutant concentrations will be below the Significant Impact Levels or other regulatory thresholds.
- Intermittent sources, like the TP#2 should be included within the 1-hour NO_x modeling assessment.
- DEQ doesn't adequately demonstrate a significant increase in regulated pollutants will be prevented by the proposed throughput increases. ICL asserts a prevention of significant deterioration (PSD) of air quality analysis is warranted.
- DEQ should assess whether or not the proposed actions would result in "debottlenecking."

Emissions Estimates

DEQ must provide more details regarding the source of emissions estimates provided within the proposed PTC. Prior permits for this facility were unavailable on the DEQ website and no other source for these emissions estimates are provided.

Modeling Analysis

The Cyprus Thompson Creek Mining facility is located in a mountainous region of central Idaho. The modeling analysis provided within the Statement of Basis uses

meteorological data from Boise, Idaho. These two locations are over 160 miles apart and demonstrate significantly different meteorological conditions. Meteorological data from Boise is not appropriately used to demonstrate ambient air conditions within and around the facility. Topography, climate, and wind conditions would differ dramatically between Boise, Idaho and the facility location. Because these data originate from an inappropriate location, the resulting model cannot be used to demonstrate compliance with regulatory thresholds. DEQ cannot defensibly assert that a significant change will not occur as a result of the proposed project based on modeled assumptions.

DEQ must provide better meteorological data to adequately describe ambient air impacts based on the proposed changes. It would not be unreasonable to set up the necessary monitoring equipment in proximity to this facility and require one year of monitoring prior to issuing any permit that increases throughput. The Cyprus Thompson Creek Mine has been in operation for almost 30 years. This permitting actions, and any subsequent permit changes, will be better informed with such meteorological data.

1-Hour NO_x

In addition, it is not clear why the TP Engine #2 was excluded from the 1-hour NO_x analysis. According to DEQ's preferred modeling approach, intermittent sources that operate for less than one hour a week are not included in modeling assessments. The TP Engine #2 is proposed to operate under this PTC for 500 hours a year, which is an average of a little less than 10 hours a week. Therefore, this intermittent source should not be excluded from the 1-hour NO_x modeling analysis.

PSD Applicability

The Cyprus Thompson Creek Mining facility has been classified as a "Synthetic Minor" source for NO_x, PM, PM₁₀ and THAP. By definition this classification places a limit on the facility that prevents major source classification. In increasing the throughput limits at this facility by 10%, DEQ is relaxing controls that prevented major source classification and the need for PSD analysis in previous permitting activities. The proposed permit package does not adequately discuss why PSD analysis is not required as a result of this increase in throughput. Furthermore, this relaxation in enforceable controls require DEQ to conduct a PSD analysis for this action in accordance with Section 52.21(r)(4):

"At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980 on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then (PSD) shall apply to the source or modification as though construction had not yet commenced on the source or modification."

According to EPA, "a source that is a minor because of operation restrictions in a construction permit later applies for a relaxation of that construction permit which would make the source major, Section 52.21(r)(4) prescribes a methodology for determining the best available control technology."

Debottlenecking

In addition, DEQ does not provide evidence to indicate that this increase in operating production rate is not considered "debottlenecking." If the proposed increase in

throughput is not considered a "debottleneck" DEQ must provide a discussion on how such a conclusion was reached and why New Source Review is not triggered and a Best Available Control Technology assessment is not needed.

Again, thank you for the opportunity to comment on the proposed permit to construct. Please feel free to contact me with any questions or comments at (208) 345-6933 ex 23 or saride@idahoconservation.org.

Sara Aride

A handwritten signature in black ink, appearing to be 'Sara Aride', with a stylized flourish extending to the right.

Community Conservation Associate

Idaho Conservation League