Statement of Basis

Permit to Construct No. P-2017.0013
Project ID 61854

P. Kay Metal Lewiston - LLC
Lewiston, Idaho

Facility ID 069-00071

Final

August 4, 2017
Morrie Lewis
Permit Writer

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.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
BRC	below regulatory concern for criteria pollutants as provided in IDAPA 58.01.01.221.01 or for TAP as provided in IDAPA 58.01.01.223.01
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
day	calendar day
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hr	clock hours
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb	pounds
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
PKM	P. Kay Metal Lewiston LLC
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
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	*Rules for the Control of Air Pollution in Idaho*
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
T	tons
T2	Tier II operating permit
TAP	toxic air pollutants
U.S.C.	United States Code
VOC	volatile organic compounds
$\mu g/m^3$	micrograms per cubic meter
yr	consecutive 12-calendar-month period

FACILITY INFORMATION

Description

P. Kay Metal Lewiston - LLC is a supplier of an assortment of metals as well as a metal recycling company. P. Kay Metal Lewiston - LLC manufactures premium solders and lead alloys in bar and wire form for the military and a wide variety of industries including electronics and ammunition industries. The process includes secondary lead processing, melting, extruding, and casting metal into bars, wires, and billets for solder.

Primary, secondary, and scrap metal containing lead enters the process in the Rotary Furnace or one of two Refining Kettles depending on the composition and physical form of the scrap metal. The temperatures during this stage ranges from 590 °F to 1706 °F (310 °C to 930 °C) for the Rotary Furnace and 900 °F (482 °C) for the kettles. Organic fluxes are added to the Rotary Furnace to form molten metal and a slag of impurities that can be removed and recycled, or sent offsite for disposal. A mixture of proprietary fluxes can be added to the Refining Kettles, depending on the composition of the metal and the required composition of the product. These additives help form a skin of impurities on the surface of the molten metal that can be easily skimmed off and routed for recycling or disposal. Emissions from the furnace and refining kettles are vented to the Rotary Furnace Baghouse.

Following the melting process, the metal is poured into one of two Alloying Kettles. Metal alloys are created depending on the client's needs. Following the alloying process, the metal mixture is poured into one of seven Holding Kettles for storage. Emissions from the Alloying and Holding Kettles are vented to the Holding Kettle Room Baghouse. All kettles are operated in a negative pressure room, and the air is vented to a Fugitive Baghouse.

Six continuous extruders shape the metal, usually into cylinders varying in size. Further processing is done based on the specific needs of each client.

Permitting History and Application Scope

This is the initial PTC for a new facility, thus there is no permitting history.

The applicant has proposed to:

- Install and operate a secondary lead processing and solder manufacturing facility.

Application Chronology

March 3, 2017	DEQ received an application and an application fee.
March 13 – 28, 2017	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
March 20, 2017	DEQ determined that the application was complete.
March 27, 2017	DEQ made available the draft permit and statement of basis for peer and regional office review.
May 12, 2017	DEQ made available the draft permit and statement of basis for applicant review.
May 25, 2017	DEQ received supplemental information from the applicant.
June 14, 2017 – July 14, 2017	DEQ provided a public comment period on the proposed action.
June 23, 2017	DEQ received the permit processing fee.
August 4, 2017	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	Control Equipment
Tilting Rotary Furnace (Kettle 1) Manufacturer: Eclipse RatioMatic Model: RM0700 Maximum capacity: 53,000 lb loading capacity Maximum operation: 60 T/day product and as limited facility-wide Maximum process temperature: 930°C Burner fuel: natural gas Burner fuel consumption: 7.0 MMBtu/hr and as limited facility-wide	Rotary Furnace Baghouse Manufacturer: Scientific Dust Collectors Model: SPJ-688-4T10 $PM_{2.5}$ Control Efficiency: 99% or greater
Refining Kettle and Burner (Kettle 2) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 100,000 lb loading capacity Maximum operation: 144 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0300 Burner fuel: natural gas Burner fuel consumption: 3.0 MMBtu/hr and as limited facility-wide	
Refining Kettle and Burner (Kettle 3) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 100,000 lb loading capacity Maximum operation: 144 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0300 Burner fuel: natural gas Burner fuel consumption: 3.0 MMBtu/hr and as limited facility-wide	
Alloying Kettle and Burner (Kettle 4) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 200,000 lb loading capacity Maximum operation: 240 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0500 Burner fuel: natural gas Burner fuel consumption: 4.0 MMBtu/hr and as limited facility-wide	Holding Kettle Room Baghouse Manufacturer: Scientific Dust Collectors Model: SPJ-512-4T10 $PM_{2.5}$ Control Efficiency: 99% or greater
Alloying Kettle and Burner (Kettle 5) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 200,000 lb loading capacity Maximum operation: 240 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0500 Burner fuel: natural gas Burner fuel consumption: 4.0 MMBtu/hr and as limited facility-wide	
Holding Kettle and Burner (Kettle 6) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 100,000 lb loading capacity Maximum operation: 38.4 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0200 Burner fuel: natural gas Burner fuel consumption: 2.0 MMBtu/hr and as limited facility-wide	

Table 1 (continued)

Source	Control Equipment
Holding Kettle and Burner (Kettle 7) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 100,000 lb loading capacity Maximum operation: 72 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0300 Burner fuel: natural gas Burner fuel consumption: 3.0 MMBtu/hr and as limited facility-wide	
Holding Kettle and Burner (Kettle 8) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 100,000 lb loading capacity Maximum operation: 90 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0300 Burner fuel: natural gas Burner fuel consumption: 3.0 MMBtu/hr and as limited facility-wide	
Holding Kettle and Burner (Kettle 9) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 50,000 lb loading capacity Maximum operation: 90 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0300 Burner fuel: natural gas Burner fuel consumption: 3.0 MMBtu/hr and as limited facility-wide	Holding Kettle Room Baghouse Manufacturer: Scientific Dust Collectors Model: SPJ-512-4T10 $PM_{2.5}$ Control Efficiency: 99% or greater
Holding Kettle and Burner (Kettle 10) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 12,000 lb loading capacity Maximum operation: 6 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0100 Burner fuel: natural gas Burner fuel consumption: 0.5 MMBtu/hr and as limited facility-wide	
Holding Kettle and Burner (Kettle 11) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 12,000 lb loading capacity Maximum operation: 6 T/day product and as limited facility-wide Maximum process temperature: 486°C Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA0100 Burner fuel: natural gas Burner fuel consumption: 0.5 MMBtu/hr and as limited facility-wide	
Holding Kettle and Burner (Kettle 12) Manufacturer/model: P. Kay Metal Lewiston - LLC Maximum capacity: 2,000 lb loading capacity Maximum process temperature: 486°C Maximum operation: 1.2 T/day product and as limited facility-wide Burner manufacturer: Eclipse Ratio Air Burners Burner model: RA075 Burner fuel: natural gas Burner fuel consumption: 0.75 MMBtu/hr and as limited facility-wide	

Table 1 (continued)

Fugitive emissions	Reasonable control of fugitive emissions, and Fugitive Baghouse (for kettle room emissions) Manufacturer: Scientific Dust Collectors Model: SL4-40 $PM_{2.5}$ Control Efficiency: 99% or greater

Emission 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 secondary lead processing and solder manufacturing facility (refer to Appendix A) to determine facility-wide emissions of criteria pollutant, HAP, and TAP emissions to demonstrate preconstruction compliance with TAP screening emission levels (EL) and "below regulatory concern" (BRC) criteria pollutant levels, to evaluate ambient air quality impacts (refer to the Ambient Air Quality Impact Analyses section), and to verify VOC and HAP major source applicability thresholds were not exceeded.

Emission estimates were based on process information specific to the facility for this proposed project, natural gas combustion and miscellaneous lead production emission factors from AP-42,[1] manufacturer specification sheets for baghouse efficiencies, natural gas usage for burner combustion (Permit Condition 2.13), and the maximum extruder production rate (Permit Condition 2.10).

The normal operating schedule for the facility will be 24 hours per day, 6 days per week, and 50 weeks per year (7,200 hr/yr), and processing of 8,760 tons of lead-containing material.

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 (baghouses) 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.

Table 2 UNCONTROLLED POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$	SO_2	NO_x	CO	VOC	Lead (Pb)
	T/yr	T/yr	T/yr	T/yr	T/yr	T/yr
Facility-wide emissions	7.7	0.09	3.67	12.17	0.80	2.26
Total, Point Sources	**7.7**	**0.09**	**3.67**	**12.17**	**0.80**	**2.26**

[1] Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Fifth Edition (AP-42), Tables 1.4-1, 1.4-2, 1.4-3 and 1.4-4 in Section 1.4 – Natural Gas Combustion and Tables 12.11-2, 12.11-4, and 12.11-5 – Secondary Lead Processing, Office of Air Quality Planning and Standards Office of Air and Radiation (OAQPS), EPA, July 1998.

The table above presents the uncontrolled Potential to Emit for regulated air pollutants as submitted by the applicant and verified by DEQ staff. Refer to Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit. For this secondary lead processing and solder manufacturing facility, uncontrolled Potential to Emit is based upon a worst-case for operation of the facility of 8,760 hr/yr.

The following table presents the uncontrolled Potential to Emit for HAP pollutants as submitted by the applicant and verified by DEQ staff. Refer to Appendix A for a detailed presentation of the calculations and the assumptions used to determine emissions for each emissions unit.

Table 3 POTENTIAL TO EMIT FOR HAZARDOUS AIR POLLUTANTS

Hazardous Air Pollutants	PTE (T/yr)
3-Methylchloranthrene	2.6E-07
Antimony	1.1E-04
Arsenic	3.3E-05
Benzene	3.0E-04
Beryllium	1.7E-08
Cadmium	2.5E-05
Chlorine	2.6E-02
Chromium	1.0E-05
Cobalt	1.9E-07
Dichlorobenzene	1.7E-04
Formaldehyde	1.1E-02
Hexane	2.6E-01
Manganese	2.8E-06
Mercury	1.6E-03
Naphthalene	8.8E-05
Nickel	1.5E-05
Phosphorus	6.4E-05
Polycyclic Aromatic Hydrocarbons (PAH)	9.9E-05
Polycyclic Organic Matter (POM; 7-PAH group)	1.7E-06
Selenium	2.3E-06
Toluene	4.4E-04
Maximum Individual HAP	**0.26**
Total HAP	**0.30**

Post-Project Potential to Emit

Post-project Potential to Emit is used to establish the change in emissions at a facility, to determine the facility's classification as a result of this project, to determine whether a public comment period may be required, and to determine the processing fee per IDAPA 58.01.01.225. The facility-wide post-project Potential to Emit includes all permit limits resulting from this project. The following table presents the post-project and change in Potential to Emit for criteria pollutants from all emission units at the facility as determined by DEQ staff. Refer to Appendix A for a detailed presentation of the calculations of these emissions for each emission source.

Table 4 POST-PROJECT AND CHANGE IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	$PM_{10}/PM_{2.5}$		SO_2		NO_x		CO		VOC		Lead (Pb)	
	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]	lb/hr[a]	T/yr[b]
Rotary Furnace Baghouse	0.0053	0.023	0.0076	0.03	0.72	3.16	1.07	4.69	0.07	0.31	0.0015	0.006
Holding Kettle Room Baghouse	0.010	0.046	0.012	0.05	0.12	0.51	1.71	7.48	0.11	0.49	0.0033	0.014
Fugitive Baghouse	0.0009	0.0038	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0003	0.001
Extruders[c]	0.0	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.000
Post Project Totals	**0.016**	**0.07**	**0.02**	**0.09**	**0.84**	**3.67**	**2.78**	**12.17**	**0.18**	**0.80**	**0.005**	**0.02**
BRC thresholds[d]		1.0		4.0		4.0		10.0		4.0		0.06

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) Extruder emissions were calculated at maximum permitted production throughput rate (Permit Condition 2.10).
d) Potential emission rates are considered "below regulatory concern" (BRC) for criteria pollutants when less than 10% of significant emission rates as defined in IDAPA 58.01.01.006.

With the exception of carbon monoxide (CO), facility-wide emission rates of criteria pollutants ($PM_{2.5}$, PM_{10}, SO_2, NO_x, VOC, and Pb) were below the "below regulatory concern" (BRC) threshold levels of less than 10% of "significant" emission rates for criteria pollutants defined in IDAPA 58.01.01.006.

TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic and carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 5 TOXIC AIR POLLUTANT EMISSION INCREASES

Pollutant	Category TAP/HAP	Averaging Period	Screening Emission Level	Emission Increase	HAP PTE
			lb/hr	lb/hr[a]	T/yr[e]
3-Methylcholanthrene	HAP, 586 TAP[d]	Annual [b]	2.5E-06	6.0E-08	2.6E-07
Aluminum	585 TAP[c]	24-hour [a]	6.67E-01	3.5E-05	
Antimony & compounds, as Sb	HAP, 585 TAP[c]	24-hour [a]	3.3E-02	2.5E-05	1.1E-04
Arsenic	HAP, 586 TAP[d]	Annual [b]	1.5E-06	7.6E-06	3.3E-05
Barium	585 TAP[c]	24-hour [a]	3.3E-02	2.4E-05	
Benzene	HAP, 586 TAP[d]	Annual [b]	8.0E-04	7.0E-05	3.0E-04
Beryllium	HAP, 586 TAP[d]	Annual [b]	2.8E-05	4.0E-09	1.7E-08
Bromine	585 TAP[c]	24-hour [a]	4.7E-02	6.5E-04	
Cadmium	HAP, 586 TAP[d]	Annual [b]	3.7E-06	5.7E-06	2.5E-05
Chlorine	HAP, 585 TAP[c]	24-hour [a]	2.0E-01	5.9E-03	2.6E-02
Chromium	HAP, 585 TAP[c]	24-hour [a]	3.3E-02	2.3E-06	1.0E-05
Cobalt	HAP, 585 TAP[c]	24-hour [a]	3.3E-03	4.3E-08	1.9E-07
Copper	585 TAP[c]	24-hour [a]	1.3E-02	5.0E-06	
Dichlorobenzene (o- and 1,4-)	HAP, 585 TAP[c]	24-hour [a]	2.0E+01	4.0E-05	1.7E-04
Formaldehyde	HAP, 586 TAP[d]	Annual [b]	5.1E-04	2.5E-03	1.1E-02
Hexane	HAP, 585 TAP[c]	24-hour [a]	1.2E+01	6.0E-02	2.6E-01
Iron oxide fume as Fe	585 TAP[c]	24-hour [a]	3.33E-01	3.1E-05	
Manganese	HAP, 585 TAP[c]	24-hour [a]	3.3E-03	6.4E-07	2.8E-06
Mercury	HAP, 585 TAP[c]	24-hour [a]	2.85E-03	3.6E-04	1.6E-03
Molybdenum	585 TAP[c]	24-hour [a]	3.33E-01	3.6E-07	
Naphthalene	HAP, 585 TAP[c]	24-hour [a]	3.33E+00	2.0E-05	8.8E-05
Nickel	HAP, 586 TAP[d]	Annual [b]	2.7E-05	3.4E-06	1.5E-05
Nitrous oxide	585 TAP[c]	24-hour [a]	6.00E+00	7.3E-02	
Pentane	585 TAP[c]	24-hour [a]	1.18E+02	8.6E-02	
Phosphorus	HAP, 585 TAP[c]	24-hour [a]	7.00E-03	1.5E-05	6.4E-05
PAH	HAP, 586 TAP[d,f]	Annual [b]	9.1E-05	2.3E-05	9.9E-05
POM (7-PAH Group)[f]	HAP, 586 TAP[d,f]	Annual [b]	2.0E-06	3.8E-07	1.7E-06
Selenium	HAP, 585 TAP[c]	24-hour [a]	1.3E-02	5.2E-07	2.3E-06
Silicon	585 TAP[c]	24-hour [a]	6.67E-01	3.4E-05	
Silver	585 TAP[c]	24-hour [a]	7.0E-03	3.0E-07	
Tin metal and oxide	585 TAP[c]	24-hour [a]	1.33E-01	1.0E-05	
Toluene	HAP, 585 TAP[c]	24-hour [a]	2.50E+01	1.1E-04	4.4E-04
Zinc	585 TAP[c]	24-hour [a]	3.33E-01	1.5E-05	
Individual HAP					0.26
Total HAP					0.30

a) Controlled average emission rate in pounds per hour is the maximum estimated hourly average emission rate.
b) Controlled average emission rate in pounds per hour is an annual average, based on the proposed annual operating schedule and annual limits.
c) Non-carcinogenic substance listed in IDAPA 58.01.01.585.
d) Carcinogenic substance listed in IDAPA 58.01.01.586.
e) Tons per consecutive 12- calendar-month period.
f) Polycyclic aromatic hydrocarbons (PAH) and polycyclic organic matter (POM) are defined in IDAPA 58.01.01.586.

With the exception of formaldehyde, arsenic, and cadmium, facility-wide emission rates of non-carcinogenic and carcinogenic TAP did not exceed applicable screening emission levels (EL) in IDAPA 58.01.01.585–586.

Formaldehyde, arsenic, and cadmium TAP exceeded carcinogenic EL identified in IDAPA 58.01.01.586, and were modeled to demonstrate preconstruction compliance with acceptable ambient concentrations for these carcinogens (AACC). Refer to the Ambient Air Quality Impact Analyses section and Appendix B for additional information concerning ambient air quality impact analyses.

Ambient Air Quality Impact Analyses

With the exception of carbon monoxide (CO), facility-wide emission rates of criteria pollutants ($PM_{2.5}$, PM_{10}, SO_2, NO_x, VOC, and Pb) were below the "below regulatory concern" (BRC) threshold levels of less than 10% of "significant" emission rates for criteria pollutants defined in IDAPA 58.01.01.006, and therefore modeling was not required. CO facility-wide emission rates were below published DEQ modeling thresholds, and therefore modeling was not required.[2]

With the exception of formaldehyde, arsenic, and cadmium, facility-wide emission rates of non-carcinogenic and carcinogenic TAP did not exceed applicable screening emission levels (EL) in IDAPA 58.01.01.585–586, and modeling was not required. With the exception of nickel, formaldehyde, arsenic, and cadmium, estimated emission increases of TAP demonstrated preconstruction compliance with TAP standards in accordance with IDAPA 58.01.01.210.05 for uncontrolled average emission rates.

Estimated emission increases of nickel demonstrated preconstruction compliance with TAP standards in accordance with IDAPA 58.01.01.210.08 for controlled average emission rates; modeling analyses conducted in the development of TAP rules supports that if a controlled average emission rate is below the applicable EL, controlled ambient concentrations are expected to be below the applicable acceptable ambient concentration.

Estimated emission increases of formaldehyde, arsenic, and cadmium demonstrated preconstruction compliance with TAP standards in accordance with IDAPA 58.01.01.210.08 for controlled ambient concentration; modeling analyses demonstrated preconstruction compliance with the acceptable ambient concentrations for these carcinogens (AACC) in IDAPA 58.01.01.586.

The production throughput limit (Permit Condition 2.10), requirement to apply baghouse control (Permit Condition 2.12) and the requirement to control fugitive emissions (Permit Condition 2.8) were established to limit criteria pollutants to below BRC, and were established in accordance with IDAPA 58.01.01.210.08.c to limit nickel, formaldehyde, arsenic, and cadmium TAP emissions.

The applicant has demonstrated preconstruction compliance to DEQ's satisfaction that emissions from this facility will not cause nor significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated preconstruction 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).

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the required modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (Refer to Appendix B). Refer to the Emission Inventories section and Appendix A for additional information concerning the emission inventories.

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[2] Criteria pollutant thresholds in Table 2, State of Idaho Guideline for Performing Air Quality Impact Analyses, Doc ID AQ-011 (September 2013), September 2013, criteria pollutant BRC thresholds as provided in IDAPA 58.01.01.221.01, and DEQ guidance pertaining to BRC (2009ACF12).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Nez Perce County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For THAP (Total Hazardous Air Pollutants) Only:

A = Use when any individual HAP has actual or potential emissions ≥ 10 T/yr or if the aggregate of all HAP (Total HAP) has actual or potential emissions ≥ 25 T/yr.

SM80 = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the permit sets limits ≥ 8 T/yr of a single HAP or ≥ 20 T/yr of THAP.

SM = Use if a synthetic minor (potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable limitations) and the potential HAP emissions are limited to < 8 T/yr of a single HAP and/or < 20 T/yr of THAP.

B = Use when the potential to emit without permit restrictions is below the 10 and 25 T/yr major source threshold

UNK = Class is unknown

For All Other Pollutants:

A = Actual or potential emissions of a pollutant are ≥ 100 T/yr.

SM80 = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are ≥ 80 T/yr.

SM = Use if a synthetic minor for the applicable pollutant (potential emissions fall below 100 T/yr if and only if the source complies with federally enforceable limitations) and potential emissions of the pollutant are < 80 T/yr.

B = Actual and potential emissions are < 100 T/yr without permit restrictions.

UNK = Class is unknown.

Table 6 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	7.7	0.07	**100**	B
$PM_{10}/PM_{2.5}$	7.7	0.07	**100**	B
SO_2	0.09	0.09	**100**	B
NO_x	3.67	3.67	**100**	B
CO	12.17	12.17	**100**	B
VOC	0.80	0.80	**100**	B
HAP (single)	6.64	0.26	**10**	B
HAP (Total)	7.7	0.30	**25**	B

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 proposed new emissions sources. 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 for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Particulate Matter – Fuel-Burning Equipment (IDAPA 58.01.01.675-681)

In accordance with IDAPA 58.01.01.677, PM shall be limited to 0.015 gr/dscf corrected to 3% oxygen concentration for natural gas-fired fuel-burning equipment with a maximum rated input of less than 10 MMBtu/hr. Maximum controlled PM emissions from each kettle burner was estimated at less than 1% of this limit.

This requirement was incorporated in Permit Condition 2.7. This permit condition incorporates PM emission limits from fuel-burning equipment as defined in IDAPA 58.01.01.006, in accordance with IDAPA 58.01.01.676. The kettle burners (Kettles 1–12) are used for the primary purpose of producing heat by indirect heat transfer.

Compliance with Baghouse $PM_{2.5}$ emission limits (Permit Condition 2.3), the requirement to apply baghouse control (Permit Condition 2.12), and the combustion of natural gas only (Permit Condition 2.13) were considered adequate to ensure compliance with the PM emission limit for each kettle burner. Each baghouse combines process and fuel-burning emissions from multiple kettle burners, and each $PM_{2.5}$ emission limit was determined to be more stringent than each of the individual underlying fuel-burning equipment PM emission limits.

Particulate Matter – Process Weight Limitations (IDAPA 58.01.01.700-703)

In accordance with IDAPA 58.01.01.700.02, no source shall be required to meet an emission limit of less than 1 lb/hr as determined based on process weight rate. As presented previously in the Emission Inventories section, the facility-wide emission rate at maximum throughput was estimated at 0.016 lb/hr, more stringent than the minimum allowable process weight-based PM emission limit specified in IDAPA 58.01.01.700.02.

The production throughput limit (Permit Condition 2.10), requirement to apply baghouse control (Permit Condition 2.12) and the requirement to control fugitive emissions (Permit Condition 2.8) were considered adequate to ensure compliance with the facility-wide process weight-based PM emission limitation.

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 PM, PM10, PM2.5, SO2, NOx, CO, VOC or 10 tons per year for any individual HAP or 25 tons per year for all HAP combined as provided in the Emission Inventories section. 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 are not applicable.

IDAPA 58.01.01.006 defines a Tier I source as "Any source located at a major facility as defined in Section 008." IDAPA 58.01.01.008.10 defines a Major Facility as either:

- For HAP, a facility with the potential to emit ten (10) tons per year (T/yr) or more of any hazardous air pollutant, other than radionuclides, or
- The facility emits or has the potential to emit twenty-five (25) T/yr or more of any combination of any hazardous air pollutants, other than radionuclides.

As provided in Table 3, because facility-wide total HAP emissions were not estimated to exceed 10 tons per year, this facility is not a HAP Major Source.

As provided in Table 2, because facility-wide total criteria pollutant emissions were not estimated to exceed 100 tons per year (26.69 T/yr), this facility is not a criteria pollutant Major Source subject to Tier I requirements.

The facility is a secondary metal production plant, a designated facility as defined in IDAPA 58.01.01.006.30.t, and fugitive emissions were included in the facility-wide emission estimates relied upon for major source applicability determination in accordance with IDAPA 58.01.01.008.10.c (refer to Table 2).

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 a secondary metal production plant, a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a) and IDAPA 58.01.01.006.30.t,[3] and fugitive emissions were included in the facility-wide emission estimates relied upon for major source applicability determinations in accordance with 40 CFR 52.21(b)(1)(iii) and IDAPA 58.01.01.008.10.c (refer to Table 2).

NSPS Applicability (40 CFR 60)

Because the Tilting Rotary Furnace and kettles (Kettles 1–12) will be pot furnaces of more than 250 kg (550 lb) charging capacity, blast (cupola) furnaces, and/or reverberatory furnaces, these sources are subject to 40 CFR 60, Subpart L – Standards of Performance for Secondary Lead Smelters and Subpart A – General Provisions. DEQ is delegated these Subparts.

§60.120 ..... Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities in secondary lead smelters: Pot furnaces of more than 250 kg (550 lb) charging capacity, blast (cupola) furnaces, and reverberatory furnaces.

(b) Any facility under paragraph (a) of this section that commences construction or modification after June 11, 1973, is subject to the requirements of this subpart.

Tilting Rotary Furnace and kettle burners (Kettles 1–12) are affected facilities identified in Permit Conditions 2.4 and 2.5.

§60.121 ..... Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

(a) Reverberatory furnace *includes the following types of reverberatory furnaces: stationary, rotating, rocking, and tilting.*

(b) Secondary lead smelter *means any facility producing lead from a lead-bearing scrap material by smelting to the metallic form.*

(c) Lead *means elemental lead or alloys in which the predominant component is lead.*

(d) Blast furnace *means any furnace used to recover metal from slag.*

These definitions are incorporated by reference in Permit Condition 2.30.

§60.122 ..... Standard for particulate matter.

(a) 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 discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:

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[3] Memo. "Request for PSD Applicability Determination, Golden Aluminum Company, San Antonio, TX," from William B. Hathaway, Director Air, Toxics and Pesticides Division to Steve Spraw, Deputy Executive Director, Texas Air Control Board, July 28, 1989.

(1) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(2) Exhibit 20 percent opacity or greater.

(b) 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 discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit 10 percent opacity or greater.

These standards are incorporated in Permit Conditions 2.4 and 2.5. Because emissions from the Tilting Rotary Furnace and Refining Kettles 2 and 3 are combined and controlled by the Rotary Furnace Baghouse, compliance with the more stringent emission standard of 10% opacity for the combined emissions is required while both sources are in operation.

§60.123 ..... Test methods and procedures.

(a) 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).

(b) The owner or operator shall determine compliance with the particulate matter standards in §60.122 as follows:

(1) Method 5 shall be used to determine the particulate matter concentration during representative periods of furnace operation, including charging and tapping. The sampling time and sample volume for each run shall be at least 60 minutes and 0.90 dscm (31.8 dscf).

(2) Method 9 and the procedures in §60.11 shall be used to determine opacity.

These requirements are incorporated in Permit Condition 2.28.

A summary of applicable Subpart A – General Provisions are summarized and incorporated by reference in Permit Conditions 2.28 through 2.30.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

The facility is not subject to any NESHAP requirements in 40 CFR 63.

Because a rotary furnace and refining kettles are used, the facility could potentially be subject to 40 CFR 63, Subpart X – Secondary Lead Smelting. Because the rotary furnace is limited to an operating temperature below 980 degrees Celsius (Permit Condition 2.11), the requirements of Subpart X were not determined to be applicable.

§63.541 ..... Applicability.

(a) You are subject to this subpart if you own or operate any of the following affected sources at a secondary lead smelter: Blast, reverberatory, rotary, and electric furnaces; refining kettles; agglomerating furnaces; dryers; process fugitive emissions sources; buildings containing lead-bearing materials; and fugitive dust sources. The provisions of this subpart do not apply to primary lead processors, lead refiners, or lead remelters.

(b) Table 1 to this subpart specifies the provisions of subpart A of this part that apply to owners and operators of secondary lead smelters subject to this subpart.

(c) If you are subject to the provisions of this subpart, you are also subject to title V permitting requirements under 40 CFR parts 70 or 71, as applicable.

(d) Emissions standards in this subpart apply at all times.

§63.542 ..... Definitions.
Terms used in this subpart are defined in the Clean Air Act, in subpart A of this part, or in this section as follows:

Affected source *means any of the following sources at a secondary lead smelter: Blast, reverberatory, rotary, and electric furnaces; refining kettles; agglomerating furnaces; dryers; process fugitive emissions sources; buildings containing lead-bearing materials; and fugitive dust sources.*

...

Blast furnace *means a smelting furnace consisting of a vertical cylinder atop a crucible, into which lead-bearing charge materials are introduced at the top of the furnace and combustion air is introduced through tuyeres at the bottom of the cylinder, and that uses coke as a fuel source and that is operated at such a temperature in the combustion zone (greater than 980 Celsius) that lead compounds are chemically reduced to elemental lead metal.*

...

Electric furnace *means a smelting furnace consisting of a vessel into which reverberatory furnace slag is introduced and that uses electrical energy to heat the reverberatory furnace slag to such a temperature (greater than 980 Celsius) that lead compounds are reduced to elemental lead metal.*

...

Refining kettle *means an open-top vessel that is constructed of cast iron or steel and is indirectly heated from below and contains molten lead for the purpose of refining and alloying the lead. Included are pot furnaces, receiving kettles, and holding kettles.*

Reverberatory furnace *means a refractory-lined furnace that uses one or more flames to heat the walls and roof of the furnace and lead-bearing scrap to such a temperature (greater than 980 Celsius) that lead compounds are chemically reduced to elemental lead metal.*

Rotary furnace *(also known as a rotary reverberatory furnace) means a furnace consisting of a refractory-lined chamber that rotates about a horizontal axis and that uses one or more flames to heat the walls of the furnace and lead-bearing scrap to such a temperature (greater than 980 Celsius) that lead compounds are chemically reduced to elemental lead metal.*

Secondary lead smelter *means any facility at which lead-bearing scrap material, primarily, but not limited to, lead-acid batteries, is recycled into elemental lead or lead alloys by smelting.*

Shutdown *means the period when no lead-bearing materials are being fed to the furnace and smelting operations have ceased during which the furnace is cooled from steady-state operating temperature to ambient temperature.*

Smelting *means the chemical reduction of lead compounds to elemental lead or lead alloys through processing in high-temperature (greater than 980 Celsius) furnaces including, but not limited to, blast furnaces, reverberatory furnaces, rotary furnaces, and electric furnaces.*

...

Because the critical temperature at which smelting occurs is above 980 °C, and because the applicant has stated that the rotary furnace will not exceed this operating temperature (Permit Condition 2.11), the requirements of Subpart X were not determined to be applicable.

In the smelting process, lead compounds are processed above 1,796 °F (980 °C) to separate elemental lead from other metals and contaminants such as arsenic, antimony, and cadmium. In the melting process, lead compounds are typically processed at 1,000–1,500 °F (538–816 °C) to change the shape of scrap into billets and bars for solder, and components are not separated.

Permit Conditions Review

This section describes the permit conditions for this initial permit.

Permit Conditions 1.1 and 1.2

These permit conditions describe the scope of this permitting action, and the emission sources and control equipment regulated by this permit.

Permit Conditions 2.1 and 2.2

These permit conditions describe secondary lead processing and solder manufacturing operations conducted in the Refining & Holding Kettle Room and in the Holding Kettle Room, and associated control equipment.

Permit Condition 2.3

This permit condition establishes PM and lead (Pb) emission limits for the three baghouse stacks, which correspond to controlled emission rates (Table 4) based on maximum production (Permit Condition 2.10).

These emission rates were relied upon in estimating $PM_{2.5}$, PM_{10}, and lead (Pb) emissions, and were relied upon to limit criteria pollutant emissions below regulatory concern. Particulate emissions, including emissions of lead, nickel, arsenic, and cadmium, rely upon baghouse control equipment to ensure that facility-wide emissions remain below modeling thresholds and modeled particulate TAP increments, as described in the Ambient Air Quality Impact Analyses section. Operation, maintenance, inspection, and testing requirements (Permit Conditions 2.10–2.13 and 2.14–2.28) have been included in the permit to ensure proper maintenance and operation of the baghouses.

Permit Conditions 2.4, 2.5, 2.28 through 2.30

These permit conditions incorporate standards (Permit Conditions 2.4 and 2.5) and test methods and general provisions (Permit Conditions 2.28 through 2.30) from NSPS Subparts A and L. Refer to the NSPS Applicability (40 CFR 60) section and Appendix B for additional information.

Because emissions from the Tilting Rotary Furnace and Refining Kettles 2 and 3 are combined and controlled by the Rotary Furnace Baghouse, compliance with the more stringent emission standard of 10% opacity for the combined emissions is required while both sources are in operation.

Permit Condition 2.6

This permit condition incorporates opacity limits for heating unit stacks in accordance with IDAPA 58.01.01.625.

Permit Condition 2.7

This permit condition incorporates PM emission limits from fuel-burning equipment as defined in IDAPA 58.01.01.006, in accordance with IDAPA 58.01.01.676. The kettle burners (Kettles 1–12) are used for the primary purpose of producing heat by indirect heat transfer.

Compliance with Baghouse $PM_{2.5}$ emission limits (Permit Condition 2.3), the requirement to apply baghouse control (Permit Condition 2.12), and the combustion of natural gas only (Permit Condition 2.13) were considered adequate to ensure compliance with the PM emission limit for each kettle burner. Each baghouse combines process and fuel-burning emissions from multiple kettle burners, and each $PM_{2.5}$ emission limit was determined to be more stringent than each of the individual underlying fuel-burning equipment PM emission limits.

Permit Conditions 2.8 and 2.14

This permit condition incorporates fugitive emission requirements for extruding and casting operations in accordance with IDAPA 58.01.01.650-651.

Compliance is assured by inspection of potential sources of fugitive emissions, including enclosures and facility structures (Permit Condition 2.14).

Any period of time that a kettle is in operation or fugitive emission-generating activity is conducted and emissions are not routed to the baghouses (e.g., if gaps, breaks, separations, or leak points from the kettle rooms or other possible routes for emissions from the kettle rooms are present) should be treated as an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.

Permit Conditions 2.9 and 2.15

These permit conditions incorporate odor emission limits for the facility in accordance with IDAPA 58.01.01.77-776. Compliance is assured by monitoring and responding to odor complaints (Permit Condition 2.15).

Permit Conditions 2.10, 2.16, and 2.17

These permit conditions incorporate production limits to ensure compliance with emission rates relied upon in preconstruction compliance demonstrations, including evaluating ambient impacts of TAP emissions (formaldehyde, arsenic, and cadmium; refer to the Ambient Air Quality Impact Analyses section).

Compliance is assured by daily monitoring and recordkeeping of production (Permit Condition 2.17).

Permit Conditions 2.11, 2.18, and 2.19

These permit condition limits the rotary furnace operating temperature to ensure non-applicability of NESHAP Subpart X. Refer to the NESHAP Applicability (40 CFR 61) section for a discussion of regulatory applicability.

Compliance is assured by continuous monitoring recording of process temperature and reporting of exceedances (Permit Conditions 2.18 and 2.19).

Permit Conditions 2.12, 2.20 through 2.23

These permit conditions require the baghouses to be operated at all times when kettles and extruders are operated. The particulate filtration efficiencies for this control equipment were relied upon in estimating $PM_{2.5}$, PM_{10}, lead (Pb), particulate HAP, and particulate TAP emissions; was relied upon to limit criteria pollutant emissions to BRC; was relied upon to demonstrate preconstruction compliance with TAP EL; and was relied upon in evaluating ambient impacts of TAP emissions (formaldehyde, arsenic, and cadmium; refer to the Ambient Air Quality Impact Analyses section).

This permit condition requires compliance with methods in an O&M manual to assure compliance with General Provision 3.2. Particulate emissions, including emissions of lead, nickel, arsenic, and cadmium, rely upon baghouse control equipment to ensure that facility-wide emissions remain below modeling thresholds and modeled particulate TAP increments, as described in the Ambient Air Quality Impact Analyses section. Operation, maintenance, inspection, and testing requirements (Permit Conditions 2.10–2.13 and 2.14–2.28) have been included in the permit to ensure proper maintenance and operation of the baghouses.

Any period of time that a kettle is in operation or fugitive emission-generating activity is conducted while the baghouses are not in operation should be treated as an excess emission event, and the permittee should comply with excess emission procedures and requirements included in the General Provisions.

Permit Condition 2.13

This permit condition limits the fuel combusted by the kettle burners to natural gas only. This operating limit was used in developing TAP, HAP, and criteria pollutant emission inventories resulting from fuel combustion; was relied upon to limit criteria pollutant emissions to BRC; was relied upon to demonstrate preconstruction compliance with TAP EL; and was relied upon in evaluating ambient impacts of TAP emissions (formaldehyde, arsenic, and cadmium; refer to the Ambient Air Quality Impact Analyses section)

Permit Condition 2.24

This permit condition provides DEQ agency contact information for compliance with reporting requirements.

Permit Conditions 2.25 through 2.27, and 2.28 through 2.30

These permit conditions require performance testing to demonstrate compliance with criteria and toxic air pollutant emission limits, in accordance with IDAPA 58.01.01 Sections 210.08, 211.04, and 157 (Permit Conditions 2.25–2.27), and NSPS Subparts A and L (Permit Conditions 2.28–2.30).

Particulate emissions, including emissions of lead, nickel, arsenic, and cadmium, rely upon baghouse control equipment to ensure that facility-wide emissions remain below modeling thresholds and modeled particulate TAP increments, as described in the Ambient Air Quality Impact Analyses section. Operation, maintenance, inspection, and testing requirements (Permit Conditions 2.10–2.13 and 2.14–2.28) have been included in the permit to ensure proper maintenance and operation of the baghouses.

DEQ recognizes that the sample mass required to determine the emission rates of lead and $PM_{2.5}$ from each of the baghouse stacks may require lengthy sampling times, and that measurement at below detection limits may be a sufficient indicator of compliance. When using three 2-hour test runs to demonstrate compliance, a sample mass of < 1 mg for Method 5 and < 4 mg for Method 202 may be a sufficient demonstration of compliance; the permittee is encouraged to submit a performance test protocol (General Provision 3.8) to DEQ for approval of this or any alternative testing methodology.

General Provision 3.1

The duty to comply general compliance provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

General Provision 3.2

The maintenance and operation general compliance provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

General Provision 3.3

The obligation to comply general compliance provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

General Provision 3.4

The inspection and entry provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

General Provision 3.5

The permit expiration construction and operation provision specifies that the permit expires if construction has not begun within two years of permit issuance or if construction has been suspended for a year in accordance with IDAPA 58.01.01.211.02.

General Provision 3.6

The notification of construction and operation provision requires that the permittee notify DEQ of the dates of construction and operation, in accordance with IDAPA 58.01.01.211.03.

General Provision 3.7

The performance testing notification of intent provision requires that the permittee notify DEQ at least 15 days prior to any performance test to provide DEQ the option to have an observer present, in accordance with IDAPA 58.01.01.157.03.

General Provision 3.8

The performance test protocol provision requires that any performance testing be conducted in accordance with the procedures of IDAPA 58.01.01.157, and encourages the permittee to submit a protocol to DEQ for approval prior to testing.

General Provision 3.9

The performance test report provision requires that the permittee report any performance test results to DEQ within 60 days of completion, in accordance with IDAPA 58.01.01.157.04-05.

General Provision 3.10

The monitoring and recordkeeping provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

General Provision 3.11

The excess emissions provision requires that the permittee follow the procedures required for excess emissions events, in accordance with IDAPA 58.01.01.130-136.

General Provision 3.12

The certification provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

General Provision 3.13

The false statement provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

General Provision 3.14

The tampering provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

General Provision 3.15

The transferability provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

General Provision 3.16

The severability provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

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 was a request for a public comment period on DEQ's proposed action. Refer to the Application Chronology section 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 Application Chronology section 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 – EMISSION INVENTORIES

P. Kay Metal, Lewiston
Emissions Summary

Max Operating Time 8760 hrs/yr

Criteria Pollutant Emissions

	PTE Uncontrolled						BRC[1]	
Pollutants	Rotary Furnace Baghouse (lbs/hr)	Holding Kettle Baghouse (lbs/hr)	Fugitive Baghouse (lbs/hr)	Extruders (lbs/hr)	Total (lb/hr)	Total (tpy)	(tpy)	Exceed BRC?
PM[8]	0.53	1.1	0.09	0.000	1.76	7.7	1	Yes
SO2	0.01	0.01	--	--	0.02	0.1	4	No
NO_x	0.72	0.1	--	--	0.84	3.7	4	No
CO	1.07	1.7	--	--	2.78	12.2	10	Yes
VOC	0.07	0.11	--	--	0.18	0.8	4	No
Lead	0.15	0.33	0.03	0	0.50	2.2	0.06	Yes
CO_2e	1,535	2,442	--	--	3,977	17,421		

					Controlled Emissions[2]			Modeling Threshold[3]			
Pollutants	Rotary Furnace Baghouse (lbs/hr)	Holding Kettle Baghouse (lbs/hr)	Fugitive Baghouse (lbs/hr)	Extruders (lbs/hr)	(lb/hr)	(tpy)	(lb/month)	(lb/hr)	(tpy)	(lb/month)	Threshold Exceeded?[8]
PM	5.3E-03	1.1E-02	9.4E-04	0.0E+00	0.018	0.08		0.054	0.35		No
SO2	7.6E-03	1.2E-02	--	--	0.02	0.09		0.21	1.2		<BRC
NO_x	0.72	0.1	--	--	0.84	3.67		0.2	1.2		<BRC
CO	1.07	1.7	--	--	2.78	12.17		15	--		No
VOC	0.07	0.11	--	--	0.18	0.80		--	--	--	<BRC
Lead	1.5E-03	3.3E-03	2.8E-04	0.0E+00	0.005	0.02	3.6	--	--	14	No
CO_2e	1,535	2,442	--	--	3,977	17,421					--

Toxic and Hazardous Pollutant Emissions

CAS #	Pollutant	Rotary Furnace Baghouse (lbs/hr)	Holding Kettle Baghouse (lbs/hr)	Fugitive Baghouse (lbs/hr)	Extruders (lbs/hr)	Emission Rate (lb/hr)	BRC[4]	Exceed BRC?	Screening Emission Level (lb/hr)	CAS #	Pollutant	Exceeds Screening Level? (Y/N)[5]
56-49-5	3-Methylchloranthrene	2.3E-08	3.7E-08	--	--	6.0E-08	2.5E-07	No	2.50E-05	56-49-5	3-Methylchloranthrene	No
NA	7-PAH group[4]	1.5E-07	2.3E-07	--	--	3.8E-07	2.0E-07	Yes	2.00E-06	NA	7-PAH group[4]	No
7429-90-5	Aluminum	1.1E-05	2.4E-05	--	--	3.5E-05	6.7E-02	No	0.667	7429-90-5	Aluminum	No
7440-36-0	Antimony	1.7E-05	7.8E-06	--	--	2.5E-05	3.3E-03	No	3.30E-02	7440-36-0	Antimony	No
7440-38-2	Arsenic	4.0E-06	3.6E-06	--	--	7.6E-06	1.5E-07	Yes	1.50E-06	7440-38-2	Arsenic	Yes
7440-39-3	Barium	1.1E-05	1.3E-05	--	--	2.4E-05	3.3E-03	No	3.30E-02	7440-39-3	Barium	No
7726-95-6	Bromine	3.3E-04	3.1E-04			6.5E-04	4.7E-03	No	4.70E-02	7726-95-6	Bromine	No
71-43-2	Benzene	2.7E-05	4.3E-05	--	--	6.9E-05	8.0E-05	No	8.00E-04	71-43-2	Benzene	No
7440-41-7	Beryllium	1.5E-09	2.4E-09	--	--	4.0E-09	2.8E-08	No	2.80E-05	7440-41-7	Beryllium	No
7440-439	Cadmium	5.1E-06	6.2E-07	--	--	5.7E-06	3.7E-07	Yes	3.70E-06	7440-439	Cadmium	Yes
7782-50-5	Chlorine	2.3E-03	3.6E-03	--	--	5.9E-03	2.0E-02	No	2.00E-01	7782-50-5	Chlorine	No
7440-47-3	Chromium	1.3E-06	9.7E-07	--	--	2.3E-06	3.3E-03	No	3.30E-02	7440-47-3	Chromium	No
7440-48-4	Cobalt	2.6E-08	1.7E-08	--	--	4.3E-08	3.3E-04	No	3.30E-03	7440-48-4	Cobalt	No
7440-50-8	Copper	2.8E-06	2.1E-06	--	--	5.0E-06	6.7E-03	No	6.70E-02	7440-50-8	Copper	No
25321-22-6	Dichlorobenzene	1.5E-05	2.4E-05	--	--	4.0E-05	3.0E+00	No	3.00E+01	25321-22-6	Dichlorobenzene	No
50-00-0	Formaldehyde	9.6E-04	1.5E-03	--	--	2.5E-03	5.1E-05	Yes	5.10E-04	50-00-0	Formaldehyde	Yes
110-54-3	Hexane	2.3E-02	3.7E-02	--	--	6.0E-02	1.2E+00	No	1.20E+01	110-54-3	Hexane	No
7439-89-6	Iron	1.3E-05	1.7E-05	--	--	3.1E-05	6.7E-03	No	6.70E-02	7439-89-6	Iron	No
7439-96-5	Manganese	3.7E-07	2.7E-07	--	--	6.4E-07	3.3E-03	No	3.30E-02	7439-96-5	Manganese	No
7439-97-6	Mercury[7]	1.6E-04	2.0E-04	--	--	3.6E-04	2.9E-04	--	2.85E-03	7439-97-6	Mercury[7]	No
7439-98-7	Molybdenum	1.4E-07	2.2E-07	--	--	3.6E-07	3.3E-02	No	3.33E-01	7439-98-7	Molybdenum	No
91-20-3	Naphthalene	7.8E-06	1.2E-05	--	--	2.0E-05	3.3E-01	No	3.33E+00	91-20-3	Naphthalene	No
7440-02-0	Nickel	1.1E-06	2.3E-06	--	--	3.4E-06	2.7E-06	Yes	2.70E-05	7440-02-0	Nickel	No
10024-97-2	Nitrous Oxide	2.8E-02	4.5E-02	--	--	7.3E-02	6.0E-01	No	6.00E+00	10024-97-2	Nitrous Oxide	No
109-66-0	Pentane	3.3E-02	5.3E-02	--	--	8.6E-02	1.2E+01	No	1.19E+02	109-66-0	Pentane	No
7723-14-0	Phosphorus	5.1E-06	9.5E-06	--	--	1.5E-05	7.0E-04	No	0.007	7723-14-0	Phosphorus	No
NA	Polyaromatic Hydrocarbons	8.7E-06	1.4E-05	--	--	2.3E-05	9.1E-06	Yes	9.10E-05	NA	Polyaromatic Hydrocarbon	No
7782-49-2	Selenium	4.1E-07	1.0E-07	--	--	5.2E-07	1.3E-03	No	1.30E-02	7782-49-2	Selenium	No
7440-21-3	Silicon	1.1E-05	2.3E-05	--	--	3.4E-05	6.7E-02	No	0.667	7440-21-3	Silicon	No
7440-22-4	Silver	2.0E-07	9.8E-08	--	--	3.0E-07	7.0E-04	No	0.007	7440-22-4	Silver	No
7440-31-5	Tin	3.1E-06	7.2E-06	--	--	1.0E-05	1.3E-02	No	0.133	7440-31-5	Tin	No
108-88-3	Toluene	4.3E-05	6.9E-05	--	--	1.1E-04	2.5E+00	No	2.50E+01	108-88-3	Toluene	No
7440-66-6	Zinc	6.2E-06	9.2E-06	--	--	1.5E-05	6.7E-02	No	6.67E-01	7440-66-6	Zinc	No

Notes

1) Idaho DEQ *Guideline for Performing Air Quality Impact Analysis* Section 3.2, over 10% of Below Regulatory Concern Limit is significant per IDAPA 58.01.01.223

2) PM and Lead controlled through baghouses

3) Idaho DEQ Guideline for Preforming Air Quality Impact Analysis Table 2

4) IDAPA 58.01.01 Section 586, 7-PAH group consisting of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indenol(1,2,3,-cd)pyrene, and benzo(a)pyrene.

5) IDAPA 58.01.01 Section 223.01

6) If levels are exceeded, then modeling is required.

7) IDAPA 58.01.01.215 Mercury is limited to 25 lbs/yr

8) $PM=PM_{10}=PM_{2.5}$

P. Kay Metal, Lewiston
Emissions Summary

Operating Equipment

Equipment Number	Equipment Type[1]	Emissions Control Equipment[2]	Capacity (lbs)[1]	Throughput (lbs/hr)[1,3]	Burner Type	Burner Rate (mm But/hr)[1]
Kettle 1	Tilting Rotary Furnace	Rotary Furnace Baghouse	53,000	5,000	Natural Gas	7
Kettle 2	Refining Kettle	Rotary Furnace Baghouse	100,000	12,000	Natural Gas	3
Kettle 3	Refining Kettle	Rotary Furnace Baghouse	100,000	12,000	Natural Gas	3
Kettle 4	Alloying Kettle	Holding Kettle Baghouse	200,000	20,000	Natural Gas	4
Kettle 5	Alloying Kettle	Holding Kettle Baghouse	200,000	20,000	Natural Gas	4
Kettle 6	Holding Kettle	Holding Kettle Baghouse	100,000	3,200	Natural Gas	2
Kettle 7	Holding Kettle	Holding Kettle Baghouse	100,000	6,000	Natural Gas	3
Kettle 8	Holding Kettle	Holding Kettle Baghouse	100,000	7,500	Natural Gas	3
Kettle 9	Holding Kettle	Holding Kettle Baghouse	50,000	7,500	Natural Gas	3
Kettle 10	Holding Kettle	Holding Kettle Baghouse	12,000	500	Natural Gas	0.5
Kettle 11	Holding Kettle	Holding Kettle Baghouse	12,000	500	Natural Gas	0.5
Kettle 12	Holding Kettle	Holding Kettle Baghouse	2,000	100	Natural Gas	0.75
Ext 1-Ext 6	Extruder	NA	400	5,017	NA	NA

Operating Characteristics

Maximum Operating Time	Maximum Throughput (tons/yr)
8760	131,838

Emissions Control Equipment

Baghouses	Manufacturer[4]	Model Number[4]	Bag type[4]	Broken Bag Detector? (Y/N)[4]	Filter Area (ft²)[4]	AC Ratio[4]	Control Efficiency[5]	Stack height (ft)[6]	Stack diameter (in)[6]	Stack exit temp (°F)[4]	Stack Flowrate (cfm)[4]
Rotary Furnace Baghouse	Scientific Dust Collectors	SPJ-688-4T10	Nomex Filter Bags	Yes	8,104	6.2:1	99%	25	36	300	50,000
Holding Kettle Room Baghouse	Scientific Dust Collectors	SPJ-512-4T10	Polyester Filter Bags	Yes	6,031	5.0:1	99%	25	36	70	30,000
Fugitive Baghouse	Scientific Dust Collectors	SL4-40	Duratex II cartridges	Yes	10,720	2.3:1	99%	25	36	70	25,000

Blowers	Manufacturer	Model Number[7]	Power (hP)[7]
Rotary Furnace Blower	Industrial Blower	BISW 445	150
Holding Kettle Blower	Industrial Blower	BISW 330	125
Fugitive Blower	Industrial Blower	BISW 300	125

Notes

1) Eclipse RA0100, RA0200, RA0300, and RA0500
2) Facility Layout, from client (July 7, 2016)
3) Assuming maximum process throughput processed through extruders
4) Scientific Dust Collectors Data Sheet (October 25, 2016)
5) Scientific Dust Collectors Performance Guarantee (October 26, 2016)
6) Rotary Furnace Baghouse specs from client, Holding Kettle Room and Fugitive Baghouse specs estimated by SEI
7) Industrial Air Technology Corp Blower Quote (August 31, 2016) Attachment 9-29

Max Operating Time	8760	hrs/yr
Max Burner Value[1]	7	MMBtu/hr
Max Throughput[1]	5,000	lb/hr
GWP_{CH4}[2]	25	
GWP_{N2O}[3]	298	

Criteria Pollutants and Greenhouse Gases

Pollutant	Emission Factor (lb/10^6 scf)[4]	Emission Factor (lb/MMBtu)[5]	Kettle 1 (lb/hr)
Burner Emissions[6]			
PM[7]	7.6	7.5E-03	5.2E-04
SO_2	0.6	5.9E-04	4.1E-03
NO_x	100	9.8E-02	0.69
CO	84	8.2E-02	0.58
VOC	5.5	5.4E-03	0.04
Lead	5.0E-04	4.9E-07	3.4E-06
CO_2	120,000	118	824
Methane	2.3	2.3E-03	1.6E-02
Process Emissions[8]			
PM[7,9]	0.03		7.5E-04
Lead[10]	0.01		2.5E-04
CO_2[11]	8.8E-05		0.4

Total Critical Pollutants and Greenhouse Gases

Pollutant	Emission Rate (lbs/hr)	Emission Rate (tpy)
Controlled		
PM	1.3E-03	5.6E-03
SO_2	4.1E-03	1.8E-02
NO_x	0.69	3.0
CO	0.58	2.5
VOC	0.04	1.7E-01
Lead	2.5E-04	1.1E-03
CO_2e[12]	828.86	3,630

Toxic and Hazardous Pollutants

CAS #	Burner Emissions	Emission Factor ($lb/10^6$ scf)[13]	Emission Factor (lb/MMBtu)	Volatile? (Yes/No)	Emission Rate (lb/hr)
91-57-6	2-Methylnaphthalene	2.40E-05	2.4E-08	Yes	1.6E-07
56-49-5	3-Methylchloranthrene	1.8E-06	1.8E-09	Yes	1.2E-08
NA	7,12-Dimethylbenz(a)anthracene	1.6E-05	1.6E-08	Yes	1.1E-07
NA	7-PAH group[14]	1.1E-05	1.1E-08	Yes	7.8E-08
83-32-9	Acenaphthene	1.8E-06	1.8E-09	Yes	1.2E-08
203-96-8	Acenaphthylene	1.8E-06	1.8E-09	Yes	1.2E-08
120-12-7	Anthracene	2.0E-06	2.0E-09	Yes	1.4E-08
7440-38-2	Arsenic	2.0E-04	2.0E-07	No	1.4E-06
7440-39-3	Barium	4.4E-03	4.3E-06	No	3.0E-07
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	Yes	1.2E-08
71-43-2	Benzene	2.1E-03	2.1E-06	Yes	1.4E-05
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	Yes	8.2E-09
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	Yes	1.2E-08
191-24-2	Benzo(g,h,i)perylene	1.2E-06	1.2E-09	Yes	8.2E-09
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	Yes	1.2E-08
7440-41-7	Beryllium	1.2E-05	1.2E-08	No	8.2E-10
7440-43-9	Cadmium	1.1E-03	1.1E-06	No	7.5E-06
7440-47-3	Chromium	1.4E-03	1.4E-06	No	9.6E-06
218-01-9	Chrysene	1.8E-06	1.8E-09	Yes	1.2E-08
7440-48-4	Cobalt	8.4E-05	8.2E-08	No	5.8E-09
7440-50-8	Copper	8.5E-04	8.3E-07	No	5.8E-06
53-70-3	Dibenzo(a,h)anthracene	1.2E-06	1.2E-09	Yes	8.2E-09
25321-22-6	Dichlorobenzene	1.2E-03	1.2E-06	Yes	8.2E-06
206-44-0	Fluoranthene	3.0E-06	2.9E-09	Yes	2.1E-08
86-73-7	Fluorene	2.8E-06	2.7E-09	Yes	1.9E-08
50-00-0	Formaldehyde	7.5E-02	7.4E-05	Yes	5.1E-04
110-54-3	Hexane	1.8E+00	1.8E-03	Yes	1.2E-02
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	Yes	1.2E-08
7439-96-5	Manganese	3.8E-04	3.7E-07	No	2.6E-06
7439-97-6	Mercury	2.6E-04	2.5E-07	Yes	1.8E-06
7439-98-7	Molybdenum	1.1E-03	1.1E-06	No	7.5E-06
91-20-3	Naphthalene	6.1E-04	6.0E-07	Yes	4.2E-06
7440-02-0	Nickel	2.1E-03	2.1E-06	No	1.4E-07
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	Yes	1.5E-02
109-66-0	Pentane	2.6E+00	2.5E-03	Yes	1.8E-02
85-01-8	Phenanathrene	1.7E-05	1.7E-08	Yes	1.2E-07
NA	Polyaromatic Hydrocarbons[15]	6.8E-04	6.7E-07	Yes	4.7E-06
129-00-0	Pyrene	5.0E-06	4.9E-09	Yes	3.4E-08
7782-49-2	Selenium	2.4E-05	2.4E-08	No	1.6E-09
108-88-3	Toluene	3.4E-03	3.3E-06	Yes	2.3E-05
7440-66-6	Zinc	2.9E-02	2.8E-05	No	2.0E-05

CAS #	Process Emissions	Weight (%)[16]	Volatile? (Yes/No)	Emission Rate (lb/hr)
7429-90-5	Aluminum	0.323	No	2.4E-06
7440-36-0	Antimony	1.893	No	1.4E-05
7440-38-2	Arsenic	0.355	No	2.7E-06
7440-39-3	Barium	0.807	No	6.1E-06
7726-95-6	Bromine	0.29	Yes	2.2E-04
7440-439	Cadmium	0.645	No	4.8E-06
7782-50-5	Chlorine	1.312	Yes	9.8E-04
7440-47-3	Chromium	0.118	No	8.9E-07
7440-48-4	Cobalt	0.002	No	1.5E-08
7440-50-8	Copper	0.269	No	2.0E-06
7439-89-6	Iron	0.946	No	7.1E-06
7439-96-5	Manganese	0.033	No	2.5E-07
7439-97-6	Mercury	0.108	Yes	8.1E-05
7440-02-0	Nickel	0.022	No	1.7E-07
7723-14-0	Phosphorus	0.215	No	1.6E-06
7782-49-2	Selenium	0.05	No	3.8E-07
7440-21-3	Silicon	0.398	No	3.0E-06
7440-22-4	Silver	0.022	No	1.7E-07
7440-31-5	Tin	0.065	No	4.9E-07
7440-66-6	Zinc	0.172	No	1.3E-06

Notes

1) Burners for kettles spreadsheet from client (June 18, 2016)
2) 40 CFR Part 98 Table A-1 (August 2016)
3) Facility Layout, from client (July 7, 2016)
4) AP-42 Chapter 1.4 Table 1&2, assuming natural gas used for combustion (July 1998)
5) Natural gas energy value of 1020 mmBTU/scf per AP-42 Section 1.4 Table 2, footnote a (July 1998)
6) Emissions based on maximum burner value for rotary furnace
7) $PM=PM_{10}=PM_{2.5}$
8) Emissions based on maximum capacity for rotary furnace
9) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.03 lb particulate per ton metal produced (Oct 1986)
10) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.01 lb lead per ton metal produced (Oct 1986)
11) Carbon from residual organic on recycled metal. Recycled metal estimated to be 10% of max throughput (SG=11.34). Residual organic assumed to be less than 1% of recycled metal (SG 1.0) [lb/lb]
12) $CO_2e=CO_2$ + Methane*Global warming potential (GWP) Methane + Nitrous Oxide*GWP Nitrous Oxide
13) AP-42 Chapter 1.4 Table 3 and 4, assuming natural gas used for combustion (July 1998)
14) IDAPA 58.01.01 Section 586, 7-PAH group consisting of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracne, chrysene, indeno(1,2,3,-cd)pyrene, and benzo(a)pyrene.
15) Polycyclic aromatic hydrocarbons include 2-methylnaphthalene, 7,12-dimethylbenz(a)anthracene, acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.
16 "Speciate" 3.2, Profile 2040310 for Reverberatory Furnace (January 5, 1989)

Max Operating Time: 8760 hrs/yr

GWP_{CH4}[1]: 25

GWP_{N2O}[1]: 298

Kettle Number	Kettle 2	Kettle 3
Max Burner Value (MMBtu/hr)[2]	3	3
Max Throughput (lbs/hr)[3]	12,000	12,000

Criteria Pollutants and Greenhouse Gases

Pollutant	Emission Factor (lb/10^6 scf)	Emission Factor (lb/MMBtu)[4]	Kettle 2 (lbs/hr)	Kettle 3 (lbs/hr)	Total (lbs/hr)
Burner Emissions[5]					
PM[7]	7.6	7.5E-03	2.2E-02	2.2E-02	4.5E-04
SO2	0.6	5.9E-04	1.8E-03	1.8E-03	3.5E-03
NO_x	5.945	5.8E-03	0.017	0.017	0.035
CO	84	8.2E-02	0.247	0.247	0.494
VOC	5.5	5.4E-03	0.016	0.016	0.032
Lead	5.00E-04	4.9E-07	1.47E-06	1.47E-06	2.9E-06
CO_2	120,000	1.2E+02	3.53E+02	3.53E+02	7.1E+02
Methane	2.3	2.3E-03	6.76E-03	6.76E-03	1.35E-02
Process Emissions[6]					
PM[7,9]	0.03		0.18	0.18	3.6E-03
Lead[10]	0.01		0.06	0.06	1.2E-03

Total Criteria Pollutants

Pollutant	Emission Rate (lbs/hr)	Emission Rate (tpy)
Controlled		
PM	4.0E-03	1.8E-02
SO2	3.5E-03	1.5E-02
NO_x	0.03	0.2
CO	0.49	2.2
VOC	0.03	0.1
Lead	1.2E-03	5.3E-03
CO_2e[11]	706	3093

Toxic and Hazardous Pollutants

CAS #	Burner Emissions	Emission Factor (lb/10^scf)[12]	Emission Factor (lb/MMBtu)	Volatile? (Yes/No)	Emission Rate (lb/hr)
91-57-6	2-Methylnaphthalene	2.40E-05	2.4E-08	Yes	1.4E-07
56-49-5	3-Methylchloranthrene	1.8E-06	1.8E-09	Yes	1.1E-08
NA	7,12-Dimethylbenz(a)anthracene	1.6E-05	1.6E-08	Yes	9.4E-08
NA	7-PAH group[13]	1.1E-05	1.1E-08	Yes	6.7E-08
83-32-9	Acenaphthene	1.8E-06	1.8E-09	Yes	1.1E-08
208-96-8	Acenaphthylene	1.8E-06	1.8E-09	Yes	1.1E-08
120-12-7	Anthracene	2.0E-06	2.0E-09	Yes	1.2E-08
7440-38-2	Arsenic	2.0E-04	2.0E-07	No	1.2E-08
7440-39-3	Barium	4.4E-03	4.3E-06	No	2.6E-07
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	Yes	1.1E-08
71-43-2	Benzene	2.1E-03	2.1E-06	Yes	1.2E-05
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	Yes	7.1E-09
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	Yes	1.1E-08
191-24-2	Benzo(g,h,i)perylene	1.2E-06	1.2E-09	Yes	7.1E-09
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	Yes	1.1E-08
7440-41-7	Beryllium	1.2E-05	1.2E-08	No	7.1E-10
7440-43-9	Cadmium	1.1E-03	1.1E-06	No	6.5E-08
7440-47-3	Chromium	1.4E-03	1.4E-06	No	8.2E-08
218-01-9	Chrysene	1.8E-06	1.8E-09	Yes	1.1E-08
7440-48-4	Cobalt	8.4E-05	8.2E-08	No	4.9E-09
7440-50-8	Copper	8.5E-04	8.3E-07	No	5.0E-08
53-70-3	Dibenzo(a,h)anthracene	1.2E-06	1.2E-09	Yes	7.1E-09
25321-22-6	Dichlorobenzene	1.2E-03	1.2E-06	Yes	7.1E-06
206-44-0	Fluoranthene	3.0E-06	2.9E-09	Yes	1.8E-08
86-73-7	Fluorene	2.8E-06	2.7E-09	Yes	1.6E-08
50-00-0	Formaldehyde	7.5E-02	7.4E-05	Yes	4.4E-04
110-54-3	Hexane	1.8E+00	1.8E-03	Yes	1.1E-02
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	Yes	1.1E-08
7439-96-5	Manganese	3.8E-04	3.7E-07	No	2.2E-08
7439-97-6	Mercury	2.6E-04	2.5E-07	Yes	1.5E-06
7439-98-7	Molybdenum	1.1E-03	1.1E-06	No	6.5E-08
91-20-3	Naphthalene	6.1E-04	6.0E-07	Yes	3.6E-06
7440-02-0	Nickel	2.1E-03	2.1E-06	No	1.2E-07
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	Yes	1.3E-02
109-66-0	Pentane	2.6E+00	2.5E-03	Yes	1.5E-02
85-01-8	Phenanathrene	1.7E-05	1.7E-08	Yes	1.0E-07
NA	Polyaromatic Hydrocarbond[14]	6.8E-04	6.7E-07	Yes	4.0E-06
129-00-0	Pyrene	5.0E-06	4.9E-09	Yes	2.9E-08
7782-49-2	Selenium	2.4E-05	2.4E-08	No	1.4E-09
108-88-3	Toluene	3.4E-03	3.3E-06	Yes	2.0E-05
7440-66-6	Zinc	2.9E-02	2.8E-05	No	1.7E-06

CAS #	Process Emissions	Weight (%)[15]	Volatile? (Yes/No)	Emission Rate (lb/hr)
7429-90-5	Aluminum	0.243	No	8.7E-06
7440-36-0	Antimony	0.08	No	2.9E-06
7440-38-2	Arsenic	0.036	No	1.3E-06
7440-39-3	Barium	0.122	No	4.4E-06
7726-95-6	Bromine	0.032	Yes	1.2E-04
7440-439	Cadmium	0.004	No	1.4E-07
7782-50-5	Chlorine	0.365	Yes	1.3E-03
7440-47-3	Chromium	0.007	No	2.5E-07
7440-50-8	Copper	0.02	No	7.2E-07
7439-89-6	Iron	0.175	No	6.3E-06
7439-96-5	Manganese	0.002	No	7.2E-08
7439-97-6	Mercury	0.02	Yes	7.2E-05
7440-02-0	Nickel	0.019	No	6.8E-07
7723-14-0	Phosphorus	0.097	No	3.5E-06
7782-49-2	Selenium	0.001	No	3.6E-08
7440-21-3	Silicon	0.234	No	8.4E-06
7440-22-4	Silver	0.001	No	3.6E-08
7440-31-5	Tin	0.073	No	2.6E-06
7440-66-6	Zinc	0.034	No	1.2E-06

Notes

1) 40 CFR Part 98 Table A-1 (August 2016)
2) Burners for kettles spreadsheet from client (June 18, 2016)
3) Facility Layout, from client (July 7, 2016)
4) AP-42 Chapter 1.4 Table 1&2, assuming natural gas used for combustion (July 1998) for PM, SO2, CO, VOC, lead, CO, and methane. NO_x emissions are from the manufacturer data sheets with a conversion from ppm to lb/mm scf using 387 cf/mol at 20°C.
5) Natural gas energy value of 1020 mmBTU/acf per AP-42 Section 1.4 Table 2, footnote a (July 1998)
6) Emissions based on maximum burner value for refining kettle
7) $PM=PM_{10}=PM_{2.5}$
8) Emissions based on maximum capacity for refining kettle
9) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.03 lb particulate per ton metal produced (Oct 1986)
10) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.01 lb lead per ton metal produced (Oct 1986)
11) $CO_2e=CO_2$ + Methane*Global warming potential (GWP) Methane + Nitrous Oxide*GWP Nitrous Oxide
12) AP-42 Chapter 1.4 Table 3 and 4, assuming natural gas used for combustion (July 1998)
13) IDAPA 58.01.01 Section 586, 7-PAH group consisting of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3,-cd)pyrene, and benzo(a)pyrene.
14) Polycyclic aromatic hydrocarbons include 2-methylnaphthalene, 7,12-dimethylbenz(a)anthracene, acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.
15) Speciate 3.2, Profile 2040510 for Melting Pot Stack (January 5, 1989)

Max Operating Time	8760	hrs/yr
GWP_{CH4}[1]	25	
GWP_{N2O}[1]	298	

Kettle Number	Kettle 4	Kettle 5
Max Burner Value (MMBtu/hr)[2]	4	4
Max Throughput (lbs/hr)[2]	20,000	20,000

Criteria Pollutants and Greenhouse Gases

Pollutant	Emission Factor (lb/10^6 scf)[4]	Emission Factor (lb/MMBtu)[5]	Kettle 4 (lbs/hr)	Kettle 5 (lbs/hr)	Total (lbs/hr)
Burner Emissions[6]					
PM[7]	7.6	7.5E-03	0.03	0.03	6.0E-04
SO2	0.6	5.9E-04	2.4E-03	2.4E-03	4.7E-03
NO_X	5.3505	5.2E-03	0.02	0.02	0.04
CO	84	8.2E-02	0.33	0.33	0.66
VOC	5.5	5.4E-03	0.02	0.02	0.043
Lead	5.00E-04	4.9E-07	2.0E-06	2.0E-06	3.9E-08
CO_2	120,000	1.2E+02	4.7E+02	4.7E+02	9.4E+02
Methane	2.3	2.3E-03	9.0E-03	9.0E-03	1.80E-02
Process Emissions[8]					
PM[7,9]	0.03		0.3	0.3	6.0E-03
Lead[10]	0.01		0.1	0.1	2.0E-03

Total Criteria Pollutants

Pollutant	Emission Rate (lbs/hr)	Emission Rate (tpy)
Controlled		
PM	0.01	2.9E-02
SO2	4.7E-03	2.1E-02
NO_X	0.04	0.2
CO	0.66	2.9
VOC	0.04	0.2
Lead	2.0E-03	8.8E-03
CO_2e[11]	941.63	4124.3

Toxic and Hazardous Pollutants

CAS #	Burner Emissions	Emission Factor (lb/10^6 scf)[12]	Emission Factor (lb/MMBtu)	Volatile? (Yes/No)	Emission Rate (lb/hr)
91-57-6	2-Methylnaphthalene	2.40E-05	2.4E-08	Yes	1.9E-07
56-49-5	3-Methylchloranthrene	1.8E-06	1.8E-09	Yes	1.4E-08
NA	7,12-Dimethylbenz(a)anthracene	1.6E-05	1.6E-08	Yes	1.3E-07
NA	7-PAH group[13]	1.1E-05	1.1E-08	Yes	8.9E-08
83-32-9	Acenaphthene	1.8E-06	1.8E-09	Yes	1.4E-08
208-96-8	Acenaphthylene	1.8E-06	1.8E-09	Yes	1.4E-08
120-12-7	Anthracene	2.0E-06	2.0E-09	Yes	1.6E-08
7440-38-2	Arsenic	2.0E-04	2.0E-07	No	1.6E-08
7440-39-3	Barium	4.4E-03	4.3E-06	No	3.5E-07
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	Yes	1.4E-08
71-43-2	Benzene	2.1E-03	2.1E-06	Yes	1.6E-05
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	Yes	9.4E-09
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	Yes	1.4E-08
191-24-2	Benzo(g,h,i)perylene	1.2E-06	1.2E-09	Yes	9.4E-09
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	Yes	1.4E-08
7440-41-7	Beryllium	1.2E-05	1.2E-08	No	9.4E-10
7440-43-9	Cadmium	1.1E-03	1.1E-06	No	8.6E-08
7440-47-3	Chromium	1.4E-03	1.4E-06	No	1.1E-07
218-01-9	Chrysene	1.8E-06	1.8E-09	Yes	1.4E-08
7440-48-4	Cobalt	8.4E-05	8.2E-08	No	6.6E-09
7440-50-8	Copper	8.5E-04	8.3E-07	No	6.7E-08
53-70-3	Dibenzo(a,h)anthracene	1.2E-06	1.2E-09	Yes	9.4E-09
25321-22-6	Dichlorobenzene	1.2E-03	1.2E-06	Yes	9.4E-06
206-44-0	Fluoranthene	3.0E-06	2.9E-09	Yes	2.4E-08
86-73-7	Fluorene	2.8E-06	2.7E-09	Yes	2.2E-08
50-00-0	Formaldehyde	7.5E-02	7.4E-05	Yes	5.9E-04
110-54-3	Hexane	1.8E+00	1.8E-03	Yes	1.4E-02
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	Yes	1.4E-08
7439-96-5	Manganese	3.8E-04	3.7E-07	No	3.0E-08
7439-97-6	Mercury	2.6E-04	2.5E-07	Yes	2.0E-06
7439-98-7	Molybdenum	1.1E-03	1.1E-06	No	8.6E-08
91-20-3	Naphthalene	6.1E-04	6.0E-07	Yes	4.8E-06
7440-02-0	Nickel	2.1E-03	2.1E-06	No	1.6E-07
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	Yes	1.7E-02
109-66-0	Pentane	2.6E+00	2.5E-03	Yes	2.0E-02
85-01-8	Phenanathrene	1.7E-05	1.7E-08	Yes	1.3E-07
NA	Polyaromatic Hydrocarbons[14]	6.8E-04	6.7E-07	Yes	5.4E-06
129-00-0	Pyrene	5.0E-06	4.9E-09	Yes	3.9E-08
7782-49-2	Selenium	2.4E-05	2.4E-08	No	1.9E-09
108-88-3	Toluene	3.4E-03	3.3E-06	Yes	2.7E-05
7440-66-6	Zinc	2.9E-02	2.8E-05	No	2.3E-06

CAS #	Process Emissions	Weight (%)[15]	Volatile? (Yes/No)	Emission Rate (lb/hr)
7429-90-5	Aluminum	0.243	No	1.5E-05
7440-36-0	Antimony	0.08	No	4.8E-06
7440-38-2	Arsenic	0.036	No	2.2E-06
7440-39-3	Barium	0.122	No	7.3E-06
7726-95-6	Bromine	0.032	Yes	1.9E-04
7440-439	Cadmium	0.004	No	2.4E-07
7782-50-5	Chlorine	0.365	Yes	2.2E-03
7440-47-3	Chromium	0.007	No	4.2E-07
7440-50-8	Copper	0.02	No	1.2E-06
7439-89-6	Iron	0.175	No	1.1E-05
7439-96-5	Manganese	0.002	No	1.2E-07
7439-97-6	Mercury	0.02	Yes	1.2E-04
7440-02-0	Nickel	0.019	No	1.1E-06
7723-14-0	Phosphorus	0.097	No	5.8E-06
7782-49-2	Selenium	0.001	No	6.0E-08
7440-21-3	Silicon	0.234	No	1.4E-05
7440-22-4	Silver	0.001	No	6.0E-08
7440-31-5	Tin	0.073	No	4.4E-06
7440-66-6	Zinc	0.034	No	2.0E-06

Notes

1) 40 CFR Part 98 Table A-1 (August 2016)
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4) AP-42 Chapter 1.4 Table 1&2, assuming natural gas used for combustion (July 1998) for PM, SO2, VOC, lead, CO, and methane. NO_X emissions are from the manufacturer data sheets with a conversion from ppm to lb/mm scf using 387 cf/mol at 20°C.
5) Natural gas energy value of 1020 mmBTU/scf per AP-42 Section 1.4 Table 2, footnote a (July 1998)
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9) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.03 lb particulate per ton metal produced (Oct 1986)
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12) AP-42 Chapter 1.4 Table 3 and 4, assuming natural gas used for combustion (July 1998)
13) IDAPA 58.01.01 Section 586, 7-PAH group consisting of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracne, chrysene, indenol(1,2,3,-cd)pyrene, and benzo(a)pyrene.
14) Polycyclic aromatic hydrocarbons include 2-methylnaphthalene, 7,12-dimethylbenz(a)anthracene, acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.
15) Speciate 3.2, Profile 2040510 for Melting Pot Stack (January 5, 1989)

P. Kay Metal, Lewiston
Emissions Summary

Max Operating Time	8760	hrs/yr
GWP_{CH4}[1]	25	
GWP_{N2O}[1]	298	

Kettle Number	Kettle 6	Kettle 7	Kettle 8	Kettle 9	Kettle 10	Kettle 11	Kettle 12
Max Burner Value (MMBtu/hr)[2]	2	3	3	3	0.5	0.5	0.75
Max Throughput (lbs/hr)[2]	3,200	6,000	7,500	7,500	500	500	100

Criteria Pollutants and Greenhouse Gases

Pollutant	Emission Factor (lb/10^6 scf)[4]	Emission Factor (lb/MMBtu)[5]	Kettle 6 (lbs/hr)	Kettle 7 (lbs/hr)	Kettle 8 (lbs/hr)	Kettle 9 (lbs/hr)	Kettle 10 (lbs/hr)	Kettle 11 (lbs/hr)	Kettle 12 (lbs/hr)	Total (lbs/hr)
Burner Emissions[6]										
PM^{7}	7.6	7.5E-03	1.5E-02	2.2E-02	2.2E-02	2.2E-02	3.7E-03	3.7E-03	5.6E-03	9.5E-04
SO2	0.6	5.9E-04	1.2E-03	1.8E-03	1.8E-03	1.8E-03	2.9E-04	2.9E-04	4.4E-04	7.5E-03
NO_X	5.945	5.8E-03	1.2E-02	1.7E-02	1.7E-02	1.7E-02	2.9E-03	2.9E-03	4.4E-03	0.1
CO	84	8.2E-02	1.6E-01	2.5E-01	2.5E-01	2.5E-01	4.1E-02	4.1E-02	6.2E-02	1.05
VOC	5.5	5.4E-03	1.1E-02	1.6E-02	1.6E-02	1.6E-02	2.7E-03	2.7E-03	4.0E-03	6.9E-02
Lead	0.0005	4.9E-07	9.8E-07	1.5E-06	1.5E-06	1.5E-06	2.5E-07	2.5E-07	3.7E-07	6.3E-08
CO_2	120000	1.2E+02	2.4E+02	3.5E+02	3.5E+02	3.5E+02	5.9E+01	5.9E+01	8.8E+01	1.5E+03
Methane	2.3	2.3E-03	4.5E-03	6.8E-03	6.8E-03	6.8E-03	1.1E-03	1.1E-03	1.7E-03	2.9E-02
Process Emissions[8]										
$PM^{7,9}$	0.03		4.8E-02	9.0E-02	1.1E-01	1.1E-01	7.5E-03	7.5E-03	1.5E-03	3.8E-03
Lead[10]	0.01		1.6E-02	3.0E-02	3.8E-02	3.8E-02	2.5E-03	2.5E-03	5.0E-04	1.3E-03

Total Criteria Pollutants

Pollutant	Emission Rate (lbs/hr)	Emission Rate (tpy)
Controlled		
PM	4.7E-03	2.1E-02
SO2	7.5E-03	3.3E-02
NO_X	0.1	0.3
CO	1.1	4.6
VOC	0.07	0.3
Lead	1.3E-03	5.5E-03
CO_2e[11]	1501	6573

Toxic and Hazardous Pollutants

CAS #	Burner Emissions	Emission Factor (lb/10^6scf)[12]	Factor (lb/MMBtu)	Volatile? (Yes/No)	Emission Rate (lb/hr)
91-57-6	2-Methylnaphthalene	2.40E-05	2.4E-08	Yes	3.0E-07
56-49-5	3-Methylchloranthrene	1.8E-06	1.8E-09	Yes	2.3E-08
NA	7,12-Dimethylbenz(a)anthracene	1.6E-05	1.6E-08	Yes	2.0E-07
NA	7-PAH group[13]	1.1E-05	1.1E-08	Yes	1.4E-07
83-32-9	Acenaphthene	1.8E-06	1.8E-09	Yes	2.3E-08
208-96-8	Acenaphthylene	1.8E-06	1.8E-09	Yes	2.3E-08
120-12-7	Anthracene	2.0E-06	2.0E-09	Yes	2.6E-08
7440-38-2	Arsenic	2.0E-04	2.0E-07	No	2.5E-08
7440-39-3	Barium	4.4E-03	4.3E-06	No	5.5E-07
56-55-3	Benz(a)anthracene	1.8E-06	1.8E-09	Yes	2.3E-08
71-43-2	Benzene	2.1E-03	2.1E-06	Yes	2.6E-05
50-32-8	Benzo(a)pyrene	1.2E-06	1.2E-09	Yes	1.5E-08
205-99-2	Benzo(b)fluoranthene	1.8E-06	1.8E-09	Yes	2.3E-08
191-24-2	Benzo(g,h,i)perylene	1.2E-06	1.2E-09	Yes	1.5E-08
207-08-9	Benzo(k)fluoranthene	1.8E-06	1.8E-09	Yes	2.3E-08
7440-41-7	Beryllium	1.2E-05	1.2E-08	No	1.5E-09
7440-43-9	Cadmium	1.1E-03	1.1E-06	No	1.4E-07
7440-47-3	Chromium	1.4E-03	1.4E-06	No	1.8E-07
218-01-9	Chrysene	1.8E-06	1.8E-09	Yes	2.3E-08
7440-48-4	Cobalt	8.4E-05	8.2E-08	No	1.1E-08
7440-50-8	Copper	8.5E-04	8.3E-07	No	1.1E-07
53-70-3	Dibenzo(a,h)anthracene	1.2E-06	1.2E-09	Yes	1.5E-08
25321-22-6	Dichlorobenzene	1.2E-03	1.2E-06	Yes	1.5E-05
206-44-0	Fluoranthene	3.0E-06	2.9E-09	Yes	3.8E-08
86-73-7	Fluorene	2.8E-06	2.7E-09	Yes	3.5E-08
50-00-0	Formaldehyde	7.5E-02	7.4E-05	Yes	9.4E-04
110-54-3	Hexane	1.8E+00	1.8E-03	Yes	2.3E-02
193-39-5	Indeno(1,2,3-cd)pyrene	1.8E-06	1.8E-09	Yes	2.3E-08
7439-96-5	Manganese	3.8E-04	3.7E-07	No	4.8E-08
7439-97-6	Mercury	2.6E-04	2.5E-07	Yes	3.3E-06
7439-98-7	Molybdenum	1.1E-03	1.1E-06	No	1.4E-07
91-20-3	Naphthalene	6.1E-04	6.0E-07	Yes	7.6E-06
7440-02-0	Nickel	2.1E-03	2.1E-06	No	2.6E-07
10024-97-2	Nitrous Oxide	2.2E+00	2.2E-03	Yes	2.8E-02
109-66-0	Pentane	2.6E+00	2.5E-03	Yes	3.3E-02
85-01-8	Phenanathrene	1.7E-05	1.7E-08	Yes	2.1E-07
NA	Polyaromatic Hydrocarbons[14]	6.8E-04	6.7E-07	Yes	8.6E-06
129-00-0	Pyrene	5.0E-06	4.9E-09	Yes	6.3E-08
7782-49-2	Selenium	2.4E-05	2.4E-08	No	3.0E-09
108-88-3	Toluene	3.4E-03	3.3E-06	Yes	4.3E-05
7440-66-6	Zinc	2.9E-02	2.8E-05	No	3.6E-06

CAS #	Process Emissions	Weight (%)[15]	Volatile? (Yes/No)	Emission Rate (lb/hr)
7429-90-5	Aluminum	0.243	No	9.2E-06
7440-36-0	Antimony	0.08	No	3.0E-06
7440-38-2	Arsenic	0.036	No	1.4E-06
7440-39-3	Barium	0.122	No	4.6E-06
7726-95-6	Bromine	0.032	Yes	1.2E-04
7440-439	Cadmium	0.004	No	1.5E-07
7782-50-5	Chlorine	0.365	Yes	1.4E-03
7440-47-3	Chromium	0.007	No	2.7E-07
7440-50-8	Copper	0.02	No	7.6E-07
7439-89-6	Iron	0.175	No	6.6E-06
7439-96-5	Manganese	0.002	No	7.6E-08
7439-97-6	Mercury	0.02	Yes	7.6E-05
7440-02-0	Nickel	0.019	No	7.2E-07
7723-14-0	Phosphorus	0.097	No	3.7E-06
7782-49-2	Selenium	0.001	No	3.8E-08
7440-21-3	Silicon	0.234	No	8.9E-06
7440-22-4	Silver	0.001	No	3.8E-08
7440-31-5	Tin	0.073	No	2.8E-06
7440-66-6	Zinc	0.034	No	1.3E-06

Notes

1) 40 CFR Part 98 Table A-1 (August 2016)
2) Burners for kettles spreadsheet from client (June 18, 2016)
3) Facility Layout, from client (July 7, 2016)
4) AP-42 Chapter 1.4 Table 1&2, assuming natural gas used for combustion (July 1998) for PM, SOCO, VOC, lead, CO, and methane. NO emissions are from the manufacturer data sheets with a conversion from ppm to lb/mm scf using 387 cf/mol at 20°C.
5) Natural gas energy value of 1020 mmBTU/scf per AP-42 Section 1.4 Table 2, footnote a (July 1998)
6) Emissions based on maximum burner value for refining kettle
7) $PM=PM_{10}=PM_{2.5}$
8) Emissions based on maximum capacity for refining kettle
9) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.04 lb particulate per ton metal produced (Oct 1986)
10) AP-42 Chapter 12.11 Table 2, kettle refining produces 0.01 lb lead per ton metal produced (Oct 1986)
11) $CO_2e=CO_2$ + Methane*Global warming potential (GWP) Methane + Nitrous Oxide*GWP Nitrous Oxide
12) AP-42 Chapter 1.4 Table 3 and 4, assuming natural gas used for combustion (July 1998)
13) IDAPA 58.01.01 Section 586, 7-PAH group consisting of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracne, chrysene, indenol(1,2,3,-cd)pyrene, and benzo(a)pyrene.
14) Polycyclic aromatic hydrocarbons inculde 2-methylnaphthalene, 7,12-dimethylbenz(a)anthracene, acenaphthene, acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.
15) Speciate 3.2, Profile 2040510 for Melting Pot Stack (January 5, 1999)

P. Kay Metal, Lewiston
Emissions Summary

Max Operating Time 8760 hrs/yr

Process Emissions

Pollutant	Emission Factor	Unit 1 (lbs/hr)	Unit 2 (lbs/hr)	Unit 3 (lbs/hr)	Unit 4 (lbs/hr)	Unit 5 (lbs/hr)	Unit 6 (lbs/hr)
Max throughput (lbs/hr)[1]	--	5,017	5,017	5,017	5,017	5,017	5,017
PM[2]	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Lead[2]	0	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Emissions Totals	(lb/hr)	(tpy)
PM	0.00	0.0
Lead	0.00	0.00

Notes

1) From Client Burners for kettles spreadsheet (June 18, 2016)

2) The extrusion process is not a source of lead emissions. Per EPA's "Locating and Estimating Air Emissions from Sources of Lead and Lead Compounds" Sections 6.4.3 and 6.8.3. (May 1998). These pages are attachem in attachment 2-9 and 2-10. Hot extrusion occurs at a temperature of 50%-75% of the metal's melting point so there is no potential for particulate or fumes from extrusion. Furthermore, the metal's vapor pressure is essentially zero.

P. Kay Metal, Lewiston
Emissions Summary

Max Operating Time 8760 hrs/yr
Baghouse control efficiency 99%

Process Emissions		Refining Kettles			Alloying Kettles		Holding Kettles for Casting						
Pollutant	Emission Factor	Kettle 1 (lb/hr)	Kettle 2 (lb/hr)	Kettle 3 (lb/hr)	Kettle 4 (lb/hr)	Kettle 5 (lb/hr)	Kettle 6 (lb/hr)	Kettle 7 (lb/hr)	Kettle 8 (lb/hr)	Kettle 9 (lb/hr)	Kettle 10 (lb/hr)	Kettle 11 (lb/hr)	Kettle 12 (lb/hr)
Max throughput (lbs/hr)[2]	--	5,000	12,000	12,000	20,000	20,000	3,200	6,000	7,500	7,500	500	500	100
PM[3]	0.002	5.0E-03	1.2E-02	1.2E-02	2.0E-02	2.0E-02	3.2E-03	6.0E-03	7.5E-03	7.5E-03	5.0E-04	5.0E-04	1.0E-04
Lead[4]	0.0006	1.5E-03	3.6E-03	3.6E-03	6.0E-03	6.0E-03	9.6E-04	1.8E-03	2.3E-03	2.3E-03	1.5E-04	1.5E-04	3.0E-05

Emissions Totals	(lb/hr)	(tpy)
Uncontrolled		
PM	0.09	0.41
Lead	0.03	0.12
Controlled		
PM	9.4E-04	4.1E-03
Lead	2.8E-04	1.2E-03

Notes

1) AP-42 Section 12.11 Table 5 (August 22, 2016)
2) From Client Burners for kettles spreadsheet (June 18, 2016)
3) AP-42 Chapter 12.11 Table 4, 0.002 lbs fugitive particulate per ton metal processed (August 22, 2016)
4) AP-42 Chapter 12.11 Table 4, 0.0006 lbs fugitive lead per ton metal processed (August 22, 2016)

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: May 30, 2017

TO: Morrie Lewis, Permit Writer, Air Program

FROM: Thomas Swain, Air Quality Modeler, Analyst 3, Air Program

PROJECT: P. Kay Metal Lewiston, LLC, in Lewiston, Idaho, a new Permit to Construct (PTC) P-2017.0013, Project 61854, Facility ID No. 069-00071

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

Acronyms, Units, and Chemical Nomenclature

AAC	Acceptable Ambient Concentration of a Non-Carcinogenic TAP
AACC	Acceptable Ambient Concentration of a Carcinogenic TAP
AERMAP	The terrain data preprocessor for AERMOD
AERMET	The meteorological data preprocessor for AERMOD
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Appendix W	40 CFR 51, Appendix W – Guideline on Air Quality Models
ARM	Ambient Ratio Method
BPIP	Building Profile Input Program
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality Modeling System
CO	Carbon Monoxide
°F	Degrees Fahrenheit
DEQ	Idaho Department of Environmental Quality
EL	Emissions Screening Level of a TAP
EPA	United States Environmental Protection Agency
ft	Feet
fps	Feet per second
GEP	Good Engineering Practice
hr	Hours
Idaho Air Rules	Rules for the Control of Air Pollution in Idaho, located in the Idaho Administrative Procedures Act 58.01.01
ISCST3	Industrial Source Complex Short Term 3 dispersion model
K	Kelvin
m	Meters
m/s	Meters per second
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
O_3	Ozone
OLM	Ozone Limiting Method
Pb	Lead
PKM	P. Kay Metal Lewiston, LLC
PM_{10}	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 10 micrometers
$PM_{2.5}$	Particulate matter with an aerodynamic particle diameter less than or equal to a nominal 2.5 micrometers
ppb	Parts Per Billion
PRIME	Plume Rise Model Enhancement
PTC	Permit to Construct
PTE	Potential to Emit
SIL	Significant Impact Level
SO_2	Sulfur Dioxide
Spring	Spring Environmental, Inc. (PKM's Permitting and Modeling Consultant)
TAP	Toxic Air Pollutant

USGS	United States Geological Survey
UTM	Universal Transverse Mercator
VOCs	Volatile Organic Compounds
$\mu g/m^3$	Micrograms per cubic meter

1.0 Summary

P. Kay Metal, Lewiston (PKM) originally submitted an application for a Permit to Construct (PTC) on October 5, 2016, for a new facility to be located in Lewiston, Idaho, denoted as PTC P-2016.0057.

PKM will be a manufacturing facility, producing a variety of metal products including solder, flux and other products. Raw materials such as basic metals, recycled materials containing lead, and minor amounts of organic and inorganic chemicals used for purification will be used by the facility. The facility will operate a rotary furnace and several kettles, including refining kettles, alloying kettles, and holding kettles. Six extruding units will shape the metal products. Emissions from the kettles are controlled by three baghouses.

Details of the entire process are discussed in the main body of the DEQ Statement of Basis supporting the issued proposed PTC. This modeling review memorandum provides a summary and approval of the ambient air impact analyses submitted with the permit application. It also describes DEQ's review of those analyses, DEQ's verification analyses, additional clarifications, and conclusions.

Project-specific air quality impact analyses, involving atmospheric dispersion modeling of estimated emissions associated with the facility, were submitted to DEQ to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard as required by IDAPA 58.01.01.203.02 and 203.03 (Idaho Air Rules Section 203.02 and 203.03).

Spring Environmental, Inc. (Spring) performed the ambient air impact analyses for this project on behalf of PKM. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to support permit issuance. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. Evaluation of emissions estimates is the responsibility of the DEQ permit writer and is addressed in the main body of the Statement of Basis. The accuracy of emissions estimates was not evaluated as part of DEQ's review of the air impact analyses submitted and described in this modeling review memorandum.

A modeling protocol was submitted on July 15, 2016 for this project. DEQ approved the protocol, with conditions, on August 15, 2016. On September 15, 2016, the applicant requested a pre-application meeting for September 19, 2016. At that meeting, the applicant and Spring discussed changes to the originally scoped project, whether a 15-day application was needed, whether a new modeling protocol was necessary, and the status of Toxic Air Pollutant (TAP) compliance utilizing National Emission Standards for Hazardous Air Pollutants (NESHAP) guidance. It was decided that a new modeling protocol was not required for the project. PKM submitted a PTC application on October 5, 2016. On October 24, 2016, DEQ responded with a letter of incompleteness. Reasons for the incompleteness determination were mainly regarding TAPs emissions, but there were also minor deficiencies/errors in the air impact analyses. DEQ received a revised application on November 23, 2016, that addressed the items listed in the incompleteness letter. DEQ responded with a letter of completeness on December 21, 2016. The submitted emissions inventory of the November 23, 2016, submittal indicated that lead emissions were greater than below regulatory concern (BRC) thresholds, but below Level I Modeling Applicability Thresholds. The final emissions inventory as accepted by the DEQ permit writer indicated that potential lead emissions were slightly above Level I Modeling Applicability Thresholds. DEQ and Spring discussed these issues further, and on March 3, 2017, Spring submitted a new permit application with refined lead emissions estimates that were below BRC. DEQ performed sensitivity modeling analyses to confirm that lead emissions, although below BRC levels, will not cause impacts above the National Ambient Air Quality Standards (NAAQS).

The final submitted air quality impact analyses: 1) utilized appropriate methods and models; 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 estimated potential/allowable emissions are at a level defined as BRC and do not require a NAAQS compliance demonstration; b) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or c) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable NAAQS at ambient air locations where and when the project has a significant impact; 5) showed that TAP emissions increases associated with the project will 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.

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 that operation of the proposed facility 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.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
General Emissions Rates. 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 greater than those used in the modeling analyses.
Modeling Thresholds for Criteria Pollutant Emissions. Maximum short-term and long-term emissions of all criteria pollutants associated with the proposed project are either below BRC or below the Level 1 Modeling Applicability Threshold for each pollutant. Therefore, a demonstration of compliance with NAAQS was not required for any criteria pollutants.	Project-specific air impact analyses demonstrating compliance with NAAQS are required, per Idaho Air Rules Section 203.02, for pollutants that do not qualify for a BRC exemption and have an emissions increase greater than Level I modeling applicability thresholds. Compliance with NAAQS has not been demonstrated for emissions that exceed the emission estimates presented in the application.
TAPs Modeling. Emission rates of the TAPs arsenic, cadmium, and formaldehyde exceeded Emissions Screening Level (EL) rates of Idaho Air Rules Section 585 and 586.	Air impact analyses demonstrating compliance with TAPs, as required by Idaho Air Rules Section 203.03, is required for pollutants having an emissions rate greater than ELs. Therefore, a demonstration of compliance with TAPs Acceptable Ambient Concentrations (AAC) and Acceptable Ambient Concentrations of Carcinogens (AACC) was required.
Lead Impacts. DEQ performed a verification lead impact analysis, even though emissions were below BRC levels, that confirmed potential emissions of lead, as modeled, will not cause a violation of the lead NAAQS.	Previous DEQ analyses of lead emissions slightly above the BRC level revealed that lead emissions at the BRC level could cause a NAAQS violation at this site. Compliance with the lead NAAQS is not assured for emissions rates above those listed in this memorandum.

2.0 Background Information

This section provides background information applicable to the project and the plant site location. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

PKM is proposing a new facility to be located in Lewiston, Idaho, that specializes in fabrication of various metal products including solder, flux, and others. PKM will utilize a rotary furnace and numerous kettles in its manufacturing procedures. The air impact analyses performed by Spring, as part of the permit application, were submitted to show that facility-wide emissions do not cause or contribute to an exceedance of any NAAQS or TAPs AACs or AACCs. A detailed description of the facility is listed in Section 1 of the application.

2.2 Proposed Location and Area Classification

PKM will be located at 152 Southport Avenue, near the airport in Lewiston, Idaho. This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants.

2.3 Air Impact Analyses Required for All Permits to Construct

Criteria Pollutant and TAP impact analyses for a PTC are addressed in Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS.*** *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.*** *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.*

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***Estimates of Ambient Concentrations.*** *All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.4 *Significant Impact Level and Cumulative NAAQS Impact Analyses*

The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. Air impact analyses are required by Idaho Air Rules to be conducted using methods and data as 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.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in 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. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

DEQ has developed modeling applicability thresholds that effectively assure that project-related emissions increases below stated values will result in ambient air impacts below the applicable SILs. The threshold levels and dispersion modeling analyses supporting those levels are presented in the *State of Idaho Guideline for Performing Air Quality Impact Analyses*[1] (*Idaho Air Modeling Guideline*). Use of a modeling threshold represents the use of conservative modeling, performed in support of the threshold, as a project SIL analysis. Project-specific modeling applicability for this project is addressed in Section 3.1.1 of this memorandum.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period 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 for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not 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. If the SIL analysis indicates the facility/modification has an impact exceeding the SIL, the facility might not have a significant contribution to a violation if impacts are below the SIL at the specific receptor showing the violation during the time periods when a modeled violation occurred.

Compliance with Idaho Air Rules Section 203.02 is generally 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 all 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] ($\mu g/m^3$)[b]**	**Regulatory Limit[c] ($\mu g/m^3$)**	**Modeled Design Value Used[d]**
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	70 ppb[w]	Not typically modeled

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 mean 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. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration.
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

2.5 *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 Idaho Air Rules 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.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements.

3.1 Emission Source Data

Emissions rates of criteria pollutants and TAPs for the project were provided by the applicant for various applicable averaging periods. Review and approval of estimated emissions was the responsibility of the DEQ permit writer, and is not addressed in this modeling memorandum. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model. The rates listed must represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling analyses submitted by Spring, as listed in this memorandum, should be reviewed by the DEQ permit writer and compared with those in the emissions inventory of the permit application. All modeled criteria air pollutant and TAP emissions rates should be equal to or greater than the facility's emissions calculated in other sections of the PTC application or requested permit allowable emission rates.

3.1.1 Criteria Pollutant Emissions Rates and Modeling Applicability

If facility-wide potential to emit (PTE) values for a specific criteria pollutant would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for some pollutants exceeding BRC thresholds, then an air impact analysis for that pollutant may not be required for permit issuance. DEQ's regulatory interpretation policy of exemption provisions of Idaho Air Rules (Policy on NAAQS Compliance Demonstration Requirements, DEQ policy memorandum, July 11, 2014) is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have

qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant." The interpretation policy also states that the exemption criteria of uncontrolled PTE not to exceed 100 ton/year (Idaho Air Rules Section 220.01.a.i) is not applicable when evaluating whether a NAAQS impact analyses is required. A permit will be issued limiting PTE below 100 ton/year, thereby negating the need to maintain calculated uncontrolled PTE under 100 ton/year.

DEQ has generated non-site-specific project modeling applicability thresholds for those projects that cannot use the BRC exemption from an impact analysis (if there are specific permitted emissions limits that require changing, etc.). Modeling applicability thresholds are provided in the *Idaho Air Modeling Guideline*. These thresholds were based on assuring an ambient impact of less than established SIL for that specific pollutant and averaging period.

If project-specific total emissions rates are below Level I Modeling Applicability Thresholds, project-specific air impact analyses are not necessary for permitting. Use of Level II Modeling Applicability Thresholds is conditional, requiring DEQ approval. Table 3 provides the emissions-based modeling applicability summary. Spring compared emission estimates with BRC and Level I Modeling Thresholds, and determined that impact modeling is not necessary for any of the criteria pollutants listed in Table 3.

Table 3. MODELING APPLICABILITY ANALYSIS RESULTS

Pollutant	Averaging Period	Emissions[a]	BRC (ton/year)	Level I Modeling Thresholds (pound/hour or ton/year)	Level II Modeling Thresholds (pound/hour or ton/year)	Modeling Required
$PM_{2.5}$	Annual	0.17 ton/year	1.0	0.350	4.1	No
	24-hour	0.04 pound/hour		0.054	0.63	No
PM_{10}	Annual[b]	0.08 ton/year	1.5	none	none	No
	24-hour	0.04 pound/hour		0.22	2.6	No
NO_x	Annual	2.4 ton/year	4.0	1.2	14	No
	1-hour	0.54 pound/hour		0.2	2.4	No
SO_2	Annual	0.08 ton/year	4.0	1.2	14	No
	1-hour	0.02 pound/hour		0.21	2.5	No
CO	Annual[b]	10.8 ton/year	10.0	none	none	No
	1,8 hour	2.5 pound/hour		15	175	No
Lead	Annual	0.02 ton/year	0.06	14 pounds/month		No[c]

a. Based on state operating schedule
b. Annual averaging listed for comparison to BRC levels only. There is no annual NAAQS for this pollutant.
c. An air impact modeling analysis was conducted by DEQ, even though emissions were below BRC levels.

An impact analysis must be performed for pollutant increases that would not qualify for the BRC exemption from an impact analysis. Emissions of all criteria pollutants, except CO, resulting from the proposed project did not exceed BRC thresholds. An air impact analysis was not performed for CO because allowable emissions are below Level 1 Modeling Thresholds.

An impact analysis was performed for lead even though facility-wide emissions were below the BRC threshold. An emissions inventory of an earlier PTC application for PKM (a PTC was not issued) indicated lead emissions may exceed DEQ Level 1 Modeling Applicability Thresholds. DEQ then used the framework of the submitted impact modeling analyses to estimate ambient impacts of lead, and results indicated that

lead emissions at Level 1 Modeling Applicability Thresholds and even at BRC levels could cause impacts exceeding NAAQS at this specific site. DEQ then determined the BRC exemption from the requirement to demonstrate lead NAAQS compliance could not be used at this site, and that a full air impact modeling analysis would be needed to support permit issuance.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NO_x, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses (see Section 3.3.3) cannot be used to estimate O_3 impacts resulting from VOC and NO_x emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O_3 has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*
>
> *The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."*

Allowable emissions estimates of VOCs and NO_x were below the 100 tons/year threshold, and DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NO_x, SO_2, and/or VOCs was assumed by DEQ to be negligible based on the magnitude of emissions and the short distance from emissions sources to modeled receptors where maximum PM_{10} and $PM_{2.5}$ impacts would be anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed after July 1, 1995. The submitted emissions inventory in the application identified three TAPs having potential emission increases that could exceed screening emissions levels (ELs) of Idaho Air Rules Section 585 or 586. Potential increases in emissions of other TAPs were all less than applicable ELs. Table 4 lists emission increases for theses TAPs and compares them to the EL.

Table 4. MODELED TAP EMISSIONS RATES			
Pollutant	**CAS No.**	**Total Emissions Increase (pound/hour)**	**Screening Emissions Level (EL)[a] (pound/hour)**
Arsenic	7440-38-2	7.5E-06	1.5E-06
Cadmium	7440-43-9	5.7E-06	3.7E-06
Formaldehyde	50-00-0	2.5E-03	5.1E-04

a. Idaho Air Rules Section 585 and 586.

Table 5 provides source-specific TAP emission rates used in the air impact analyses.

Table 5. TAP EMISSIONS AS MODELED BY SOURCE			
Source ID	**arsenic (pound/hour)**	**cadmium (pound/hour)**	**formaldehyde (pound/hour)**
ROTARY[a]	3.98E-06	5.09E-06	9.6E-04
HOLDING[b]	3.56E-06	6.2E-07	0.001468

a. Baghouse for rotary furnace and refining kettles.
b. Baghouse for alloying kettles and holding kettles.

3.1.3 Emission Release Parameters

Table 6 provides emissions release parameters used in the final air impact modeling analyses, including stack height, stack diameter, exhaust temperature, and exhaust velocity for facility emissions sources.

Stack parameters used in the modeling analyses were documented/justified adequately in the application.

Table 6. MODELING PARAMETERS							
Source ID	**Source Description**	**Easting (X)[a] (meters)**	**Northing (Y)[b] (meters)**	**Stack Height (feet)**	**Temperature (°F)[c]**	**Exit Velocity (fps)[d]**	**Stack Diameter (feet)**
ROTARY	Baghouse for Rotary Furnace and Kettles	497527	5134726	25	300.0	117.9	3.0
HOLDING	Baghouse for holding and alloying kettles	497475	5134780	25	70.0	70.7	3.0

a. Universal Transverse Mercator coordinates in meters in the east/west direction.
b. Universal Transverse Mercator coordinates in meters in the north/south direction.
c. Degrees Fahrenheit.
d. Feet/second.

3.2 Background Concentrations

Background concentrations were provided by DEQ from the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) *Lookup 2009-2011 Design Values of Criteria Pollutants*[1]. These design value air pollutant levels are based on regional scale air pollution modeling of Washington, Oregon, and Idaho, with values influenced by monitoring data as a function of distance from the monitor. DEQ has determined that the NW AIRQUEST background values are reasonably representative of the facility locale. These values were not utilized in this analysis because criteria pollutant emissions qualified for the BRC exemption from NAAQS compliance demonstration requirements.

3.3 *Impact Modeling Methodology*

This section describes the modeling methods used by the applicant to demonstrate preconstruction compliance with applicable air quality standards.

3.3.1 General Overview of Analyses

Spring performed project-specific air impact analyses that were determined by DEQ to reasonably represent the proposed facility as described in the application. Results of the submitted analyses demonstrate 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 7 provides a brief description of parameters used in the modeling analyses.

Table 7. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Addition Description
General Facility Location	Lewiston, Idaho	The facility will locate in an area that is attainment or unclassified for all criteria air pollutants
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 15181.
Meteorological Data	2011-2015 Lewiston, Idaho NWS, and upper air data from Spokane, WA	See Section 3.3.4 for a detailed discussion on the meteorological data.
Terrain	Considered	See Section 5.3 below.
Building Downwash	Considered	Because there are substantial buildings at the PKM facility, BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
Receptor Grid	Grid 1	10-meter spacing along the ambient air boundary and out to distances of 100 from the center of the facility
	Grid 2	50-meter spacing out to distances of 1000 meters with respect to the facility
	Grid 3	100-meter spacing out to approximately 2000 meters
	Grid 4	250-meter spacing for distances out to 3000 meters from facility
	Grid 5	750-meter spacing for distances out to 10,000 meters from facility

3.3.2 Modeling protocol and Methodology

A modeling protocol for the PKM project was submitted on July 15, 2016. DEQ approved the protocol, with conditions, on August 15, 2016. After some revisions to the project, PKM submitted an application on October 5, 2016. On October 20, 2016, DEQ responded with a letter of incompleteness, largely because of emissions calculation questions. DEQ received a revised application on November 23, 2016, addressing the items listed in the incompleteness letter, and DEQ responded with a letter of completeness on December 21, 2016. During the process of final review in February, 2017, DEQ found that emissions for lead as listed in the submitted emissions inventory were above Level I Modeling Applicability Thresholds, but emissions were slightly greater than thresholds in the final DEQ emissions inventory. DEQ performed lead impact modeling to evaluate NAAQS compliance as described in Section 3.1.1 of this memorandum, finding that NAAQS compliance was not demonstrated. DEQ and Spring discussed these issues further, and Spring explained that the initial lead emission estimates were overly conservative. Lead emissions initially estimated from the extruders do not occur because of the operating temperature range of the extrusion process. On March 2, 2017, Spring submitted a new application with refined emissions estimates of lead that were below BRC levels. DEQ performed verification modeling analyses to confirm that listed emissions of

lead will result in impacts below NAAQS.

Project-specific modeling and other required impact analyses were generally conducted using data and methods discussed in pre-application correspondence and in the *Idaho Air Quality Modeling Guideline*[1].

3.3.3 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 15181 was used by the applicant for the air impact modeling analyses to evaluate impacts of the facility. This version is the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

Spring used meteorological data collected at the nearby Lewiston, Idaho, airport for the period 2011-2015. The meteorological model input files for this project were processed by DEQ provided to Spring upon request. Upper air data were collected from the Spokane, Washington, airport. DEQ determined the meteorological data used in the submitted analyses were adequately representative for the modeling analyses used for this permit in the locale of PKM.

3.3.5 Effects of Terrain on Modeled Impacts

Terrain data were extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files in the WGS84 datum (approximately equal to the NAD83 datum). Spring used 1 Arc Second resolution data, which is adequate for this analysis.

The terrain preprocessor AERMAP Version 11103 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. 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.

DEQ reviewed the area surrounding the facility by using the web-based mapping program Google Earth, which uses the WGS84 datum. DEQ also overlaid modeling files with a digital photograph background images acquired from the 2013 ARCGIS NAIP (National Agriculture Imagery Program) data base. The immediate area is effectively flat with regard to dispersion modeling affects. Elevations in the modeling domain are identical to those indicated by the background images.

3.3.6 Facility Layout

DEQ compared the facility layout used in the model to that indicated in aerial photographs on Google Earth. The modeled layout was consistent with aerial photographs in Google Earth as well as from those in the ARCGIS 2013 NAIP database. The PKM facility has not yet been constructed, so location of buildings could not be verified in Google Earth.

3.3.7 Effects of Building Downwash on Modeled Impacts

The presence of structures proposed at the site and facility will influence air flow in the vicinity of air pollutant release points, potentially causing the downwash of emitted plumes. Potential downwash effects on emissions plumes were addressed in the model by algorithms using building dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME), which was used as input to the dispersion model AERMOD.

3.3.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." Public access to the PKM facility was conservatively limited to the manufacturing building itself, as the applicant may possibly lease the other building existing on the property. Although there is a fence surrounding the property and public access is unlikely except for those leasing, this conservative approach is adequate to assess modeled impacts at all locations where public access is not precluded.

3.3.9 Receptor Network

Table 7 describes the receptor grid used in the submitted air impact analyses. The receptor grid met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[1]. DEQ determined this grid assured maximum impacts were reasonably resolved by the model considering: 1) types of sources modeled; 2) modeled impacts and the modeled concentration gradient; 3) conservatism of the methods and data used as inputs to the analyses; 4) potential for continual exposures or exposure to sensitive receptors. Additionally, DEQ performed sensitivity analyses using a finer grid-spaced receptor network to assure that maximum concentrations were below all applicable standards.

3.3.10 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

Buildings exist in the vicinity of all point sources modeled. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 Impact Modeling Results

This section presents results for the air impact analyses performed in support of issuing a PTC to PKM.

4.1 Results for NAAQS Significant Impact Level Analyses

Because estimated emissions for the project were either below BRC or below Level I modeling thresholds, no site-specific air quality dispersion modeling was submitted for any criteria pollutants. DEQ performed a lead verification analysis to assure NAAQS compliance, as explained in Section 3.1.1 of this memorandum. The maximum modeled 3-month average lead concentrations was 0.019 $\mu g/m^3$, and when combined with a conservative background of 0.015 $\mu g/m^3$, the resulting total impact of 0.034 $\mu g/m^3$ is only 23% of the 0.15 $\mu g/m^3$ NAAQS.

4.2 Results for TAPs Impact Analyses

Air impact dispersion modeling is required (to demonstrate compliance with TAP increments specified in Idaho Air Rules Section 585 and 586) for those TAPs with project-specific emission increases exceeding emissions screening levels (ELs). Because several TAPs emissions exceeded the ELs, modeling analyses were needed to demonstrate compliance with those AACs and AAACs. Results are listed in Table 8 and show compliance with all AACs and AAACs.

Table 8. TAP MODELING RESULTS

Pollutant	CAS No.	Average	Modeled Conc. ($\mu g/m^3$)[a]	AAC/AAAC[b] ($\mu g/m^3$)	%AAC/AAAC
Arsenic	7440-38-2	Annual	5.0E-05	2.3E-04	22%
Cadmium	7440-43-9	Annual	1.0E-05	5.6E-04	2%
Formaldehyde	50-00-0	Annual	2.1E-02	7.7E-02	27%

a. Micrograms per cubic meter.
b. Acceptable Ambient Concentration or Acceptable Ambient Concentration of a Carcinogen.

5.0 Conclusions

The ambient air impact analyses and other air quality analyses submitted with the PTC application demonstrated to DEQ's satisfaction that emissions from the PKM facility will not cause or significantly contribute to a violation of any ambient air quality standard.

References:

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

2. Air Quality Environmental Science and Technology Consortium (NW AIRQUEST). *Lookup 2009-2011 Design Values of Criteria Pollutants*. Available at: http://lar.wsu.edu/nw-airquest/lookup.html.

APPENDIX C – NESHAP REGULATORY APPLICABILITY

40 CFR 60, Subpart L
Standards of Performance for Secondary Lead Smelters

§60.120 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to the following affected facilities in secondary lead smelters: Pot furnaces of more than 250 kg (550 lb) charging capacity, blast (cupola) furnaces, and reverberatory furnaces.

(b) Any facility under paragraph (a) of this section that commences construction or modification after June 11, 1973, is subject to the requirements of this subpart.

This standard is applicable to P. Kay Metal because the kettles are used for melting lead containing material.

[42 FR 37937, July 25, 1977]

§60.121 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

(a) *Reverberatory furnace* includes the following types of reverberatory furnaces: stationary, rotating, rocking, and tilting.

(b) *Secondary lead smelter* means any facility producing lead from a leadbearing scrap material by smelting to the metallic form.

(c) *Lead* means elemental lead or alloys in which the predominant component is lead.

(d) *Blast furnace* means any furnace used to recover metal from slag.

[39 FR 9317, Mar. 8, 1974; 39 FR 13776, Apr. 17, 1974, as amended at 65 FR 61756, Oct. 17, 2000]

§60.122 Standard for particulate matter.

(a) 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 discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:

(1) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(2) Exhibit 20 percent opacity or greater.

Superseded by IDAPA 58.01.01 Section 625 and IDAPA 58.01.01 Section 676.

(b) 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 discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit 10 percent opacity or greater.

P. Kay Metal acknowledges the opacity standard for 60.122(b)

[39 FR 9317, Mar. 8, 1974, as amended at 40 FR 46259, Oct. 6, 1975]

§60.123 Test methods and procedures.

(a) 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).

(b) The owner or operator shall determine compliance with the particulate matter standards in §60.122 as follows:

(1) Method 5 shall be used to determine the particulate matter concentration during representative periods of furnace operation, including charging and tapping. The sampling time and sample volume for each run shall be at least 60 minutes and 0.90 dscm (31.8 dscf).

(2) Method 9 and the procedures in §60.11 shall be used to determine opacity.

P. Kay Metal acknowledges the prescribed test methods.

[54 FR 6667, Feb. 14, 1989]

APPENDIX D – FACILITY DRAFT COMMENTS

The following comments were received from the facility on May 25, 2017:

Facility Comment: The facility location address should be changed from 154 Southport Avenue to 152 Southport Avenue.

DEQ Response: The facility location information has been updated in the proposed permit.

Facility Comments: Permit Scope Section 1.2 should reflect the following changes:

a) Kettle 1's burner fuel consumption is 7 MMBtu instead of 4 MMBtu per manufacturer specifications (annotated EU form attached with vendor information).

b) Kettle 6's burner fuel consumption is 2 MMBtu instead of 4 MMBtu per manufacturer specifications (annotated EU form attached).

c) Kettle 9's burner fuel consumption is 3 MMBtu instead of 1.5 MMBtu per manufacturer specifications (annotated EU form attached).

d) Kettle 12's burner fuel consumption is 0.75 MMBtu instead of 0.5 MMBtu per manufacturer specifications (annotated EU form attached with vendor information)

e) Baghouse information is incorrect. The manufacturer is Scientific Dust Collectors. The model for the Rotary Furnace Baghouse is SPJ-688-4T10, the Holding Kettle Room Baghouse model is SPJ-512-4T10, and the Fugitive Baghouse model is SL4-40. All three baghouses have a $PM_{2.5}$ control efficiency of 99%+. Further information about these baghouses can be found in Attachment 7, pages 7-31 to 7-36 of the March 1st application package.

Table 1 [in the Statement of Basis] should be updated with the same changes at Permit Scope Section 1.2.

DEQ Response: Kettle burner and baghouse information have been updated in Table 1.1 of the proposed permit and Table 1 of the Statement of Basis as requested.

Facility Comment: Emissions calculations, forms, and modeling were updated to reflect the new burner information as requested. The modeling results were the same or lower except formaldehyde results, which increased from 2.0E-2 $\mu g/m^3$ to 2.1E-2 $\mu g/m^3$.

DEQ Response: $PM_{2.5}$ emission limits have been updated in Permit Condition 2.3 of the proposed permit. Emission inventories and modeled impacts have been updated in Tables 2 through 5 and in Appendices A and B of the Statement of Basis.

Facility Comment: Conditions 2.10, 2.16 and 2.27. There is no way to install a device to monitor weight on the extruder. As each pallet is completed (approximately hourly), PKM would weigh the finished pallet. Since per EPA's reference (see March 1st application package, Attachment pages 2-7, 2-9 and 2-10), the extruders are not an air emissions source, we propose to record production weight on a daily basis based on the finished pallet weight rather than to weigh production from each individual extruder.

DEQ Response: Permit Conditions 2.10, 2.15, 2.16, and 2.25 have been revised in the proposed permit to accommodate measurement of finished product as requested.

Facility Comment: Condition 2.11 states the facility shall not exceed 257,647,058 scf/yr. The natural gas limit should be removed from the permit because the furnaces are already limited by the burner fuel consumption, the calculations are based on 8,760 hours per year, and natural gas for building heat is not metered separately from process natural gas. The proposed permit limit is in effect a make-work condition that in no way affects potential air emissions from the project. (Please note that based on the Section 1.2 changes, the potential annual consumption would be 289,852,941 scf/yr.)

DEQ Response: Because process emissions have been calculated based on continuous processing at maximum burner heat input capacities per manufacturer specifications, monitoring of natural gas usage should not be necessary. Fuel usage limits (draft Permit Conditions 2.11 and 2.17) have therefore been removed from the proposed permit. Permit modification is required if the specified fuel input capacities and/or natural gas usage rates are exceeded.

Facility Comments: Condition 2.19 states the process temperature shall be monitored and recorded every 15 minutes of operation. This is an excessive monitoring frequency which is not supported by 40 CFR 63.8 or 40 CFR 63 Subpart X except during the performance test. We propose that a 24-hour rolling average temperature be recorded hourly. (Note: we recognize that the 15-minute frequency would remain in Condition 2.27 for performance testing.)

Condition 2.20 states the maximum temperature every hour must be recorded and compared to the temperature limit. 40 CFR 63 Subpart X only stipulates that the temperature must be maintained so the average temperature in any 3-hour period does not fall more than 28°C (§63.548, j, (4)). We propose requirements 2.19 and 2.20 be combined so a 24-hour rolling average temperature is recorded and that any 3-hour period does not fall more than 28°C.

DEQ Response: The purpose of these permit conditions are to avoid "smelting" of raw materials at or above 980 degrees Celsius as defined in 40 CFR 63.542, at which temperature lead compounds are chemically reduced to elemental lead metal. Processing at such temperatures results in the applicability of NESHAP Subpart X requirements. This is a maximum temperature, and an averaging time is not associated with this applicability criteria.

A daily averaging time could allow for processing at brief periods above 980 °C while not exceeding the daily average temperature limit, and data has not been provided to support that continuous monitoring at 15-minute intervals would not be technically feasible. DEQ recognizes that instantaneous and transient temperature measurements may not always be accurate, and that a sufficient averaging time should be considered to ensure that accurate processing temperatures are captured. Permit Conditions 2.17 and 2.18 have therefore been updated to include an hourly averaging period.

Facility Comment: Condition 2.21: Under the 6th bullet, please remove "wet acid gas scrubber" as that is not applicable to this facility.

DEQ Response: Permit Condition 2.19 has been revised to remove reference to this control technology, as requested.

Facility Comment: [In reference to the Statement of Basis] Page 5, the 2nd and third paragraphs mention cooling loops, but this language should be removed. Cooling loops were from an old baghouse manufacturer quote, and have since been removed from the facility plans. (see revised Attachment page 1-1 attached).

DEQ Response: The Statement of Basis has been updated as requested. In discussions with the facility, it was confirmed that exhaust temperatures relied upon in the modeling analysis would not change as a result of this correction to the process description.

APPENDIX E – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

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: P. Kay Metal Lewiston LLC
Address: 152 Southport Avenue
City: Lewiston
State: ID
Zip Code: 83501
Facility Contact: Dan Hall
Title: Director of Operations
AIRS No.: 069-00071

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	2.4	0	2.4
SO_2	0.1	0	0.1
CO	10.8	0	10.8
PM10	7.6	0	7.6
VOC	0.7	0	0.7
TAPS/HAPS	0.9	0	0.9
Total:	0.0	0	**22.4**
Fee Due	$ 5,000.00		

Comments: