August 15, 2019

Mr. Dave Shuck
Stillwater Mining Company
Columbus Metallurgical Complex
P.O. Box 1209
Columbus, MT 59011

Dear Mr. Shuck:

Montana Air Quality Permit #2635-19 is deemed final as of August 15, 2019, by the Department of Environmental Quality (Department). This permit is for a platinum group precious metals smelter and base metals refinery. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

Rhonda E. Payne
Air Quality Specialist
Air Quality Bureau
(406) 444-5287

JM:RP
Enclosure

Montana Department of Environmental Quality
Air, Energy & Mining Division

Montana Air Quality Permit #2635-19

Stillwater Mining Company
Columbus Metallurgical Complex
P.O. Box 1209
Columbus, MT 59011

August 15, 2019

MONTANA AIR QUALITY PERMIT

Issued To: Stillwater Mining Company	MAQP: #2635-19
Columbus Metallurgical Complex	Application Complete: 5/31/2019
P.O. Box 1209	Preliminary Determination Issued: 7/9/2019
Columbus, MT 59011	Department's Decision Issued: 7/30/2019
	Permit Final: 8/15/2019

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to the Stillwater Mining Company – Columbus Metallurgical Complex (Stillwater) pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

Section I: Permitted Facilities

A. Plant Description

Stillwater operates a platinum group precious metals (PGM) smelter and base metals refinery in Columbus, Montana. The legal description of the site is Section 27, Township 2 South, Range 20 East, (45.6323533, -109.2369634) in Stillwater County, Montana. A list of permitted equipment is contained in Section I.A of the permit analysis.

B. Current Permit Action

On May 31, 2019, the Department of Environmental Quality (Department) received a complete application from Stillwater to construct and operate a new concentrate drying, blending and handling process (referred to as the Concentrate Handling Project), which will be enclosed in a new building onsite at the Columbus Metallurgical Complex. The Concentrate Handling Project would provide more capacity and process flexibility. Additionally, Stillwater has requested approval for the addition of a natural gas-fired infrared pre-heater for the existing concentrate handling process and a new recycle process baghouse for the existing recycle handling process. Stillwater's Columbus Metallurgical Complex is classified as a synthetic minor source with respect to ARM 17.8, Subchapter 12. The requested changes would increase potential particulate matter emissions but would not exceed 100 tons per year, so the synthetic minor status would be maintained. This modification makes the requested changes as well as updates current permit language and rule references used by the Department.

Section II: Limitations and Conditions

A. Emission Limitations

1. Stillwater shall not cause or authorize visible emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

2. Stillwater shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

3. Stillwater shall treat all unpaved portions of haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.2 (ARM 17.8.749).

4. Stack emissions from any 40 Code of Federal Regulation (CFR) 60, Subpart LL affected facility, not discharged from a wet scrubber, are subject to an opacity limitation of 7% (ARM 17.8.340 and 40 CFR 60, Subpart LL).

5. Process fugitive emissions from any 40 CFR 60, Subpart LL affected facility are subject to an opacity limitation of 10% (ARM 17.8.340 and 40 CFR 60, Subpart LL).

6. Particulate emissions from the smelting circuit and the concentrate drying circuit shall each be controlled by a baghouse. Particulate emissions shall be limited to 0.011 grains per dry standard cubic foot (gr/dscf) for each circuit. This emission limitation applies at the main stack of each circuit (ARM 17.8.749, ARM 17.8.752, and ARM 17.8.1204).

7. Sulfur dioxide (SO_2) emissions from the smelting circuit shall be limited to (ARM 17.8.749 and ARM 17.8.1204):

   a. 235 pounds per hour calculated on a 1-hour averaging basis;
   b. 50 pounds per hour calculated on a rolling 24-hour average basis; and
   c. 86 tons per year calculated on a rolling 12-month average.

8. The hydrated lime silo at the smelting circuit shall be controlled by a baghouse. Particulate emissions from the baghouse shall be limited to 0.02 gr/dscf (ARM 17.8.752).

9. Particulate emissions from the nickel sulfate crystal dryer at the Base Metals Refinery shall be controlled by a baghouse. Particulate matter emissions shall be limited to 0.022 gr/dscf (ARM 17.8.749).

10. Particulate emissions from the 200-ton dried concentrates silo shall be controlled by a baghouse. Particulate matter emissions from the baghouse shall be limited to 0.05 grams per dry standard cubic meter (g/dscm) or 0.022 gr/dscf (ARM 17.8.340 and 40 CFR 60, Subpart LL).

11. Particulate matter emissions from the revert crushing system shall be controlled by a baghouse. The revert crushing system includes a jaw crusher, vertical impact crusher, ventilation ductwork, vibrating screen, conveyor system and associated transfer points, and a material handling station. Particulate matter emissions shall be limited to 0.05 g/dscm or 0.022 gr/dscf (ARM 17.8.340 and 40 CFR 60, Subpart LL).

12. Particulate matter emissions from the precious metal bearing recyclable material (PMBRM) crushing system and associated equipment shall be controlled by baghouse(s). PMBRM crushing system includes a 15-ton primary feed bin, upstream vibrating pan feeder, mag belt conveyor, conveyor discharge to SCC cutter and downstream vibrating pan feeder to process spent automotive catalyst (Crushing and Sampling System); a surge hopper, vibrating pan feeder, vibrating screen and bag filling station to process petroleum catalyst (Direct Feed System). Particulate matter emissions shall be limited to 0.05 g/dscm or 0.022 gr/dscf (ARM 17.8.340 and 40 CFR 60, Subpart LL).

13. Particulate matter emissions from the security area material handling system at the base metals refinery shall be controlled by a baghouse. The security area material handling system includes a mixer/blender, pin mill, sample preparation dust hood, portable hopper, stationary de-lumper, surge hopper, and pin mill feed screw. Particulate matter emissions shall be limited to 0.022 gr/dscf (ARM 17.8.749).

14. Particulate matter emissions from vibratory fluid dryer at the concentrate handling building shall be controlled by a baghouse. Particulate matter emissions from the baghouse shall be limited to 0.05 grams per dry standard cubic meter (g/dscm) or 0.022 gr/dscf (ARM 17.8.752, ARM 17.8.340 and 40 CFR 60, Subpart LL).

15. Stillwater shall limit PM_{10} emissions from the facility to a level that does not exceed 100 tons during any rolling 12-month time period. Any calculations used to establish PM_{10} emissions shall be approved by the Department and shall incorporate the emission limits contained in Section II.A.6 (as validated through source testing on an every 2-year basis) (ARM 17.8.749 and ARM 17.8.1204).

B. Operational Limitations

1. Maximum smelting circuit concentrate and precious metals recyclable material throughput shall be limited to the following (ARM 17.8.749):

   a. Concentrate throughput limit: 59,500 ton/yr
   b. Precious metals recyclable material throughput limit: 15,000 ton/yr

2. Emissions from the following sources shall be routed to the smelting circuit main stack and through all associated emission control equipment (baghouse and scrubber). Particulate matter emissions from these sources are subject to the emission limit for the smelting circuit. This emission limit shall be applied at the main stack for the smelting circuit (ARM 17.8.749 and ARM 17.8.752):

   a. Original Furnace Number 2 (includes 8 hoods)
   b. Top Blown Rotary Converter (TBRC) 2-1
   c. TBRC 2-2
   d. TBRC 2-3
   e. EF Matte/TBRC Slag Dryer

f. TBRC Matte Dryer
g. Granulator Tipping Station Hood
h. New Furnace Number 2 (including 10 hoods)
i. New TBRC Slag Bin
j. New Recyclable Materials/Reverts/Iron Residue Bin

3. Gypsum production shall be limited to 25,000 tons during any rolling 12-month time period (ARM 17.8.749).

4. Smelter slag production shall be limited to 60,000 tons during any rolling 12-month time period (ARM 17.8.749).

5. The amount of waste ore, used for lining the slag pits, delivered to and handled at the facility shall be limited to 40,000 tons during any rolling 12-month time period (ARM 17.8.749).

6. Each emergency/back-up generator at the Stillwater facility shall be limited to 500 hours of operation during any rolling 12-month time period (ARM 17.8.749).

7. Stillwater shall comply with all applicable standards and limitations, and the reporting, recordkeeping, monitoring, and notification requirements of 40 CFR 60, Subpart LL, Standards of Performance for Metallic Mineral Processing Plants (ARM 17.8.340 and 40 CFR 60, Subpart LL).

8. Stillwater shall comply with all applicable standards and limitations, and the reporting, recordkeeping, monitoring, and notification requirements of 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (ARM 17.8.340 and 40 CFR 60, Subpart Dc).

C. Testing Requirements

1. Stillwater shall conduct particulate and opacity performance source tests on the smelting circuit main stack to demonstrate compliance with the applicable emission limit(s) in Section II.A.1 Section II.A.6. The compliance source testing shall be conducted on the smelting circuit stack every 2 years or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.340 and ARM 17.8.749).

2. Stillwater shall conduct particulate and opacity performance source tests on the concentrate drying circuit main stack to demonstrate compliance with the applicable emission limit(s) in Section II.A.4 Section II.A.6. The compliance source testing shall be conducted on the concentrate drying circuit stack every 2 years or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.340 and ARM 17.8.749).

3. Stillwater shall conduct SO_2 performance source testing on the smelting circuit stack to monitor compliance with the emission limit in Section II.A.7.a. The compliance source testing shall be conducted every 5 years or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.749 and ARM 17.8.105).

4. Stillwater shall conduct a particulate performance source test on the process baghouse for the nickel sulfate crystal dryer, at the Base Metals Refinery, to demonstrate compliance with the emission limit in Section II.A.9. The compliance source testing shall be conducted every 5 years or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.749).

5. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

6. The Department may require further testing (ARM 17.8.105).

D. Operational Reporting Requirements

1. Stillwater shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date require in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Stillwater shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include the ***addition of a new emission unit,*** a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

3. All records compiled in accordance with this permit must be maintained by Stillwater as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

4. Stillwater shall document, by month, the amount of concentrate and precious metal-bearing recyclable material throughput at the smelting circuit. By the 25th day of each month, Stillwater shall total the amount of concentrate and the amount of precious metal-bearing recyclable material throughput at the smelting circuit for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.B.1. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

5. Stillwater shall document, by month, the amount of gypsum produced. By the 25th day of each month, Stillwater shall total the amount of gypsum produced during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.B.3. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

6. Stillwater shall document, by month, the amount of smelter slag produced. By the 25th day of each month, Stillwater shall total the amount of smelter slag produced during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.B.4. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

7. Stillwater shall document, by month, the amount of waste ore, used to line the slag pits, delivered to the facility. By the 25th day of each month, Stillwater shall total the amount of waste ore delivered to the facility during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.B.5. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

8. Stillwater shall document, by month, the PM_{10} emissions from the facility. By the 25th day of each month, Stillwater shall total the PM_{10} emissions from the facility for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.14. The information for each of the previous months shall be submitted along with the annual emission inventory. Any calculations made to determine PM_{10} emissions shall be approved by the Department and, where applicable, shall be based on unit capacities and emission limits contained in Section II.A of this permit (ARM 17.8.749).

9. Stillwater shall document, by month, the operating hours for each emergency/ back-up generator operated at the site. By the 25th day of each month, Stillwater shall total the operating hours of each emergency/back-up generator for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.B.6. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

10. Stillwater shall annually certify, as required by ARM 17.8.1204(3)(b), that its actual emissions are less than those that would require the source to obtain an air quality Title V operating permit. The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted no later than March 1 and may be submitted with the annual emission inventory information (ARM 17.8.1204 and ARM 17.8.1207).

E. Continuous Emission Monitoring Systems

1. A Continuous Emissions Monitoring System (CEMS) to monitor stack volumetric flow rate and record SO_2 emissions discharged to the atmosphere shall be installed and operated on the smelting circuit to demonstrate compliance with Section II.A.7 of this permit (ARM 17.8.749).

2. The monitoring systems shall be certified according to the performance specification procedures of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6. The CEMS must meet the quality assurance requirements contained in 40 CFR Part 60, Appendix F, with the exception that a Relative Accuracy Test Audit (RATA) be performed at least every 2 years, rather than every year, and that either a Cylinder Gas Audit (CGA) or Relative Accuracy Audit (RAA) be performed in each of the other quarters in the 2-year period (ARM 17.8.749 and 40 CFR Part 60).

SECTION III: General Conditions

A. Inspection – Stillwater shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (continuous emission monitoring systems (CEMS)/continuous emission rate monitoring systems (CERMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Stillwater fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Stillwater of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay

upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Stillwater may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit (MAQP) Analysis
Stillwater Mining Company – Columbus Metallurgical Complex
MAQP #2635-19

I. Introduction/Process Description

A. Permitted Equipment

Stillwater Mining Company – Columbus Metallurgical Complex (Stillwater) operates the following equipment, and emission points, in the processing of metallic minerals to recover platinum group precious metals;

Emission Source	Control Equipment	Exhaust Termination
SMELTER		
Original Electric Furnace #2 Emissions (Smelting Circuit)	Smelting Circuit Baghouse/Scrubber	Smelting Circuit Stack
Granulator Tipping Station Hood (Smelting Circuit)		
TBRC 2-1		
TBRC 2-2		
TBRC 2-3		
EF Matte/TBRC Slag Dryer (Smelting Circuit)		
TBRC Matte Dryer (Smelting Circuit)		
New Electric Furnace #2 Emissions (Smelting Circuit)		
New TBRC Slag Bin (Smelting Circuit)		
New Recyclable Materials/Reverts/Iron Residue Bin (Smelting Circuit)		
Receiving/Concentrate Handling Building	Cyclone/Baghouse	Vents Outside Building
Concentrate Dryer	North Baghouse #1	Concentrate Drying Circuit Stack
Recyclable Material Mixer/Blender (Concentrate Drying Area)		
Recyclable Material Sample Preparation Room (Old Smelting Circuit #1)/ 8-Point Sampler, Pulverizers, Sieve Shakers/Screens, Work Benches	Recycle Process Baghouse	
8-Point Sampler (Old Revert Crushing Area)		
Recyclable Material Transfer Area/Enclosure		
30-Ton Wet Concentrate Dryer Feed Hopper	N/A	Vents Inside Building
Dried Concentrates Silo (200-Ton)	Bin Vent Baghouse	Vents Outside Building
Hydrated Lime Silo (Smelting Circuit)	Bin Vent Baghouse	Vents Outside Building
Limestone Flux Bin (Smelting Circuit)	Vents to Dust Bin	Vents Inside Building
Dust Bin (Smelting Circuit)	Bin Vent Baghouse	Vents Inside Building
40-Ton Dried Concentrates Bin (Smelting Circuit)	Bin Vent Baghouse	Vents Inside Building
Original Recyclable Materials/Reverts/Iron Residue Bin (Smelting Circuit)	N/A	Vents Inside Building
Original TBRC Slag Bin (Smelting Circuit)	N/A	Vents Inside Building
Pebble Lime Feed Systems (Smelting Circuit) [2]	N/A	Vents Inside Building
EF Matte Bins (Smelting Circuit) [2]	N/A	Vents Inside Building
Dried EF Matte Collection Garbros (Smelting Circuit)	N/A	Vents Inside Building
Dried TBRC Slag Collection Garbros (Smelting Circuit)	N/A	Vents Inside Building
Dried TBRC Matte Collection Bin (Smelting Circuit)	N/A	Vents Inside Building
Granulator	N/A	N/A
Revert Crushing Area/Building Baghouse	Revert Crushing Area Baghouse	Vents Inside Building
Waste Ore Dump and Handling (Slag Pit Liner)	N/A	Fugitive Emissions
Smelter Slag Material Transfer	N/A	Fugitive Emissions
Gypsum Dumping and Loading	N/A	Fugitive Emissions

Emission Source	Control Equipment	Exhaust Termination
Smelter Diesel Fired Emergency Generator #1 (800 kW)	N/A	Engine Stack
Smelter Diesel Fired Emergency Generator #2 (600 kW)	N/A	Engine Stack
Moffit Indoor Smelter Building Heater	N/A	Vents Outside Building
Reznor Make-Up Air Heater (Concentrate Drying Area)	N/A	Vents Outside Building
Concentrate/Catalyst Bagging and Unloading System	N/A	Vents Inside Building
Relocated Baghouse/Vacuum System (Unloading System)	Baghouse	Vents Inside Building
Drum Dumping System (Smelting Circuit)	N/A	Vents Inside Building
Misc. Material Screening Station (Revert Crushing Area)	N/A	Vents Inside Building
PK1000 Rotating Tube Sampler and Drum Dump (Old Revert Crushing Area)	North Baghouse #1	Concentrate Drying Circuit Stack
12-Point Rotating Table Sampler (Smelter Material Handling Area)	N/A	Vents Inside Building
Process/Secondary Dust Return System and Vacuum Exhauster	Fabric Filter	Vents Inside Building
Central Vacuum System (CVS)	CVS Hygiene Baghouse	Vents Inside Building
Precious Metal-Bearing Recyclable Material Feed Chute	N/A	Vents Inside Building
15-Ton Recyclable Material Product Bins [2]	Bin Vent Baghouse	Vents Inside Building
Metallurgical Coke Addition (Drum Dumping System)	N/A	Vents Inside Building
Precious Metal-Bearing Recyclable Material Crushing System	PMBRM Baghouse(s)	Vents Inside Building
Large Sample Prep Equipment System	Sample Prep Area Baghouse (L)	Vents Inside Building
Small Sample Prep Equipment System	Sample Prep Area Baghouse (S)	Vents Outside Building
Conveyor Belt Systems (Automated Sample Prep System) [2]	N/A	N/A
Electric Muffle Furnace (Automated Sample Prep Area) [4]	N/A	Vents Outside Building
X-Ray Detectors (Automated Sample Prep System) [4]	N/A	N/A
Pellet Press for Smelter Daily Samples (Revert Crushing Building)	N/A	Vents Inside Building
Electric Test Furnace	N/A	Vents Outside Building
Silica Sand Media Addition (Automated Sample Prep Area)	N/A	Vents Inside Building
LECO C-230 Carbon Determinator (Automated Sample Prep Area)	N/A	Vents Outside Building
BASE METALS REFINERY (BMR)		
BMR Tower Mill Feed Hopper	N/A	Vents Inside Building
NSC Dryer Process	NSC Baghouse	Independent Stack
Nickel Sulfate Bagging Unit	Bagger Baghouse	Independent Stack
New Natural Gas Fired Boiler (15 MMBtu/hr)	NA	Independent Stack
Refinery Diesel Fired Emergency Generator (650 kW)	N/A	Engine Stack
Tower Mill	Refinery Main Scrubber	Refinery Stack
Nickel Atmospheric Leach (NAL) Circuit [9 tanks]		
Iron Removal Tanks (2)		
Nickel Solution and Solution Surge Tanks (2)		
Nickel Crystal Evaporator Condensate Tank		
Polish Autoclave Feed Tanks (2)		
Polish Filter and Filtrate Tanks (3)		
Vertical Autoclave Discharge Tank		
Copper Dissolve Circuit [4 tanks, 2 sample stations]		
Copper Electrowinning (E.W.) Circuit [5 tanks]		
Process Water Tank		
Scrubber Water and Thickener Tanks (2)		
Security Area Electric Dryers (3)	Refinery Main Scrubber	Refinery Stack
Security Area Portable Hopper	Security Area Baghouse	Vents Inside Building
Security Area Delumper		

Emission Source	Control Equipment	Exhaust Termination
Security Area Surge Hopper		
Security Area Pin Mill w/ Feed Screw		
Security Area Mixer/Blender		
Security Area Sample Preparation Dust Hood		
Copper Electrowinning Cells (10)	E.W. Scrubber	Refinery Stack
Nickel Screening and Splitting Area (Crystallizer Area)	N/A	Vents Inside Building
Additional TBRC Matte Handling Process	N/A	Vents Inside Building
Process Transfer Bin and Vacuum Exhauster	N/A	Vents Inside Building
ANALYTICAL LAB		
Digestion Hoods (3)	West Refinery Lab Scrubber #1	Independent Stack
Digestion/Dilution Hoods (2)	East Refinery Lab Scrubber #2	Independent Stack
Auto-Dilutor Fume Hood (1)		
Microwave Digestion Manifold Exhaust (4 microwaves)		
EW Process Lab Ventilation Hood (1)		
Sample Digestion/Acetone Sample Cooling Hood		
DFC 815 Fusion Furnace Exhaust/Hoods (3)	Fire Assay Area Baghouse	Vents Outside Building
DFC 810 Cupel Furnace/Cress Cupel Furnace Exhaust/Hoods (4)		
Cooling Hoods (5)		
Mixing Hood (1)		
Slagging Hoods (3)		
TM Crusher Hood (1) [Sample Preparation Area]	Sample Prep Area Baghouse	Vents Inside Building
TM Crushers (2) [Sample Preparation Area]		
Herzog Pulverizer Exhausts (2) [Sample Preparation Area]		
TM Pulverizer Hoods (2) [Sample Prep and Concentrate Prep Areas]		
TM Pulverizers (4) [2 Sample Prep/2 Concentrate Prep Areas]		
High-Grade Pellet Press Hoods (2) [Concentrate Preparation Area]		
Sample Pellet Press (1) [Recycle Preparation Area]		
TM Vibratory Ring Pulverizer (1) [Recycle Preparation Area]		
Work Bench/Sample Prep Hood (1) [Recycle Preparation Area]		
High-Grade Standard Preparation Area (Hood for SWECOs)		
Low-Grade Sample Preparation Area Pellet Press		
Ro-Tap Sieve Shaker System (High-Grade Standard Preparation Area)		
Sample Preparation Dryer #1	N/A	Vents Outside Building
Sample Preparation Dryer #2	N/A	Vents Outside Building
Electric Drying Ovens [8]	N/A	Vents Inside Building
Electric Muffle Furnace (Secondary Recycling Area) [4]	N/A	Vents Outside Building
Lab Boiler (2.3 MMBtu/hr)	N/A	Independent Stack
ICP Analyzers - Argon Fired [8]	N/A	Vents Outside Building
LECO SC144DR Analyzer	N/A	Vents Outside Building
LECO RO600 Analyzer	N/A	Vents Outside Building
Electric Drying Oven and Hood for Acetone Preped Sample (Recycle Prep)	N/A	Vents Outside Building
New Lab Boiler for Expansion (2.396 MMBtu/hr)	N/A	Independent Stack
Digestion Hoods (2)	Aqua Regia Acid Mist Scrubber	Independent Stack
Microwave Digestion Manifold Exhaust (3 microwaves)		
Area Cooling/Fume Hood for Auto-Dilutor Samples		
Wet Lab Area - 3 Hoods/2 Filters	Hygiene Acid Hoods/Carbon Filters	Vents Inside Building

Emission Source	Control Equipment	Exhaust Termination
V-Blender	N/A	N/A
Specs 8000 Mixer/Mill [2]	N/A	N/A
Sepor Blender (Football Blender)	N/A	Vents Inside Building

B. Source Description

The Stillwater Columbus Metallurgical Complex is fed concentrate by two offsite mine locations that perform initial ore processing to reduce the mined material to a suitable diameter. This process facilitates separation and recovery of palladium and platinum ores. A flotation process follows, which generates slurry concentrate through agitation of the material in a mixture of water and flotation reagents. The floating layer is collected as concentrate and transported to Stillwater's Columbus Metallurgical Complex site near Columbus, Montana.

The filter cake concentrate is received, sampled, dried, and pneumatically conveyed to a concentrate bin where it is fed to an electric furnace. Furnace matte is tapped into ladles and granulated in preparation for converting in the Top Blown Rotary Converters (TRBC). From the TBRC's converter matte is poured into ladles, granulated, dried and transported to the Refinery. Local ventilation systems capture process off-gas and route exhaust through a two-part control process. A baghouse removes particulate matter entrained within the air stream prior to passing through a wet gas scrubber for sulfur dioxide (SO_2) and fine particulate removal.

The refining process follows a series of stages in which palladium and other Platinum Group Metals (PGM) are separated from other metals. A three-stage leach and metal recovery process selectively extracts nickel, iron, copper and other metals from the PGM. The resulting high grade PGM filter cake produced at the Stillwater Metallurgical Complex is sent to off-site third-party refiners for final PGM extraction and purification. Certain operations are provided localized ventilation which is exhausted to the wet scrubber system.

C. Permit History

The original air quality permit **MAQP #2635** for this facility was issued May 9, 1990. The initial process rate was planned at 15 tons per day of concentrate, which corresponded to an ore production rate of 1,000 tons per day from the Stillwater Mine. The permit analysis was based on a process rate of 30 tons per day of concentrate in anticipation of increased production.

The Department of Environmental Quality (Department) determined that the most significant air quality concern with the project was SO_2 emissions. All process gases from the electric furnace, TBRC, and granulation drier, as well as gases from all the tap hoods, are ducted to the scrubbing system. The rated capacity of the scrubber is 15,000 standard cubic feet per minute (SCFM), containing 370 pounds (lb) of particulate matter per hour (hr) and 2242 lb SO_2/hr. The spent scrubbing solution is "regenerated" by adding hydrated lime, which precipitates the sulfur solids and is then pumped to a filter for final removal of gypsum solid from the circuit. The thickener overflow is softened by bubbling carbon dioxide (CO_2) gas through the solution that precipitates calcium carbonate. Soda ash, which is added to make up sodium in the scrubbing solution, also has a softening effect. The solids from the slurry are removed by cycloning and then are filtered along with the gypsum. The

now regenerated and softened solution is sent to the scrubber make-up tank and is ready for re-use.
Concentrate storage bins, bucket elevators, and screw feeders are ducted through a baghouse for particulate removal. The cleaned air then joins the scrubber exhaust and is ducted to the stack. Process exhaust air from the furnace, TBRC, and granulation circuit is routed through a process baghouse for removal of particulate. The exhaust from the process baghouse is then routed to the scrubbing circuit for SO_2 removal.

The performance of the gas cleaning system is monitored with inlet and outlet SO_2 Continuous Emission Monitor Systems (CEMS) and gas flow, pressure, and temperature sensors. Operator alarms to adjust the system are activated if limits are approached. If the adjustments are ineffective in reducing the SO_2 level, oxygen to the TBRC is automatically shut down, suspending the primary SO_2 source.

The project included two 50-killowatt (kW) portable diesel generators to provide temporary or emergency electricity.

The first permit modification was given **MAQP #2635-01** and was issued February 10, 1993. The permit modification included an increase in concentrate input from 30 tons per day to 40 tons per day. SO_2 emission limitation increases were also approved.

MAQP #2635-02 was issued December 21, 1993, as a modification that incorporated the construction and operation of a small base metal refinery. The process involves the acid leaching of copper, nickel, and iron from the matte produced in the smelting process. The product was to be sold to off-site refiners and the purified matte containing the platinum group metals was to be sent for additional hydrometallurgical refining. There would be no measurable increase in air pollutant emissions from the operation; therefore, a permit was not required.

MAQP #2635-03 was a modification issued April 15, 1994, which incorporated language to clarify the quality assurance requirements relative to the outlet SO_2 CEMS. This language was placed in Section II.D of the permit.

MAQP #2635-04 was a modification issued on August 1, 1994, to clarify language in a previous permit analysis. Specifically, in the discussion on MAQP #2635-02, language was deleted, which indicated that process gas streams would not be vented to the atmosphere. Originally, it was planned to vent internally the off-gas from the acid de-mister associated with the base metal refinery. However, due to its high moisture content, it was later determined these off-gases should be vented to the atmosphere. This does not change the original determination that there would be no measurable increase in air pollutant emissions associated with the base metal refinery.

MAQP #2635-05 was issued on March 24, 1995. The permit was a modification to allow the processing of spent platinum and palladium catalyst (PGM in a ceramic matrix). This material was considered within the concentrate throughput limitation so there would be no increase in allowable emissions.

MAQP #2635-06 was issued final on August 5, 1998. The application proposed a second smelting circuit essentially the same as the existing smelter, but with an increased capacity of 100 tons per day of concentrate and/or PGM catalyst. Stillwater installed similar particulate and SO_2 control measures, already demonstrated at the existing smelter.

In addition to the changes discussed above, increased refinement steps for copper and nickel, and an analytical laboratory were proposed at the base metals refinery circuit. The Department determined these changes did not require a permit pursuant to the Administrative Rules of Montana (ARM) 17.8.705 (currently ARM 17.8.745).

The second smelting circuit resulted in an increase in emissions in tons per year (tpy) of 73.4, 62.7, 62.6, 6.3, and 1.6 of SO_2, particulate matter (PM), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), oxides of nitrogen (NO_x), and carbon monoxide (CO), respectively. Total allowable emissions from the facility, including both Smelting Circuit #1 and #2, were approximately 96.2, 86.9, 85.9, 8.14, and 1.94 tpy of SO_2, PM, PM_{10}, NO_x, and CO, respectively.

The facility is not subject to the New Source Review - Prevention of Significant Deterioration (PSD) permitting program because Stillwater included federally enforceable limits in the permit reducing potential emissions below the PSD permitting threshold. Similarly, the facility accepted federally enforceable limits keeping permitted potential emissions below the Title V major source threshold. MAQP #2635-06 included annual emission limits, an operational limit, and reporting requirements to verify that the facility's emissions are less than 100 tpy of SO_2.

For the purpose of demonstrating compliance with the National Ambient Air Quality Standards (NAAQS) 3-hour SO_2 limit and the Montana Ambient Air Quality Standards (MAAQS) 1-hour SO_2 limit, Stillwater permitted SO_2 limits of 86 lbs/hr on smelting circuit #1 and 235 lbs/hr on smelting circuit #2. In addition, the proposed 24-hour rolling average hourly emission rates of 24 lbs/hr of SO_2 for smelting circuit #1 and 50 pounds per hour of SO_2 for smelting circuit #2 demonstrated compliance with NAAQS and MAAQS. Therefore, these emission limits were incorporated into the permit.

Further, Stillwater proposed CEMS on the main stack of the #2 Smelting Circuit. The Department determined, at the time, CEMS were appropriate to demonstrate compliance with SO_2 emission limits on the main stacks for both smelting circuits.

Finally, the Department received a request from Stillwater to increase the throughput limitation on Smelting Circuit #1 from 10,950 to 11,500 tpy. The Department agreed to increase Smelting Circuit #1's limitation. The SO_2 permitted potential emission rate from the facility is 96.16 tpy. **MAQP #2635-06** replaced MAQP #2635-05.

On July 10, 2000, Stillwater submitted a complete permit application for the installation and operation of a natural gas-fired concentrate dryer in the Smelter and a natural gas-fired nickel-sulfate crystal dryer in the Base Metals Refinery. The concentrate dryer vents through the existing smelting circuit #1 baghouse and increases potential flow through the stack by 6000 acfm (actual cubic feet per minute). Further, the nickel-sulfate crystal dryer in the Base Metals Refinery is utilized as a process application for the capture of product and required installation

of a new 2000 acfm baghouse. Calculations indicating potential emissions from the proposed project are contained in the emission inventory in Section IV of the permit analysis for MAQP #2635-07.

In addition, Stillwater requested that the production limit of 11,500 tpy throughput for smelting circuit #1 and a 37,050 tpy throughput limit for smelting circuit #2, as stated in MAQP #2635-06, be re-stated as a combined throughput production limit of 48,550 tpy through Smelting Circuit #1 and Smelting Circuit #2. The new combined throughput limit was included in Section II.B.1. **MAQP #2635-07** replaced MAQP #2635-06.

On January 22, 2001, the Department received a letter from Stillwater requesting a Department determination on three separate issues regarding operations at the Columbus Smelter facility. These issues included the following:

- A request for removal of the SO_2 CEMS requirement for smelting circuit #1 when only the concentrate dryer is venting through the circuit;

- A request for a de minimis determination for the construction and operation of a new 200 ton capacity dried concentrates silo; and

- A request for a need for permit determination to increase the capacity of the current bin baghouse located within the smelter building.

Under MAQP #2635-07, Stillwater permitted the construction and operation of a concentrate dryer at the smelter facility. Concentrate dryer emissions vent through a baghouse and exit the Smelting Circuit #1 stack. Stillwater anticipates that in most instances the concentrate dryer will be the only source discharging through the Smelting Circuit #1 stack. The permitted SO_2 CEMS requirement for Smelting Circuit #1 was in place for documenting SO_2 emissions during smelting operations that have significant potential process SO_2 emissions. Stillwater demonstrated, to the Department's satisfaction, that concentrate drying activities will not result in significant, if any, SO_2 emissions. Therefore, the Department removed the CEMS requirement from Smelting Circuit #1 during times when the concentrate dryer is the only source venting through the circuit.

Further, as previously cited, Stillwater submitted a de minimis determination involving the construction and operation of a 200 ton capacity dried concentrates silo. The silo utilizes baghouse control. However, because potential uncontrolled emissions from the silo were less than 15 tpy, the Department determined that construction and operation of the silo could be accomplished under the provisions of ARM 17.8.705 (1)(r). The Department added the dried concentrates silo as part of the permit action.

Finally, the bin baghouse vents directly into the smelter building and is utilized as a process/ hygiene control device rather than an emission control device. Because the baghouse vents exclusively to the indoor atmosphere, the Department did not quantify emissions or incorporate these emissions into the air quality permit. **MAQP #2635-08** replaced MAQP #2635-07.

Based on compliance inspection findings in August of 2001, the Department sent Stillwater letters requesting information regarding several emitting units, currently operating at the facility, which are not included in the air quality permit. The Department's letters also indicated that Stillwater was permitted as a synthetic minor source of emissions as defined under the Title V Operating Permit program. Through various correspondences, and a subsequent site visit/inspection in August of 2002, the Department determined that, as permitted under MAQP #2635-08, the total facility Potential to Emit (PTE) for PM_{10} exceeded the Title V Operating Permit PTE threshold of 100 tpy for PM_{10}.

Further, based on the Department's findings, Stillwater sent the Department a request for a permit modification to incorporate federally enforceable permit limits to bring the facility PM_{10} PTE to a level below the Title V Operating Permit threshold for the purpose of maintaining Title V synthetic minor status. Specifically, the modification request proposed new emission limits for both the #1 and #2 Smelting Circuits and identified several emitting units that vent inside the building and are not counted toward the facility's PTE. Further, the request indicated that the flow rate for the Smelting Circuit #2 had increased from 75,000 acfm to 100,000 acfm. Also, the modification request included a demonstration that all of the un-permitted emitting units had been added to the facility in accordance with ARM 17.8.705(1)(r). Finally, Stillwater requested that Gypsum production/material handling and Smelter Slag production/material handling be added to the permit under ARM 17.8.705(1)(r).

The proposed limits brought the total facility PTE to a level below the Title V Operating Permit threshold for PM_{10} allowing Stillwater to remain a Title V synthetic minor source. A total facility emission inventory demonstrating that emissions are less than the Title V Operating Permit threshold for all regulated pollutants was included in Section III of the permit analysis for MAQP #2635-09. Further, the permit action incorporated all existing equipment into the permitted list of equipment at the facility. **MAQP #2635-09** replaced MAQP #2635-08.

On April 16, 2003, the Department received a complete permit application from Stillwater for proposed changes to the permitted facility. The permit action provided for the following changes to the existing permitted facility:

- An increase in the previously proposed and permitted (MAQP #2635-09) operational limits on the production of gypsum and slag and the use of crushed rock to line the slag-pit under the provisions of ARM 17.8.745(1);

- A review and new determination of previous Best Available Control Technology (BACT) determinations requiring fabric filter baghouse control for various bins and silos contained in the smelter building (MAQP #2635-06);

- A permit clarification of required control technology for the concentrate dryer operations at the facility;

- The addition of 2 natural gas-fired dryers to the Laboratory Sample Prep Area under the provisions of ARM 17.8.744(1)(c);

- The replacement of the existing and permitted revert cone crusher with a like-kind revert cone crusher under the provisions of ARM 17.8.745(1); and

- The incorporation of permit language to potentially allow for future off-permit "like-kind" replacement of various equipment to the permitted facility in accordance with ARM 17.8.745(1).

A complete emission inventory, including all proposed changes under the current permit action was contained in Section IV of the permit analysis. Further, the required BACT analysis for the various bins and silos contained within the smelter building was contained in Section V of the permit analysis.

In addition, Stillwater provided the Department with comments on the preliminary determination. Based on the comments received, the Department made various changes to the permit. These changes were summarized in the current permit action discussion in MAQP #2635-10. **MAQP #2635-10** replaced MAQP #2635-09.

On December 9, 2003, Stillwater submitted a letter clarifying an administrative amendment request that had been submitted on November 6, 2003. One purpose of this amendment was to update Sections II.B.2 and 3 of the permit to identify all existing points that are ducted to the Smelting Circuit #1 and #2 air pollution control equipment. The other purpose was to clarify the procedure for handling and updating emission inventory information. The full emission inventory for the facility and corresponding calculations would no longer be included in the analysis section of the permit. Stillwater will submit updated emission inventory information as necessary and this information will be maintained in the company file. **MAQP #2635-11** replaced MAQP #2635-10.

On February 18, 2004, the Department received a request from Stillwater for an administrative amendment to MAQP #2635-11. Specifically, the request involved modifying the catalyst and/or concentrate throughput processing limit in Section II.B.1 of MAQP #2635-11 and modifying the corresponding allowable SO_2 limits contained in Section II.A.3 and II.A.4 of MAQP #2635-11. Section II.A.3 was modified to combine the smelting circuit #1 and smelting circuit #2 SO_2 emission limits. Further, Section II.B.1 was modified to incorporate concentrate and catalyst specific process throughput limits. Finally, the permit action modified the testing requirement in Section II.C.2 to accommodate the combined SO_2 emission limit for Smelting Circuit #1 and Smelting Circuit #2.

In addition, in accordance with ARM 17.8.745 (de minimis rule), Stillwater proposed the addition of 5 new emission sources to the permitted facility including a concentrate/catalyst bagging and unloading system and four 175,000 British Thermal Unit (Btu)/hr space heaters to the new nickel sulfate solution tank and product storage building at the Base Metals Refinery. Because combined potential emissions from these newly proposed emission sources is less than 15 tpy, addition of these units was accomplished in accordance with the de minimis rule. **MAQP #2635-12** replaced MAQP #2635-11.

On June 2, 2004, Stillwater submitted notification to the Department for the installation and operation of a 650 kW diesel-fired emergency/back-up generator at the Base Metals Refinery (BMR Emergency Generator). Based on the information provided in the notification and Department policy regarding the establishment of emergency generator PTE, the BMR Emergency Generator was added to the facility in accordance with the provisions of ARM 17.8.745.

Further, on June 22, 2004, the Department received a request from Stillwater for an AA to MAQP #2635-12 for the purpose of adding an enforceable emergency generator operating limit for all affected units at the facility. The permit action added an operational limit of 500 hours during any rolling 12-month time period for each emergency generator at the Stillwater facility.

On July 28, 2004, Stillwater notified the Department by telephone of additional facility changes that would necessitate an administrative amendment. Stillwater asked the Department to halt issuance of the administrative amendment requested on June 22, 2004, until Stillwater submitted the additional request for further amendments. On August 5, 2004, the Department received the updated request for administrative amendment. The following additional changes were incorporated;

- Removal of the soda ash silo for Smelting Circuit #1 from the facility operations and from the emission inventory;

- Correction of the emission inventory to establish the PTE of the baghouse controlled hydrated lime silo for Smelting Circuit #2; and

- Incorporation of a federally enforceable requirement for baghouse control on the existing Secondary Preparation Building crushing system for the purpose of accommodating future like-kind replacement of this equipment, should it become necessary.

MAQP #2635-13 replaced MAQP #2635-12.

On January 19, 2006, the Department received a request from Stillwater for an administrative amendment to MAQP #2635-13 in accordance with the provisions of ARM 17.8.764. The requested changes included two separate and distinct projects at the Base Metals Refinery and the Precious Metals Smelter (Smelter), respectively. At the Base Metals Refinery, the changes include the addition of permit language allowing for future off-permit like-kind affected equipment replacement and the addition of new equipment under the provisions contained in ARM 17.8.745.

At the Precious Metals Smelter, Stillwater requested the decommissioning and removal of various existing equipment including the Old Furnace, the TBRC, and associated equipment within smelting circuit #1. Removal of this equipment resulted in the cessation of smelting activities in smelting circuit #1 and the following changes to the permit:

- "Smelting circuit #1" reference was changed to "concentrate dryer and revert crushing circuit";

- "Smelting circuit #2" reference was changed to "smelting circuit".

Further, the Department amended the permit to include updated permit language in Section II.D, Monitoring and Reporting Requirements, for affected rolling 12-month reporting requirements. **MAQP #2635-14** replaced MAQP #2635-13

On July 18, 2007; the Department received a complete application from Stillwater for the modification of MAQP #2635-14. Specifically, Stillwater proposed the following changes under the current permit action:

- Installation and operation of a second electric furnace within the Precious Metals Smelter (Smelter);

- Installation and operation of associated bins and material transfer equipment to accommodate operation of the proposed second furnace within the Smelter;

- Control of four existing and previously uncontrolled open-top feed bins within the Smelter for the purpose of capturing and recovering any residual dust which may contain precious metal product. The affected units will be controlled by the existing Smelter emission control equipment; and

- Revision of existing permit language and terminology used in the current permit to accurately reflect the proposed modifications.

This permit modification did not increase allowable emissions of any regulated pollutant from the permitted facility as each new emitting unit is vented through existing and permitted emission control equipment and all existing and affected material throughput limits remained the same under the current permit action. The following changes to MAQP #2635-14 were accomplished under the current permit action:

- Section II.B.1: The "Platinum Group Metal (PGM) Catalyst" throughput reference was renamed the "Precious Metal-Bearing Recyclable Materials" throughput to more accurately reflect Stillwater's recycling activities.

- Section II.B.3: The following seven additional sources were added to the list of sources that are required to be vented through the smelting circuit main stack and associated emission control equipment (baghouse and scrubber): New Furnace Number 2 (including 10 hoods); Original TBRC Slag Bin; Original Recyclable Materials/Reverts/Iron Residue Bin; EF Matte Feed Bins (2); New TBRC Slag Bin; and the New Recyclable Materials/Reverts/Iron Residue Bin. In addition, the "Furnace Number 2" reference was re-named "Original Furnace Number 2", for clarification.

- Section II.D.3: The "PGM Catalyst" throughput reference was renamed the "Precious Metal-Bearing Recyclable Materials" throughput to more accurately reflect Stillwater's recycling activities.

- Section III.D.6: The "slag pit" reference was re-named "slag pits" to account for both slag collection and cooling areas to accommodate both the existing and newly proposed electric furnaces.

Comments on Department's Preliminary Determination (PD) on MAQP #2635-15

On August 27, 2007, the Department received comments from Stillwater on the Department's PD on MAQP #2635-15. Specifically, under the current permit action, Stillwater proposed the control of four existing and previously uncontrolled open-top feed bins within the Smelter for capturing and recovering any residual dust which may contain precious metal product. However, due to scheduling and construction conflicts, Stillwater will not be able to accommodate this proposed change now. Because the affected units constitute existing and previously permitted equipment and the subject control requirement does not constitute BACT, removal

of the requirement to control the affected units can be accomplished through the comment process. Therefore, the Department has modified Section II.B.3 to remove the requirement for control of the subject units.

In addition, Stillwater provided comment on the following updates/administrative errors contained in the Department's PD on MAQP #2635-15:

- *MAQP #2635-15, Section II.D.3.* The "PGM Catalyst" reference should be re-named "precious metal-bearing recyclable material", to be consistent with the current permit action.

- *Permit Analysis, Section I.A.* The "Concentrate Dryer (30 ton)" emitting unit should be identified as "Concentrate Dryer".

- *Permit Analysis, Section I.A.* The "Refinery Emergency Generator" should be removed as the "BMR Emergency Generator" replaced this unit in 2004.

- *Permit Analysis, Section I.A.* The "Steam Generator (15 MMBtu/hr)" is the same unit as the "New Natural Gas Fired Boiler (15 MMBtu/hr)".

- *Permit Analysis, Section I.A.* The "Fire Assay Area Fume Hoods (6)" should identify 13 hoods vented through the Fire Assay Area Baghouse.

- *Permit Analysis, Section I.A.* The "Sample Preparation Dryer #1" emitting unit vents to a stack and not inside the building.

- *Permit Analysis, Section I.A.* The "Sample Preparation Dryer #2" emitting unit vents to a stack and not inside the building.

- *Permit Analysis, Section I.A.* The "Sample Preparation Area Fume Hoods (4)" should identify 9 hoods vented through the Sample Preparation Area Baghouse.

- *Permit Analysis, Section I.A.* The "Dust Bin" emitting unit vents to an indoor stack.

- *Permit Analysis, Section I.A.* The "Secondaries/Iron Residue Bin" emitting unit should be re-named "Recyclable Materials/Reverts/Iron Residue Bin" to be consistent with the current permit action.

- *Permit Analysis, Section I.A.* The "EF Matte Bin" emitting unit should identify 2 bins within the smelting circuit.

- *Permit Analysis, Section I.A.* The "Circular Refinery Building Heater" should be removed as it has been physically removed from the facility.

- *Permit Analysis, Section I.A.* The "Secondary Preparation Building" emitting unit should be changed to the "Secondary Preparation Building Baghouse" to more accurately identify the control system.

- *Permit Analysis, Section I.A.* The "Refinery Laboratory Scrubbers (2)" emitting unit should identify 3 scrubbers.

The preceding list of administrative changes/updates has been made to the permit prior to issuance of the Department's decision. **MAQP #2635-15** replaced MAQP #2635-14.

On January 1, 2012 the Department issued an administrate amendment for Stillwater's MAQP to incorporate multiple de minimis notifications. Identification and description of improvements and/or additions to the Columbus Metallurgical Complex addressed within that action are as follows;

On August 30, 2007, Stillwater submitted a de minimis notice to add four (4) new 100,000 Btu/hr forced air natural gas-fired heaters to the complex's office building.

On October 17, 2007, Stillwater submitted a de minimis notice for the following adjustments and/or installations undertaken in the analytical laboratory. The proposed changes did not result in an increase in emissions.

- Two (2) additional cooling hoods were installed near the fire assay furnaces to remove radiant heat from fired crucibles/cupels. The hoods were ducted to the existing Fire Assay Area Baghouse;

- One (1) additional slagging hood was installed near the fusion furnace to remove radiant heat from fused samples. The hood was ducted to the existing Fire Assay Area Baghouse;

- Four digestion hoods were initially proposed with the installation of the Aqua Regia Acid Mist Scrubber; however, Stillwater modified this process to include Two (2) digestion hoods and one (1) microwave digestion manifold exhaust - venting three microwaves. The digestion hoods and microwave digestion manifold were vented to the Aqua Regia Acid Mist Scrubber to remove acid gas emissions; and

- Additional hygiene filter, including two (2) collection hood, fan, and carbon filter, were installed to the wet lab area of the recent lab expansion, to capture and remove residual acid fumes.

On June 6, 2008, Stillwater submitted correspondence for the following projects and/or adjustments undertaken at the Precious Metals Smelter;

- A new crushing system was installed to size, sample, and prepare precious metal-bearing recyclable materials for feed to the smelter furnace;

- Stillwater requested clarification of the feed point for introducing precious metal-bearing recyclable material to the smelter; and

- A new process feed transfer bin and vacuum exhauster was installed to redirect feed materials from the existing furnace feed system to the second furnace feed system.

On October 14, 2008, Stillwater submitted a de minimis notice to add four (4) emissions sources to the Base Metals Refinery and two (2) emission sources to the analytical laboratory as follows;

- Two (2) forced air natural gas-fired heaters were installed for the base metal refinery maintenance area. Maximum rating heat capacity of the units are 40,000 and 60,000 Btu/hr;

- A single 40,000 Btu/hr natural gas-fired hot water heater was installed to service the base metal refinery maintenance area;

- Stillwater undertook changes to the method of handling TBRC Matte produced by the precious metals smelter, whereby, the TBRC Matte is placed into supersacks for storage prior to use in the base metal refinery;

- A new inductively Coupled Plasma analyzer was installed within the laboratory; and

- A new cooling/fume hood was installed to control acid emissions from the auto-dilutor sampler. The hood collects and duct acid fumes emitted from cooling samples to Aqua Regia Acid Mist Scrubber.

On April 9, 2009, Stillwater submitted a de minimis notice to install two (2) natural gas-fired heating, ventilation, and air-conditioning (HVAC) units of 250,000 and 80,000 Btu/hr capacity in the furnace (#2) transformer room and two (2) 150,000 Btu/hr natural gas-fired space heater in the TBRC Reline Building.

On May 20, 2009, Stillwater submitted a de minimis notification for the following equipment additions and/or upgrades to the analytical laboratory;

- Installed One (1) "V-Blender" for closed cup blending of solid product samples;

- Installed Two (2) "Specs 8000 Mixer/Mill" for closed cup mixing of solid product samples;

- Installed One (1) "Sepor Blender" for blending of internal reference materials;

- Installed One (1) dust hood in the recycle preparation area for sample preparation activities;

- Installed Two (2) small electric drying ovens for drying solid product samples;

- Relocated the previously permitted vibratory ring pulverizer from the sample preparation area to the recycle preparation area;

- Relocated the previously permitted sample pellet press from the low-grade pellet room to the recycle preparation area; and

- Relocated the previously permitted electric drying oven for use with acetone prepared samples from the high digestion area to the recycle preparation area.

On September 9, 2009, Stillwater submitted correspondence to add the following new emissions sources and/or activities;

- Initiated the use of metallurgical coke as a supplemental feed material which is added to the Precious Metals Smelter furnace to increase metal recovery efficiencies; and

- Installed two (2) new pellet presses within the analytical laboratory.

On February 5, 2010, Stillwater submitted correspondence for the following improvements and/or additions undertaken at the Columbus Metallurgical complex;

- Installed the New Precious Metal-Bearing Recyclable Material Crushing system;

- Relocated the existing Revert Crushing area to the Secondary Preparation Building;

- Installed a new drum dumping system to feed recyclable materials, collected from the new crushing system, to the permitted 2-point Rotating Tube Sampler for representative sample preparation;

- Installed a new Recyclable Material Transfer Room to control and capture particulate emissions from operating and cleaning the permitted 3-Point Rotating Tube Sampler and both 12-Point Rotating Table Samplers;

- Installed two (2) natural gas radiant heaters within the old Smelting Circuit #1 building and four (4) natural gas radiant heaters within the new Recyclable material Receiving Area/Warehouse;

- Installed an automated sample preparation and X-Ray analysis system within the old Smelting Circuit #1 area to reduce turnaround times for recyclable material analysis;

- Vented the Low-Grade Sample Preparation Area pellet press (currently permitted for use in the Analytical Laboratory) through the lab's existing Sample Preparation Area Baghouse;

- Installed a Ro-Tap sieve shaker system within the High-Grade Standard Preparation Area of the Analytical laboratory;

- Installed sample preparation equipment for daily Smelter samples submitted to SMC's Analytical laboratory;

- Installed a small, electric test furnace at the Smelter for bench scale testing and research;

- Replaced the existing, propane-fired Co-Ray-Vac Heating System currently permitted within the Smelter's Maintenance Shop with two (2) natural gas space heaters; and

- Installed four (4) new GenSys fuel cells at the Base Metals Refinery for supplemental power needs.

On July 27, 2010, Stillwater submitted a de minimis notice for the following process improvements and new emission sources;

- Installed three (3) new Trane combination heaters/air-conditioning units for the Precious Metals Smelter's automated sample preparation and X-Ray analysis area/building;

- Usage of silica sand cleaning media within the Smelter's new sample pulverizers (part of the automated sample preparation and X-Ray analysis system);

- Ventilation of the permitted spoon dosing station through the larger sample preparation equipment baghouse installed as part of the automated sample preparation and X-Ray analysis system;

- Installed a ventilated a cup cleaning station within the automated sample preparation and X-Ray analysis system;

- Installed One (1) new recyclable material mixer/blender for precious metal filter cake blending at the Smelter;
- Installed a new pneumatic conveyor, process transfer bin (inline dust collector), and vacuum exhauster within the Base Metals Refinery Security Area to reduce ergonomic issues associated with the current PGM Filter Cake handling process;

- Installed one (1) new vibratory ring pulverizer in the recycle preparation area of the Analytical Laboratory; and

- Relocated the previously permitted sample pellet press within the Lab's recycle area to the concentrate preparation area (also within the Lab).

On November 16, 2010, Stillwater notified the Department of a like-kind replacement of the baghouse servicing the Precious Metal Smelter's 200 Ton Dried Concentrates Silo.

On February 21, 2011, Stillwater notified the Department of plans to relocate three (3) existing sources;

- One (1) bagging and unloading station for emptying full supersacks of concentrate or catalyst material was relocated to the old Revert Crushing Area for tie-in with the new Precious Metal-Bearing Recyclable Material Crushing System;

- Relocated one (1) TM vibratory ring pulverizer from the Recycle Preparation Area to the Sample Preparation Area. Ventilation of the unit relocated to the Sample Preparation Baghouse; and

- Relocated a sample pellet press from the Concentrate Preparation Area to the Recyclable Preparation Area, Ventilation of the unit relocated to the Sample Preparation Baghouse; and

On July 7, 2011, Stillwater notified the Department of two proposed changes to the facility's operations;

- Like-kind replacement of the baghouse servicing the Precious Metal Smelter's Concentrate Dryer. The replacement did not affect the Metallurgical Complex Emission Inventory; and

- Added a second slag hole and slag launder to the Smelter's Original Furnace Number 2—the back-up (critical spare) and slag cleaning furnace was previously permitted under MAQP #2635-15.

On September 27, 2011, Stillwater submitted a de minimis notice for the following new emission units and associated equipment changes;

- Replaced an existing combination heater/air conditioning unit with two (2) new natural gas-fired units servicing the Smelting Circuit Motor control center;

- Replaced two (2) existing propane-fired space heaters in the Revert Crushing Building with two (2) new natural gas-fired space heaters of the same combustion rates;

- Installed one (1) new LECO C-230 Analyzer in the Automated Sample Preparation Area of the Precious Metals Smelter;

- Installed one (1) new Inductively Coupled Plasma analyzer within the Analytical Laboratory; and

- Updated the forced air heaters servicing the Base Metals refinery Maintenance Shop expansion area (initially proposed through a de minimis notification dated October 14, 2008).

In addition to the aforementioned change the emission inventory was updated as well as, permit language and rule references used by the Department. MAQP **#2635-16** replaced MAQP #2635-15.

Stillwater requested an administrative amendment of the MAQP to incorporate multiple operation change notifications proposed to the Department. Identification and description of improvements, additions, and decommissioning activities which occurred at the Columbus Metallurgical Complex are provided below.

On May 2, 2012, the Department received a de minimis notification which proposed the following changes;

- Replacement of the existing cone crusher with a new vertical impact crusher and installation of a vibrating screen and two associated conveyors in the Revert Crushing Area. The vibrating screen and conveyors have been fully enclosed and ventilated to the existing Revert Crushing Area/Building Baghouse.

- Replacement of the pneumatic feed transfer bin and vacuum exhauster with an enclosed screw conveyor and bucket elevator to transfer furnace feed material from the Original Furnace #2 airslide to the New Furnace #2 airslide. The pneumatic feed system has been fully enclosed using air-tight connections.

- Relocation of the Process Transfer Bin and Vacuum Exhauster, previously servicing the smelter furnaces, to the Process and Secondary Baghouse hopper. Unit was identified as the Process/Secondary Dust Return and Vacuum Exhauster. The Secondary Baghouse captures precious metal-bearing dust from smelter off-gases for return to the furnace.

- Installation of a new hygiene baghouse and vacuum exhauster, identified as the Central Vacuum System, within the smelter area to enhance housekeeping and recovery of precious metal-bearing dust. The baghouse vents inside the smelter area while the baghouse hopper was hard-piped to the Process/Secondary Dust Return and Vacuum Exhauster.

- Replacement of the tubular drag conveyor off the TEMA sampler (Precious Metal-bearing Recyclable Material Crushing System) with a bucket elevator conveyance system.

- Installation of an exhaust system on the 2-Point Rotating Tube Sampler and Drum Dumping System within the Recycling Area to ventilate precious metal-bearing dust to the North Baghouse. Additionally, SMC requested that the air quality permit be updated to identify the permitted unit as the PK1000 Rotating Tube Sampler.

- Relocation of one of the 8-Point Samplers within the Recyclable Material Sample Preparation Room to the old Revert Crushing Area. The relocated sampler was ventilated through ductwork servicing the Recyclable Material Transfer Area/Enclosure. No emission increase occurred because of this relocation.

- Removal of the baghouse supporting the Concentrate/Catalyst Unloading System due to equipment deterioration. The Unloading System was fully enclosed and air-tight.

On September 21, 2012, the Department received notification from Stillwater indicating that the Hydrated Lime Silo which supports the Old Smelting Circuit #1 was officially decommissioned. Decommissioning activities consisted of removal of electric wiring, freeing the silo base from anchor bolts, and placing the silo horizontally on the ground. Reference to the Hydrated Lime Silo (Old Smelting Circuit) was removed from the permit conditions section and emission inventory.

The Department reviewed the notifications submitted by Stillwater and supported the assertion that the proposed changes or additions met the definition of de minimis. This permit also updated current permit language and rule references used by the Department. MAQP **#2635-17** replaced MAQP #2635-16.

On April 6, 2018, the Department received a complete application from Stillwater to update concentrate and recycle throughput limits. The smelter anticipated an increase in the processing of mine concentrates and precious metals recyclable materials. The requested increase in throughput allowed for operational flexibility at the smelter.

The updated throughput limits were based on updated average sulfur content of the process streams. The mine concentrate contains 8% sulfur and the precious metals recyclable material contains 1% sulfur. In previous emissions estimates, the sulfur content was 11% and 2% for the mine concentrate and precious metals recyclable material, respectively. Using the updated sulfur content for the material processed, the increase in SO_2 emissions from the smelting circuit was 10.0 tpy. Section II.E.1 of the permit required continuous compliance with the SO_2 emissions listed in Section II.A.7 to be demonstrated via SO_2 CEMS. This requirement was still in place, so no additional sulfur limitations were necessary to make the emissions increase practically/federally enforceable. Also of note is that the short-term emissions requirements found in Section II.A.7(a) and (b) did not change. These short-term limits were based on the worst-case scrubber operation, which the Department and Stillwater believed were still achievable despite the increase in production. The annual emissions limitation for sulfur dioxide (SO_2) from the smelting circuit was updated to reflect the additional concentrate and recycle throughput.

Stillwater's Columbus Metallurgical Complex is classified as a synthetic minor source with respect to ARM 17.8, Subchapter 12. The updated throughput limits did not change this classification as overall emissions remained below 100 tpy per pollutant. No new or modified equipment were included as part of this project.

This modification made the requested changes as well as updated current permit language and rule references used by the Department. **MAQP #2635-18** replaced MAQP #2635-17.

D. Current Permit Action

On May 31, 2019, the Department received a complete application from Stillwater to construct and operate a new concentrate drying, blending and handling process (referred to as the Concentrate Handling Project), which will be enclosed in a new building onsite at the Columbus Metallurgical Complex. The Concentrate Handling Project would provide more capacity and process flexibility. Additionally, Stillwater has requested approval for the addition of a natural gas-fired infrared pre-heater for the existing concentrate handling process and a new recycle process baghouse for the existing recycle handling process. Some of the permitted emissions points that currently report to the North Baghouse will now report to the new baghouse, such as the Recyclable Material Sampler Preparation Room, 8-Point Sampler, PK100 Rotating Tube Sampler, Drum Dumper and the Recyclable Material Transfer Area/Enclosure. The additional baghouse will provide operational flexibility by not having to rely on the North Baghouse when maintenance is being performed.

Stillwater's Columbus Metallurgical Complex is classified as a synthetic minor source with respect to ARM 17.8, Subchapter 12. The requested changes would increase potential particulate matter emissions but would not exceed 100 tons per year, so the synthetic minor status would be maintained. This modification makes the requested changes as well as updates current permit language and rule references used by the Department. **MAQP #2635-19** replaces MAQP #2635-18.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations, or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary, using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   Stillwater shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide (SO_2)
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide (CO)
5. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter (PM)
6. ARM 17.8.221 Ambient Air Quality Standard for Visibility
7. ARM 17.8.222 Ambient Air Quality Standard for Lead
8. ARM 17.8.223 Ambient Air Quality Standard for Particulate Matter with an Aerodynamic Diameter of Ten Microns or Less (PM_{10})

Stillwater must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precaution are taken to control emissions of airborne PM. (2) Under this rule, Stillwater shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne PM.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere PM caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel.
This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this section.

6. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 Code of Federal Regulations (CFR) 60, Standards of Performance for New Stationary Sources (NSPS). Stillwater is considered an NSPS-affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

   a. 40 CFR 60, Subpart A - General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below;

b. 40 CFR 60, Subpart P - Standards of Performance for Primary Copper Smelters relating to the CEMS have been incorporated into the permit. However, Subpart P is not directly applicable to this facility as it does not meet the definition of a primary copper smelter. Stillwater's smelter is sized and designed to process PGM and produces copper only as a by-product.

c. 40 CFR 60, Subpart LL - Standards of Performance for Metallic Mineral Processing Plants. The facility is applicable to Subpart LL as the facility meets the definition of a metallic mineral processing plant and was constructed after August 24, 1982. The facility is subject to PM and opacity emission standards and monitoring requirements on the scrubber. Further, the facility is subject to NSPS PM limits for the concentrate dryer, the dried concentrates silo, the vibrating fluid bed dryer and associated silos and material handling and the process recycle baghouse.

d. 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. The 15 million British Thermal Units per hour (MMBtu/hr) BMR natural gas-fired boiler is an affected facility under Subpart Dc, as the boiler was constructed after June 9, 1989 and has a maximum design heat input capacity equal to or greater than 2.9 megawatts (MW) [10 MMBtu/hr] but less than 29 MW [100 MMBtu/hr].

7. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below;

a. 40 CFR 63, Subpart A - General provisions apply to all equipment or facilities subject to an NESHAP Subpart as listed below;

b. 40 CFR 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources. The boilers operating at Stillwater are natural gas-fired units and are therefore not subject to the provisions of Subpart JJJJJJ. However, this regulation may become applicable if Stillwater modifies or replaces the current natural gas-fired boilers with units that burn fuels other than natural gas.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Stillwater submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a facility to obtain an air quality permit or permit modification if they construct, modify or use any air contaminant sources that have a potential to emit (PTE) greater than 25 tpy of any pollutant. Stillwater has a PTE greater than 25 tons per year of PM, PM_{10}, SO_2, CO and oxides of nitrogen (NO_x); therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Stillwater submitted the required permit application for the current action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Stillwater submitted an affidavit of publication of public notice for the May 30, 2019 issue of the *Stillwater County News* in Stillwater County, as proof of compliance with the public notice requirements.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. A BACT determination was made for the proposed project, a summary of the BACT determination is contained in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Stillwater of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745(1) for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

   This facility is not a major stationary source since this facility is not a listed source and the facility's PTE is less than 250 tpy of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

   a. PTE > 100 tpy of any pollutant;

   b. PTE > 10 tpy of any one Hazardous Air Pollutant (HAP), or PTE > 25 tpy of any combination of HAPs, or lesser quantity as the Department may establish by rule; or

   c. PTE > 70 tpy of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #2635-19 for Stillwater, the following conclusions were made:

   a. The facility's allowable PTE as permitted is less than 100 tpy for all pollutant;

   b. The facility's PTE is less than 10 tpy for any one HAP and less than 25 tpy for combined HAPs;

   c. This source is not located in a serious PM_{10} nonattainment area;

   d. This facility is subject to a current NSPS (40 CFR 60, Subpart A, Subpart LL, and Subpart Dc);

   e. This facility is not subject to a current NESHAP;

   f. This source is not a Title IV affected source, or a solid waste combustion unit;

g. This source is not an EPA designated Title V source.

h. ARM 17.8.1204(3). The Department may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations that limit the source's PTE.

i. In applying for an exemption under this section, the owner or operator of the source shall certify to the Department that the source's PTE does not require the source to obtain an air quality operating permit.

ii. Any source that obtains a federally enforceable limit on PTE shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

Stillwater's MAQP #2635-19 includes federally enforceable conditions limiting emissions to less than the Title V Operating Permit threshold. Therefore, the facility is considered a synthetic minor source of emissions, as defined under the Title V Operating Permit Program, and is not required to obtain a Title V Operating Permit. The Department determined that the annual reporting requirements contained in the permit are sufficient to monitor this requirement.

3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness. The compliance certification submittal required by ARM 17.8.1204(3) shall contain certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this subchapter shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Based on these facts, the Department determined that Stillwater will be a minor source of emissions as defined under Title V. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, Stillwater will be required obtain a Title V Operating permit.

III. BACT Determination

A BACT determination is required for each new or modified source. Stillwater shall install on the new or modified source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

BACT for Vibratory Fluid Dryer - PM

Stillwater proposes to utilize a vibratory fluid dryer with a maximum heating capacity of 10 MMBtu/hr and a maximum material throughput rate of 16.9 tons/hr. Because of the low level of potential emissions from natural gas combustion, gaseous emissions are not considered further.

Step 1 – Identify All Available PM Control Technologies

Table 1 lists and briefly describes available technologies for controlling particulate emissions from similar dryers used in mineral processing industries.

Table 1: Available Dryer Particulate Control Technologies

Technology	Description
No Add-on Control	This is the base case for the proposed source.
Fabric Filter (Baghouse)	Baghouses direct particulate-laden exhaust through tightly woven or felted fabric that traps particulate by sieving and other mechanisms. Collection efficiency pressure drop simultaneously increases as a particulate layer collects on the filter. Filters are intermittently cleaned by shaking the bag, pulsing air through the bag, or temporarily reversing the airflow direction.
Electrostatic Precipitator (ESP)	An ESP uses electrical forces to move entrained particles onto a collection surface. To remove dust cake from the collection surface, the collection surface is periodically "rapped" by a variety of means to dislocate the particulate, which drops down into a hopper.
Wet Particulate Scrubber	Wet scrubbers typically use water to impact, intercept, or diffuse a particulate in an exhaust gas stream. Particulate matter is accelerated and impacted onto a solid surface or into a liquid droplet through devices such as a venturi and spray chamber. Wet slurry material is typically stored in an on-site waste impoundment.
Cyclone	A cyclone acts as an inertial separator which is very effective at separating the coarse material from a gas stream. A cyclone has a lower collection efficiency for smaller diameter particles.

Step 2 - Eliminate Technically Infeasible Options

All of these control technologies are considered technically feasible.

Step 3 - Rank Remaining Options by Control Effectiveness

Table 2 lists the PM control technologies and expected emission reductions.

Table 2: Control Technology Effectiveness Estimates Technology Control

Technology	Control Efficiency	Ranking
Baghouse Control	99%	1
ESP	99%	2
Wet Particulate Scrubber	98%	3
Cyclone	90%	4
No Add-on Control	Base case	5

Step 4 - Evaluate Most Effective Controls and Document Results

Stillwater proposes to install the top ranked control technology, the use of a baghouse in addition to a pre-baghouse process-control cyclone, to control particulate emissions from the vibratory fluid dryer. This is the highest rated control option available and no further analysis is required.

Step 5 - Select BACT

As mentioned above, Stillwater proposes to install a baghouse to control particulate emissions from the vibratory fluid dryer. Stillwater proposes this technology in conjunction with the applicable PM limit of 0.022 gr/dscf from 40 CFR 60, Subpart LL. The Department agrees that Stillwater's proposed control and PM limit is BACT for the vibratory fluid dryer.

BACT for Material Handling, Transfer, and Storage – PM

Trucks will unload high moisture (11%-15%) concentrate from the truck dump into the dump pit or concentrate storage/stockpile by a front-end loader or skid steer. Concentrate from the dump pit or storage/stockpile would be loaded into a storage bin where it would be conveyed to the dryer via an enclosed weigh belt feeder. The other handling/processing steps mix dried concentrate and move it back to storage or the furnaces in the existing parts of the concentrate handling at the Columbus Metallurgical Complex. All of these activities take place within buildings. These emission sources will be controlled in several ways: inherent moisture in the concentrate, building enclosures, baghouse/dust collector control, and enclosed conveyors and drop points.

Step 1 - Identify All Control Options

Table 3 lists and briefly describes available technologies for controlling particulate emissions from material handling, transfer, and storage.

Table 5-3: Available Material Handling, Transfer, and Storage Particulate Control Technologies

Technology	Description
No Add-on Control	This is the base case for proposed new sources
Best Operational Practices (BOPs)	BOPs include a variety of techniques such as reducing transfer point drop heights.
Enclosure	Enclosure technology employs structures or underground placement to shelter material from wind entrainment. Enclosures can either fully or partially surround the source.
Wet Dust Suppression Including Retained or Inherent Moisture	Fogging water spray adds water, with or without surfactant, to material. Emissions are reduced through agglomerate formation by combining small dust particles with larger aggregate or with liquid droplets. Moisture retained from water sprays upstream in the process or moisture inherent in the material provides a similar emission-reducing effect.
Electrostatic Precipitator (ESP)	An ESP uses electrical forces to move entrained particles onto a collection surface. To remove dust cake from the collection surface, the collection surface is periodically "rapped" by a variety of means to dislocate the particulate, which drops down into a hopper.
Wet Particulate Scrubber	Wet scrubbers typically use water to impact, intercept, or diffuse a particulate in a waste gas stream. Particulate matter is accelerated and impacted onto a solid surface or into a liquid droplet through devices such as a venturi and spray chamber. Wet slurry material is typically stored in an on-site waste impoundment.

Technology	Description
Fabric Filter (Baghouse/Dust Collectors)	Baghouses direct particulate-laden exhaust through tightly woven or felted fabric that traps particulate by sieving and other mechanisms. Collection efficiency pressure drop simultaneously increases as a particulate layer collects on the filter. Filters are intermittently cleaned by shaking the bag, pulsing air through the bag, or temporarily reversing the airflow direction.

Step 2 - Eliminate Technically Infeasible Options

An important requirement of any pollution control measures at the Columbus Metallurgical Complex is the ability to use those measures as process controls and to recover product (concentrate or recycle) from them. ESPs and wet scrubbers would potentially contaminate or render recovered product unusable, and they are determined to be technically infeasible.

Step 3 - Rank Remaining Options by Control Effectiveness

Table 4 ranks the remaining available alternatives according to their respective potential effectiveness values.

Table 4: Control Technology Effectiveness Estimates Technology Control Efficiency Ranking

Technology	Control Efficiency	Ranking
Baghouse/Dust Collectors Control	99%	1
Enclosure	Up to 97% (varies with degree of enclosure)	2
BOPs	Varies with BOP	3
No Add-on Control	Base case	4

Step 4 – Evaluate Most Effective Controls and Document Results

The material handling processes generally fall into three categories: piles/bulk transport, conveyance/transfer points, and storage bins, which would use a combination of the top three control strategies. Stillwater proposes to use the inherent moisture in the concentrate as a BOP as well as building enclosure for the piles and bulk transport. For conveyance and transfer points, Stillwater proposes to use covered conveyors and chute work for transfer points. Stillwater proposes to install bin vents/dust collectors on the recycle and blended storage bins. Because of the nature/value of the PGM products, product recovery is intrinsic in the process (and pollution control) units. In addition, these processes will be enclosed within a building. The new recycle baghouse will not be reviewed beyond noting that it is already the highest rated control option listed.

Step 5 - Select BACT

As discussed above, Stillwater requests BOPs, enclosures, and bin vent/baghouse/dust collectors on the storage bins. The three-bin vent/dust collectors would also be subject to the 40 CFR 60, Subpart LL limitation of 0.022 gr/dscf, which is being proposed as a BACT limit in conjunction with the technology proposed. The Department agrees that Stillwater's proposed control and PM limit is BACT for material handling, transfer, and storage activities.

BACT for Natural Gas Heaters and Infrared Pre-Heater

The BACT analysis regarding the proposed natural gas heaters (air heaters, building heaters, in-floor heating, and concentrate heating) has been combined to assess BACT for small natural gas-fired heaters. The largest of these units is 1.6 MMBtu/hr with a maximum potential to emit NO_x of 0.65 tons per year. Based on the small size of the heaters and the minimal emissions generated, no add-on control technology would be economically feasible. Emissions of all criteria pollutants will be minimized through the combustion of natural gas and by following good combustion practices for these units.

The combustion of pipeline quality natural gas and following good combustion practices is proposed as BACT for all the natural gas heaters associated with this project. The proposed BACT conforms to previous BACT determinations made by the Department for similar sized natural gas heaters. The Department has determined that the combustion of pipeline quality natural gas and following good combustion practices constitutes BACT for the natural gas heaters and the infrared pre-heater.

IV. Emission Inventory

Potential To Emit (PTE)	**tons/yr**					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
SMELTER						
Concentrate Drying Circuit PM_{10} Emissions	0.00	6.93	0.00	0.00	0.00	0.00
[9] Concentrate Drying Circuit SO_2 Emissions	NA	NA	NA	NA	NA	NA
[3] 30-Ton Wet Concentrate Dryer Feed Hopper	0.030	0.012	0.00	0.00	0.00	0.00
[1] Concentrate Dryer Process PM_{10} Emissions	NA	NA	NA	NA	NA	NA
Natural Gas Use: Concentrate Dryer	0.22	0.22	0.02	2.95	2.48	0.16
Dried Concentrates Silo (200-Ton)	2.21	2.21	0.00	0.00	0.00	0.00
[3] Dust Collection Supersack, North Baghouse (#1)	0.00022	0.00011	0.00	0.00	0.00	0.00
Smelting Circuit Process PM_{10} Emissions	0.00	33.04	0.00	0.00	0.00	0.00
[9] Smelting Circuit Process SO_2 Emissions (combined)	0.00	0.00	85.68	0.00	0.00	0.00
Smelting Circuit Natural Gas Use Emissions	0.00	0.00	2.70	4.50	3.78	0.25
Hydrated Lime Silo (Smelting Circuit)	0.34	0.34	0.03	0.00	0.00	0.00
[7] Limestone Flux Bin (Smelting Circuit)	0.83	0.83	0.00	NA	NA	NA
[3] Dust Bin (Smelting Circuit)	0.11	0.11	0.00	0.00	0.00	0.00
[3] 40-Ton Dried Concentrates Bin (Smelting Circuit)	0.00	0.00	0.00	0.00	0.00	0.00
[3] Original Recyclable Materials/Reverts/Iron Residue Bin (Smelting Circuit)	0.38	0.38	0.00	0.00	0.00	0.00
[3] Original TBRC Slag Bin (Smelting Circuit)	0.05	0.02	0.00	0.00	0.00	0.00
[2] Original Electric Furnace #2 Emissions (Smelting Circuit) -- EF Process Off-Gases -- EF Slag Hoods (2) for one slagging hole -- EF North Tapping Hood -- EF South Tapping Hood -- EF Matte Ladle Hood	0.090	0.045	NA	NA	NA	NA
[2] Granulator Tipping Station Hood (Smelting Circuit)	NA	NA	NA	NA	NA	NA
[2] TBRC 2-1	NA	NA	NA	NA	NA	NA
[2] TBRC 2-2	NA	NA	NA	NA	NA	NA
[2] TBRC 2-3	NA	NA	NA	NA	NA	NA
[2] EF Matte/TBRC Slag Dryer (Smelting Circuit)	NA	NA	NA	NA	NA	NA
[2] TBRC Matte Dryer (Smelting Circuit)	NA	NA	NA	NA	NA	NA
[3] Pebble Lime Feed Systems (Smelting Circuit) [2]	0.24	0.12	0.00	0.00	0.00	0.00

Potential To Emit (PTE)	tons/yr					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
[3] EF Matte Bins (Smelting Circuit) [2]	0.09	0.05	0.00	0.00	0.00	0.00
[3] Dried EF Matte Collection Garbros (Smelting Circuit)	0.07	0.033	0.00	0.00	0.00	0.00
[3] Dried TBRC Slag Collection Garbros (Smelting Circuit)	0.09	0.045	0.00	0.00	0.00	0.00
[3] Dried TBRC Matte Collection Bin (Smelting Circuit)	0.02	0.011	0.00	0.00	0.00	0.00
[5] Granulator	NA	NA	NA	NA	NA	NA
[3] Revert Crushing Area/Building Baghouse (Old Secondary Prep. Building) -- Jaw Crusher -- Vertical Impact Crusher -- Conveyor Belts (2) -- Vibrating Screen -- Five Transfer Points	1.49	1.49	0.00	0.00	0.00	0.00
[3] Cone Crusher (Old Revert Crushing Area)	0.024	0.0014	0.00	0.00	0.00	0.00
Arrestal Dust Collector (Revert Crushing Building) -- Small Jaw Crusher for Smelter Daily Samples -- Enclosed Bowl Pulverizer for Smelter Daily Samples -- Sample Prep. Bench	0.009	0.009	0.00	0.00	0.00	0.00
Waste Ore Dump and Handling (Slag Pit Liner)	4.80	2.40	0.00	0.00	0.00	0.00
Smelter Slag Material Transfer	7.20	3.60	0.00	0.00	0.00	0.00
Gypsum Dumping and Loading	3.00	1.50	0.00	0.00	0.00	0.00
Smelter Diesel Fired Emergency Generator #1 (800 kW)	0.19	0.19	2.17	6.44	1.48	0.19
Smelter Diesel Fired Emergency Generator #2 (600 kW)	0.14	0.14	1.63	4.83	1.11	0.14
Moffit Indoor Smelter Building Heaters [2]	0.32	0.32	0.03	4.20	3.53	0.23
Reznor Make-Up Air Heater (Concentrate Drying Area)	0.10	0.10	0.0999	1.31	1.10	0.072
[5] Small Electric Drying Oven (Revert Crushing Area)	NA	NA	NA	NA	NA	NA
[5] Large Electric Drying Oven (Recyclable Material Sample Prep. Room)	NA	NA	NA	NA	NA	NA
[5] X-Large Electric Drying Oven (Concentrate Drying Area)	NA	NA	NA	NA	NA	NA
Dayton Overhead Space Heater (Compressor Room)	0.0053	0.0053	0.0004	0.066	0.059	0.0039
Reznor Overhead Space Heater (Lime Room)	0.0053	0.0053	0.00026	0.07	0.059	0.0039
[3] Dayton Overhead Space Heaters [11] -- Larox Filter Area (2) -- Scrubber Area (6) -- Granulation Room (3)	0.0033	0.0033	0.0003	0.043	0.036	0.0024
Dayton Overhead Space Heaters (Revert Crushing Building) [2]	0.0166	0.0166	0.0013	0.219	0.184	0.012
N. G. Water Heaters (AO Smith, Master-Fit) [2] -- Hot Well Area	0.033	0.033	0.0026	0.44	0.37	0.024
-- Larox Filter Area						
N. G. Water Heaters (Rheem by Ruud, Commercial) [2] -- West Heater for the Dry Area -- East Heater for the Dry Area	0.013	0.013	0.0011	0.18	0.15	0.0096
[3] N. G. Water Heater (Eyewash Area)	0.00067	0.00067	0.00005	0.0088	0.0074	0.00048
[5] Electric Water Heater (Eyewash Area)	NA	NA	NA	NA	NA	NA
Haul Roads	11.22	5.05	0.00	0.00	0.00	0.00
[4] Mobile Gasoline Use	NA	NA	NA	NA	NA	NA
[4] Mobile Diesel Use	NA	NA	NA	NA	NA	NA
Lennox Combination Heater/HVAC [2] -- West Heater/HVAC for Smelter Offices -- Central Heater/HVAC for Smelter Offices	0.012	0.012	0.00095	0.16	0.13	0.0087
Lennox Combination Heater/HVAC - East Heater (Smelter Offices)	0.0025	0.0025	0.0002	0.033	0.028	0.0018
[3] Concentrate/Catalyst Bagging and Unloading System	5.34	2.68	0.00	0.00	0.00	0.00
[3] Dayton Overhead Space Heater (New Granulation Area)	0.0003	0.0003	0.00002	0.0039	0.0033	0.0002

Potential To Emit (PTE)	tons/yr					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Carrier Combination Heater/HVAC (Furnace #1 Transformer Room)	0.0060	0.0060	0.00047	0.0788	0.0662	0.0043
RUUD Combination Heater/HVAC (Smelting Circuit MCC)	0.0119	0.0119	0.00094	0.1559	0.1310	0.0086
Dayton Overhead Space Heater (Old Revert Crushing Area)	0.0083	0.0083	0.00066	0.1095	0.0920	0.0060
[3] Drum Dumping System (Smelting Circuit)	0.0083	0.0041	NA	NA	NA	NA
[3] Miscellaneous Material Screening Station (Revert Crushing Area)	0.0684	0.0342	NA	NA	NA	NA
[1] PK1000 Rotating Tube Sampler & Drum Dump (Old Revert Crushing Area)	NA	NA	NA	NA	NA	NA
[3] 12-Point Rotating Table Sampler (Smelter Material Handling Area)	0.0545	0.0272	NA	NA	NA	NA
Portable Dust Control Vacuum (Old Revert Crushing Area)	NA	NA	NA	NA	NA	NA
[1] Recyclable Material Sample Preparation Room (Old Smelting Circuit #1)	NA	NA	NA	NA	NA	NA
-- Enclosed Bowl Pulverizers (2)						
-- Sieve Shakers/Screens (2) -- 8-Point Sampler -- Work Benches						
Reznor Combination Heater/HVAC (Recyclable Material Sample Prep.)	0.0233	0.0233	0.0018	0.3066	0.2575	0.0169
Ruud Combination Heater/HVAC (Recyclable Material Sample Prep.)	0.0033	0.0033	0.0003	0.0438	0.0368	0.0024
[2] New Electric Furnace #2 Emissions (Smelting Circuit) -- EF Process Off-Gases -- EF Slag Hoods (6) for three slagging holes -- EF North Tapping Hood -- EF South Tapping Hood -- EF Matte Ladle Hood	NA	NA	NA	NA	NA	NA
[2] New TBRC Slag Bin (Smelting Circuit)	NA	NA	NA	NA	NA	NA
[2] New Recyclable Materials/Reverts/Iron Residue Bin (Smelting Circuit)	NA	NA	NA	NA	NA	NA
[3] Process/Secondary Dust Return and Vacuum Exhauster	0.132	0.132	NA	NA	NA	NA
[3] Precious Metal-Bearing Recyclable Material Feed Chute	0.825	0.413	NA	NA	NA	NA
Trane Combination Heater/HVAC (New Furnace #2 Transform. Rm - roof)	0.0083	0.0083	0.0007	0.1095	0.0920	0.0060
Trane Combination Heater/HVAC (New Furnace #2 Transform. Rm - floor)	0.0038	0.0038	0.0003	0.0504	0.0423	0.0028
Reznor Overhead Space Heaters (TBRC Reline Building) [2]	0.0100	0.0100	0.0008	0.1314	0.1104	0.0072
Metallurgical Coke Addition (Drum Dump System to Electric Furnace)	0.00002	0.00001	0.0432	NA	NA	NA
[3 & 13] New Precious Metal-Bearing Recyclable Material Crushing System	1.8219	1.7850	0.0000	NA	NA	NA
[1] Recyclable Material Transfer Area/Enclosure -- 3-Point Rotating Tube Sampler -- 12-Point Rotating Table Sampler -- 2-Point Sample Splitter	NA	NA	NA	NA	NA	NA
-- 8-Point Sampler -- Compressed Air Cleaning Station						
Detroit Radiant Products Company Radiant Heaters [6]	0.0249	0.0249	0.0020	0.3285	0.2760	0.0181
-- New Recyclable Material Crushing Area (2)	0.0083	0.0083	0.0007	0.1095	0.0920	0.0060
-- Recyclable Material Receiving Area/Warehouse (4)	0.0166	0.0166	0.0013	0.2190	0.1840	0.0120
[5] Electric Muffle Furnaces (Automated Sample Preparation Area) [4]	NA	NA	0.0579	NA	NA	NA
Electric Drying Oven (Automated Sample Preparation Area) [2]	NA	NA	NA	NA	NA	NA
[3] Large Sample Prep Equipment Baghouse (Automated Sample Prep Sys.) -- HP-M1500 Mills/Pulverizers (2) -- HP-P Pellet Presses (2) -- Spoon Dosing Station -- Cup Cleaning Station	0.198	0.198	0.0000	0.0000	0.0000	0.0000
Small Sample Prep Equipment Baghouse (Automated Sample Prep Sys.) -- HP-M Mills/Pulverizers (2) -- Acetone Usage -- Isopropyl Alcohol Cleaning	0.991	0.991	0.0000	0.0000	0.0000	7.754

Potential To Emit (PTE)	tons/yr					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
[3] Conveyor Belt Systems (Automated Sample Prep System) [2]	NA	NA	NA	NA	NA	NA
[3] X-Ray Detectors (Automated Sample Prep System) [4]	NA	NA	NA	NA	NA	NA
[3] Pellet Press for Smelter Daily Samples (Revert Crushing Building)	NG	NG	NA	NA	NA	NA
Electric Test Furnace	0.0913	0.0456	0.1986	0.0000	0.0000	0.0000
Dayton Overhead Space Heaters (Old Regen. Area/Smelter Maint. Shop) [2]	0.0166	0.0166	0.0013	0.2190	0.1840	0.0121
Trane Combination Heater/HVAC (Automated Sample Prep Building) [3]	0.0112	0.0112	0.0009	0.1472	0.1236	0.0081
-- North Heater/HVAC	0.0013	0.0013	0.0001	0.0175	0.0147	0.00096
-- Center Heater/HVAC	0.0067	0.0067	0.0005	0.0876	0.0736	0.0048
-- South Heater/HVAC	0.0032	0.0032	0.00025	0.0420	0.0353	0.0023
Silica Sand Cleaning Media Addition (Automated Sample Prep System)	0.00020	0.00010	NA	NA	NA	NA
-- HP-M1500 Mills/Pulverizers (2)						
-- HP-M Mills/Pulverizers (2)						
[1] Recyclable Material Mixer/Blender (Concentrate Drying Area)	NA	NA	NA	NA	NA	NA
LECO C-230 Carbon Determinator (Automated Sample Preparation Area)	NA	NA	0.0019	NA	NA	NA
Central Vacuum System	0.0529	0.0529	NA	NA	NA	NA
Lennox Combination Heater/HVAC (New Maintenance Shop - ceiling) [2]	0.0060	0.0060	0.0005	0.0788	0.06623	0.00434
Reznor Overhead Space Heaters (New Maintenance Shop) [4]	0.0140	0.0140	0.0011	0.1840	0.1545	0.0101
N.G. Water Heaters (Rheem - New Maintenance Shop) [2]	0.0025	0.0025	0.0002	0.0333	0.0280	0.0018
[3] Recycle Area Vacuum System (Hygiene Baghouse & Vacuum Exhauster)	0.0742	0.0742	NA	NA	NA	NA
Modine Space Heaters (East Property) [2]	0.0125	0.0125	0.0010	0.1643	0.1380	0.0090
Sure Flame Portable Space Heaters (Natural Gas) [2]	0.01	0.01	0.0008	0.1314	0.1104	0.0072
Portable Space Heaters (Propane) [2 L.B. White/1 Dayton/1 Ready)	0.00095	0.00095	0.0005	0.0615	0.0355	0.0047
Portable Space Heaters (Diesel) [10 total including Dayton/Dewalt/All Pro]	0.0103	0.0103	0.0010	0.1034	0.0258	0.0029
Skid Steer Screening Bucket	0.15	0.036	NA	NA	NA	NA
De-Canning System	0.2914	0.2914	NA	NA	NA	NA
Dust Removal Booth	0.0425	0.0425	NA	NA	NA	NA
Concentrate Handling and Drying Process						
-- Vibratory Fluid Dryer (Natural Gas)	9.38	9.38	0.03	NA	3.61	0.24
-- Recycle Storage Bin Vent/Dust Collector	1.25	1.25	NA	NA	NA	NA
-- Blended Storage Bin Vent/Dust Collector	1.25	1.25	NA	NA	NA	NA
-- Building Heaters	0.08	0.08	0.06	0.97	0.41	0.06
-- Material Transfers and Pile Fugitive Emissions	8.19	3.46	NA	NA	NA	NA
Infrared Pre-Heater (Natural Gas)	0.01	0.01	0.01	0.17	0.07	0.01
Recycle Baghouse	0.72	0.72	NA	NA	NA	NA
Emission Subtotal:	64.59	82.46	92.77	31.65	20.96	9.32
BASE METALS REFINERY						
[3] BMR Tower Mill Feed Hopper	0.015	0.0075	0.00	0.00	0.00	0.00
NSC Dryer Process PM_{10} Emissions (Baghouse)	1.09	1.09	0.00	0.00	0.00	0.00
Natural Gas Use: NSC Dryer	0.026	0.026	0.002	0.34	0.29	0.019
Nickel Sulfate Bagging Unit Baghouse	0.23	0.23	0.00	0.00	0.00	0.00
New Natural Gas Fired Boiler (15 MMBtu/hr)	0.50	0.50	0.04	6.57	5.52	0.36
Refinery Diesel Fired Emergency Generator (650 kW)	0.15	0.15	1.76	5.23	1.20	0.15
[6] Refinery Main Scrubber	NA	NA	NA	NA	NA	NA
-- Tower Mill						
-- Nickel Atmospheric Leach (NAL) Circuit [9 tanks]						
-- Iron Removal Tanks (2)						
-- Nickel Solution and Solution Surge Tanks (2)						
-- Nickel Crystal Evaporator Condensate Tank						
-- Polish Autoclave Feed Tanks (2)						

Potential To Emit (PTE)	tons/yr					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
-- Polish Filter and Filtrate Tanks (3) -- Vertical Autoclave Discharge Tank -- Copper Dissolve Circuit [4 tanks, 2 sample stations]						
-- Copper Electrowinning (E.W.) Circuit [5 tanks] -- Process Water Tank -- Scrubber Water and Thickener Tanks (2)						
[7] Security Area Electric Dryers (3)	NA	NA	NA	NA	NA	NA
[3] Security Area Baghouse -- Security Area Portable Hopper -- Security Area Delumper -- Security Area Surge Hopper -- Security Area Pin Mill w/ Feed Screw -- Security Area Mixer/Blender -- Security Area Sample Preparation Dust Hood	0.12	0.12	NA	NA	NA	NA
[6] Refinery Electrowin Scrubber -- Copper Electrowinning Cells (10)	NA	NA	NA	NA	NA	NA
[5] SO_2 Hygiene Fan	NA	NA	NA	NA	NA	NA
Reznor Roof Heaters (Grinding Area) [2] -- North Heater/HVAC -- South Heater/HVAC	0.025	0.025	0.0020	0.33	0.28	0.018
Carrier Combination Heater/HVAC (2nd Floor, Utilities Room) [2] -- North Heater/HVAC -- South Heater/HVAC	0.0053	0.0053	0.00042	0.0701	0.0589	0.0039
Modine Overhead Space Heaters (Electrowin Area) [2] -- West, Unit 1 -- East, Unit 2	0.012	0.012	0.00092	0.15	0.13	0.0084
Modine Overhead Space Heater (SO_2 Ton Room)	0.005	0.005	0.00039	0.066	0.055	0.0036
Modine Overhead Space Heater (Electrical Shop)	0.0048	0.0048	0.00038	0.064	0.053	0.0035
Trane Combination Heater/HVAC (Maintenance Shop)	0.0083	0.0083	0.0007	0.11	0.092	0.006
Reznor Overhead Space Heaters (Grinding Area) [2] -- Southwest Door -- Southeast Door	0.011	0.011	0.00084	0.14	0.12	0.0077
Reznor and Dayton Overhead Space Heaters [2] -- Maintenance Shop (Reznor) -- Boiler Area (Dayton)	0.0053	0.0053	0.00042	0.07	0.059	0.0039
Refinery N. G. Water Heater (Grinding Area)	0.0066	0.0066	0.00052	0.087	0.073	0.0048
Refinery N. G. Water Heater (New Offices)	0.008	0.008	0.00063	0.105	0.088	0.0058
Plasma Cutting Table (Maintenance Shop)	0.00	0.00	0.00	0.55	0.00	0.00
[8] Clarifier Filter Press Drop Chute	NA	NA	NA	NA	NA	NA
[8] Iron Removal Filter Press Drop Chute	NA	NA	NA	NA	NA	NA
[8] STR Filter Press Drop Chute	NA	NA	NA	NA	NA	NA
[8] EW/Recirculation Filter Press Drop Chute	NA	NA	NA	NA	NA	NA
[8] Security Area Filter Press Drop Chute	NA	NA	NA	NA	NA	NA
[5] Small Electric Oven (Copper Dissolve Area)	NA	NA	NA	NA	NA	NA
[5] Small Electric Oven (Security Area Entry)	NA	NA	NA	NA	NA	NA
Modine Overhead Space Heaters (Ni Solution Area) [4]	0.0233	0.0233	0.0018	0.31	0.26	0.0169
[3] Nickel Screening and Splitting Area (Crystallizer Area)	NG	NG	NA	NA	NA	NA
Carrier Forced Air Heaters (New Office Building/west of BMR) [4]	0.0133	0.0133	0.00105	0.1752	0.1472	0.0096
RUUD Forced Air Heaters (BMR Maintenance Shop Expansion) [2]	0.0035	0.0035	0.00028	0.046	0.039	0.0025
Electric Water Heater (BMR Maintenance Shop Expansion)	NA	NA	NA	NA	NA	NA
[3] Additional TBRC Matte Handling Process	0.0050	0.0025	NA	NA	NA	NA

Potential To Emit (PTE)	tons/yr					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Plug Power GenSys Fuel Cells [4]	0.00	0.00	0.0299	0.0022	0.0004	0.00
[3] Process Transfer Bin and Vacuum Exhauster	0.0289	0.0289	NA	NA	NA	NA
Trane Floor Mounted Heaters (Security Area Expansion) [2]	0.0067	0.0067	0.00050	0.0876	0.0736	0.0048
Reznor Overhead Space Heaters (Security Area Expansion) [4]	0.0166	0.0166	0.00130	0.2190	0.1840	0.0120
A.O. Smith N.G. Water Heaters (Security Area Expansion) [2]	0.0132	0.0132	0.00110	0.174	0.146	0.0096
L.B. White Portable Space Heaters (Propane) [2]	0.0007	0.0007	0.00037	0.048	0.028	0.0037
Emission Subtotal:	2.33	2.33	1.85	14.94	8.89	0.66
ANALYTICAL LAB						
[6] West Refinery Lab Scrubber (High Digestion, #1) -- Digestion Hoods (3)	NA	NA	NA	NA	NA	NA
[6] East Refinery Lab Scrubber (Low Digestion, #2) -- Digestion/Dilution Hoods (2) -- Auto-Dilutor Fume Hood (1) -- Microwave Digestion Manifold Exhaust (4 microwaves)	NA	NA	NA	NA	NA	NA
-- EW Process Lab Ventilation Hood (1) -- Sample Digestion/Acetone Preped Sample Cooling Hood						
Fire Assay Area Baghouse -- DFC 815 Fusion Furnace Exhaust/Hoods (3) -- DFC 810 Cupel Furnace/Cress Cupel Furnace Exhaust/Hoods (4) -- Cooling Hoods (5) -- Mixing Hood (1) -- Slagging Hoods (3)	7.68	7.68	0.4163	0.00	0.00	0.00
[3] Sample Prep Area Baghouse -- TM Crusher Hood (1) [Sample Preparation Area] -- TM Crushers (2) [Sample Preparation Area] -- Herzog Pulverizer Exhausts (2) [Sample Preparation Area] -- TM Pulverizer Hoods (2) [Sample Prep and Concentrate Prep Areas] -- TM Pulverizers (4) [2 Sample Prep/2 Concentrate Prep Areas] -- High-Grade Pellet Press Hoods (2) [Concentrate Preparation Area] -- Sample Pellet Press (1) [Recycle Preparation Area] -- TM Vibratory Ring Pulverizer (1) [Recycle Preparation Area] -- Work Bench/Sample Prep Hood (1) [Recycle Preparation Area] -- High-Grade Standard Preparation Area (Hood for SWECOs) -- Low-Grade Sample Preparation Area Pellet Press -- Ro-Tap Sieve Shaker System (High-Grade Standard Preparation Area)	1.01	0.99	0.00	0.00	0.00	0.522
Sample Preparation Dryer #1	0.002	0.002	0.0002	0.031	0.026	0.002
Sample Preparation Dryer #2	0.003	0.003	0.0003	0.044	0.037	0.002
[5] Electric Drying Ovens [8] -- Sample Prep./Receiving Area (4) -- Concentrate Preparation Area -- Secondary Recycling Area (2) -- Recycle Preparation Area -- AP/BP Balance Room	NA	NA	NA	NA	NA	NA
[5] Electric Muffle Furnace (Secondary Recycling Area) [4]	NA	NA	0.103	NA	NA	NA
Lab Boiler (2.3 MMBtu/hr)	0.077	0.077	0.006	1.01	0.85	0.06
[10] ICP Analyzers - Argon Fired [8]	NA	NA	NA	NA	NA	NA
LECO SC144DR Analyzer	NA	NA	0.0069	NA	NA	NA
LECO RO600 Analyzer	NA	NA	0.0002	NA	NA	NA
LECO CS-744 Carbon Deterinator	NA	NA	0.0020	NA	NA	

Potential To Emit (PTE)	tons/yr					
Emission Source	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Electric Drying Oven and Hood for Acetone Preped Samples (Recycle Prep)	NA	NA	NA	NA	NA	3.64
New Lab Boiler for Expansion (2.396 MMBtu/hr)	0.0798	0.0798	0.0063	1.0495	0.8815	0.0577
[6] Aqua Regia Acid Mist Scrubber (LMITS) -- Digestion Hoods (2) -- Microwave Digestion Manifold Exhaust (3 microwaves) -- Area Cooling/Fume Hood for Auto-Dilutor Samples	NA	NA	NA	NA	NA	NA
[11] Hygiene Acid Hoods and Carbon Filters (Wet Lab Area) [3 hoods/2 filters]	NA	NA	NA	NA	NA	NA
[12] V-Blender	NA	NA	NA	NA	NA	NA
[12] Specs 8000 Mixer/Mill [2] -- Concentrate Preparation Area -- Low-Grade Sample Preparation Area	NA	NA	NA	NA	NA	NA
[3] Sepor Blender (Football Blender)	0.0009	0.0004	NA	NA	NA	NA
Thermogravimetric Analyzer (TGA)	NA	NA	0.006	NA	NA	NA
Emission Subtotal:	8.84	8.84	0.54	2.13	1.79	4.28
Metallurgical Complex Emission Totals:	75.74	93.59	95.06	48.70	31.62	14.26

NOTES:

-- Hood and/or emission location

1 Process PM_{10} emissions from these sources are not counted in the total facility PTE because these emissions are routed through the concentrate drying circuit stack and have already been accounted for in the emission inventory (concentrate drying/revert crushing process).

2 Process PM_{10} emissions from these sources are not counted in the total facility PTE because these emissions are routed through the smelting circuit stack and have already been accounted for in the emission inventory (smelting circuit process).

3 Emissions vent or are contained inside the building; therefore, a 90% control factor is applied to the source.

4 Mobile emission sources are insignificant at this facility.

5 No particulate in process: insignificant vapor mist emissions only.

6 No particulate emissions: insignificant acid gas emissions only.

7 Emissions ducted to source that has already been accounted for in the emission inventory.

8 No particulate emissions: moisture content of product equals or exceeds 10%.

9 Per Air Quality Permit #2635-12, potential SO_2 emissions from Smelter #1 (old/renamed) and Smelter #2 (renamed) have been recalculated based on the individual concentrate and catalyst throughput limitations and sulfur contents. In addition, new SO_2 emission limitations have been established for the combined operations of smelting circuit #1 (the concentrate drying/revert crushing circuit) and #2 (the smelting circuit).

10 Inert gases used for sample analysis; no regulated pollutant emissions.

11 Hygiene system to enhance air quality inside the building; filters vent inside building.

12 Activity performed inside a closed, sealed vessel; no regulated pollutant emissions.

13 System includes two baghouse dust collectors and two bin vent baghouse(s).

14 Process PM_{10} emissions from these sources are not counted in the total facility PTE because these emissions are routed through the Sample Prep Area Baghouse and have already been accounted for in the emission inventory.

V. Existing Air Quality

Stillwater's facility is located in Stillwater County, Montana. Stillwater County is currently classified as attainment/unclassified for all NAAQS. The Stillwater Columbus Metallurgical Complex is an existing synthetic minor source pursuant to ARM 17.8, Subchapters 7 and 12. The additional equipment would not change the synthetic minor status of the facility. Therefore, the Department determined that the current permit action will not result in any impact to the existing air quality of the area.

VI. Ambient Air Impact Analysis

With respect to annual emission impacts, the primary pollutant affected is particulate matter (listed as PM, PM_{10}, and $PM_{2.5}$), which is almost exclusively emitted from baghouse/dust collector control devices in addition to some raw concentrate material handling. The Columbus Metallurgical Complex is controlled for process needs by fabric filter baghouse units across the facility (as well as for pollution control). The project gaseous pollutants are minimal and do not require additional analysis or explanation to demonstrate compliance with ambient air quality standards. The project and facility potential to emit is listed in Table 5 below. The analysis for particulate matter is also included below.

Table 5 - Project Potential to Emit Summary

	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	NO_x (tpy)	CO (tpy)	VOC (tpy)
Potential emissions from MAQP #2635-18	54.9	77.4	63.8	94.97	45.42	27.53	13.9
Proposed facility potential emissions	75.7	93.6	64.0	95.0	45.4	27.5	14.0
Potential emissions increase	20.9	16.2	7.3	0.1	3.3	4.1	0.3

The PM, PM_{10}, and $PM_{2.5}$ emissions result from the concentrate handling from truck dump/piles into the enclosed conveyors, dryer, and silos and the baghouse/dust collector NSPS requirements, which are conservative and do not provide speciation information for PM_{10} and $PM_{2.5}$ (an AP-42 $PM_{2.5}$ to PM_{10} speciation factor was used for the baghouse emissions). The proposed process units are all enclosed in a building, which provides additional levels of control beyond the high moisture concentrate, enclosed processes, and baghouse/dust collectors. And, as previously mentioned, Stillwater uses significant process controls beyond general pollution control because of the nature of their products.
The potential for ambient impacts from these emissions is described below. The discussion references the EPA modeling guidance for $PM_{2.5}$ (Guidance for $PM_{2.5}$ Permit Modeling, May 2014) and the November 2007 draft of the State of Montana Modeling Guideline for Air Quality Permit Applications (Montana Modeling Guideline).

PM_{10}

The PM_{10} emissions from this proposed project are 16.2 tpy. Little recent guidance exists from EPA on modeling PM10 emissions as the focus has changed to fine particulate. The Montana Modeling Guideline provides some information with respect to PM_{10} modeling; that document was drafted in 2007. The Montana Modeling Guidance lists the annual modeling threshold at 50 tpy for PM_{10} and the daily modeling threshold at 247 lb of PM_{10} per day. Discussions on the $PM_{2.5}$ qualitative demonstration follow.

The Concentrate Handling Project (with the pre-heater and recycle process baghouse) is far below the potential modeling threshold of 50 tpy annually and 247 lb/day with respect to PM_{10}. Given the attainment/unclassifiable status of the surrounding area, the conservatism built into the emissions calculations, and the Modeling Guidance, no additional demonstration would be needed to confirm compliance with the PM_{10} standard.

$PM_{2.5}$

The $PM_{2.5}$ emissions from this proposed project at 7.3 tpy are below the Montana Modeling Guidance annual modeling threshold of 12 tpy, in addition to being below the significant emissions rate defined in ARM 17.8.801(28), as would apply to modifications at major PSD sources. These project emissions include fugitive emissions from material handling, which are conservatively based on all PM_{10} emissions being $PM_{2.5}$. The Montana Modeling Guideline provides some information with respect to $PM_{2.5}$ modeling; however, that document was drafted (and never finalized) in 2007. This was shortly after EPA made significant changes to the 24-hour $PM_{2.5}$ NAAQS and prior to a much more detailed and broader-reaching national guidance on the implementation of the $PM_{2.5}$ standard, including making NAAQS and increment determinations.

EPA has provided the recent, final guidance with respect to implementing the $PM_{2.5}$ standard, Guidance for $PM_{2.5}$ Permit Modeling (May 2014). With respect to major source and major modification demonstrations (as listed in Table ES-1 – EPA Recommended Approaches for Assessing Primary and Secondary PM2.5 Impacts by Assessment Case), EPA provided recommendations based on the levels of $PM_{2.5}$ emissions and emissions of NO_x and/or SO_2 precursors. The proposed project would have $PM_{2.5}$ emissions less than 10 tpy with emissions of the suggested precursors far below the significant emissions rate, SER, of 40 tpy. In that instance (referred to as "Case 1"), EPA recommends "No Air Quality Analysis." Further, EPA states, "For "Case 1—No Air Quality Analysis," if direct $PM_{2.5}$ emissions are less than the SER of 10 tpy and both NO_x and SO_2 emissions are individually less than the respective SERs of 40 tpy, then no modeled compliance demonstration is required. See 40 CFR 51.166(m)(1)(i); 40 CFR 52.21(m)(1)(i)." The language in 40 CFR 51.166(m)(1)(i) states:

> "(m) Air quality analysis (1) Preapplication analysis. (i) The plan shall provide that any application for a permit under regulations approved pursuant to this section shall contain an analysis of ambient air quality in the area that the major stationary source or major modification would affect for each of the following pollutants:
>
> (a) For the source, each pollutant that it would have the potential to emit in a significant amount;
>
> (b) For the modification, each pollutant for which it would result in a significant net emissions increase."

Given that the projected emissions from this project are below modeling thresholds for both Montana and EPA, no further demonstration for $PM_{2.5}$ is necessary.

The emissions at the Columbus Metallurgical Complex are well controlled. Considering the projected low level of the potential emissions increase, the unclassified or attainment status of ambient standards in the area, and relevant guidance documents from the Department and EPA, no modeling analyses are needed to demonstrate compliance with the ambient standards. This qualitative analysis provides sufficient evidence of compliance with the NAAQS.

Based on the information provided and the conditions established in MAQP #2635-19, the Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air, Energy & Mining Division
Air Quality Bureau
P.O. Box 200901, Helena, Montana 59620
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ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Stillwater Mining Company – Columbus Metallurgical Complex

Montana Air Quality Permit number (MAQP): 2635-19

EA Draft: 7/9/2019
EA Final: 7/30/2019
Permit Final: 8/15/2019

1. *Legal Description of Site:* Stillwater operates a platinum group precious metals smelter and base metals refinery in Columbus, Montana. The legal description of the site is Section 27, Township 2 South, Range 20 East, Stillwater County, Montana.

2. *Description of Project:* The Department of Environmental Quality (Department) received an application from Stillwater to construct and operate a new concentrate drying, blending and handling process (referred to as the Concentrate Handling Project), which will be enclosed in a new building onsite at the Columbus Metallurgical Complex. Additionally, Stillwater has requested approval for the addition of a natural gas-fired infrared pre-heater for the existing concentrate handling process and a new recycle process baghouse for the existing recycle handling process.

3. *Objectives of Project:* The proposed project would provide more capacity and process flexibility. for the permitted facility.

4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the "no-action" alternative. The "no action" alternative would deny the issuance of the MAQP to the facility. Stillwater would be denied the opportunity to expand their business to meet commercial demands. Any potential air emission increases that would be authorized by issuing the MAQP would not occur. However, the Department does not consider the "no action" alternative to be appropriate because Stillwater has demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration. Other alternatives considered were discussed in the BACT analysis, Section III in the permit analysis.

5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in MAQP #2635-19.

6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do not unduly restrict private property rights.

7. *SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS*: The following comments have been prepared by the Department.

A. *Terrestrial and Aquatic Life and Habitats*

The proposed project would result in an increase in allowable emissions from the Stillwater facility; however, any increase in actual emissions from the proposed project would be minor and any impacts on terrestrial and aquatic life and habitats would be minimal. Additionally, limitations established within MAQP #2635-19 would minimize air pollution. Overall, any adverse impact on terrestrial and aquatic life and habitats is anticipated to be minor.

B. *Water Quality, Quantity and Distribution*

The proposed project would not affect water quantity or distribution in the proposed project area. The proposed project is within an existing facility and the project would not discharge or use water as part of normal operations.

The new equipment would result in an increase in allowable emissions from the Stillwater facility, which may have a minor impact on water quality in the proposed project area. However, as discussed in Section V and Section VI of the permit analysis and Section 7.F of this EA, any emissions and resulting deposition impacts from the project would be minor due to the low concentration of those pollutants emitted. Overall, any impacts to the water quality, quantity, and distribution of the project area would be minor and consistent with existing impacts.

C. *Geology and Soil Quality, Stability and Moisture*

The new equipment would not impact the geology, soil quality, stability, and moisture of area. The proposed project is within an existing facility and no new construction or ground disturbance beyond the existing disturbance would be required.

The increase in allowable emissions from the Stillwater facility may result in a minor increase in actual emissions to the outside ambient environment. These pollutants may deposit on the soils in the surrounding area. Any impact from deposition of these pollutants would be minor due to dispersion characteristics and the low concentration of those pollutants emitted. Overall, any impacts to the geology and soil quality, stability, and moisture of the project area would be minor and consistent with existing impacts.

D. *Vegetation Cover, Quantity, and Quality*

The increase in allowable emissions from the new sources may have a minor impact on vegetation cover, quantity, and quality in the proposed project area. However, as discussed in Section V and Section VI of the permit analysis and 7.F of this EA, any emissions and resulting impacts from the project would be minor due to dispersion characteristics of pollutants and the atmosphere, and the low concentration and magnitude of those pollutants emitted.

Further, the proposed project is within an existing industrial facility and no new construction or ground disturbance beyond the existing disturbance would be required. Overall, any impact to the vegetation cover, quantity, and quality of the proposed project area would be extremely minor.

E. *Aesthetics*

No impacts to the aesthetic value of the area would result from the proposed project because the facility is an existing facility. The proposed project would not impact the aesthetics of either the immediate area or the surrounding area and would instead remain consistent with existing industrial impacts.

F. *Air Quality*

The proposed project may have a minor impact on air quality in the area. However, the Department believes that the emissions would exhibit good dispersion characteristics resulting in relatively low deposition impacts. The impacts from deposition of pollutants would be minor due to dispersion characteristics of pollutants (stack height, stack temperature, etc.) and atmosphere (wind speed, wind direction, ambient temperature, etc.). The amount of air concentration of pollutants would be relatively small, and the corresponding deposition of those air pollutants would be minor.

The Department determined that controlled emissions from the source would not cause or contribute to a violation of any ambient air quality standard. Therefore, any impacts to air quality from the proposed project would be minor and consistent with existing impacts.

G. *Unique Endangered, Fragile, or Limited Environmental Resources*

In an effort to identify any unique endangered, fragile, or limited environmental resources in the area, the Department completed a species of concern report through the environmental summary function shared by the Montana Natural Heritage Program, Natural Resource Information System (NRIS). The area was defined by the section, township, and range of the proposed location with an additional 1-mile buffer zone. Search results identified a number of species within the search radius. Species of concern include the Black-tailed Prairie Dog, Hoary Bat, American White Pelican, Black-billed Cuckoo, Bobolink, Cassin's Finch, Clark's Nutcracker, Golden Eagle, Great Blue Heron, Pinyon Jay, Varied Thrush, Veery, Yellow-billed Cuckoo, Greater Short-horned Lizard, Spiny Softshell, Western Milksnake, Northern Leopard Frog, Yellowstone Cutthroat Trout and Alberta Snowfly. Because potential emission levels are minor, and no new disturbance outside of the existing facility footprint would occur, the Department has determined that there will be a minor disturbance to unidentified unique, endangered, fragile, or limited environmental resources in the area.

H. *Demands on Environmental Resource of Water, Air and Energy*

The proposed project would result in minor impacts on the demand for the environmental resource of air due to the potential for a minor increase in actual emissions from the proposed project. Further, the new equipment at the facility may

result in a minor increase in the demand for energy to supply power to the facility to accommodate the proposed new operations. The proposed project would not be expected to have any impacts on the demand for the environmental resource of water. Overall, any impacts on the demands for the environmental resources of water, air, and energy would be minor and consistent with existing impacts.

I. *Historical and Archaeological Sites*

The proposed project would not result in any impacts to any existing historical and archaeological sites in the proposed project area because the proposed project is within an existing industrial area and would not require any additional ground-disturbing construction activities outside of the existing industrial site. According to previous correspondence from the Montana State Historic Preservation Office, there is low likelihood of any disturbance to any known archaeological or historic site, given previous industrial disturbance within a given area. Therefore, the Department determined that the increased throughput would not impact any existing historical or archaeological site.

J. *Cumulative and Secondary Impacts*

Overall, any cumulative or secondary impacts to the above-cited physical and biological resource of the human environment of the project area would be minor because the increased emissions from the proposed project are considered minor. Further, the increase in emissions would have similar impacts to those impacts already in place and the overall industrial nature of the area would not change because of the proposed project. Therefore, any cumulative and secondary impacts resulting from the proposed project would be minor and consistent with existing impacts.

8. *SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS:* The following comments have been prepared by the Department.

A. *Social Structures and Mores*
B. *Cultural Uniqueness and Diversity*

The proposed project would not cause a disruption to any native or traditional lifestyles of communities (social structures or mores) or impact the cultural uniqueness and diversity of the area because the proposed project would not change the overall industrial nature of the operation. The predominant use of the surrounding area would not change because of the proposed project and would be consistent with existing impacts.

C. *Local and State Tax Base and Tax Revenue*

The proposed project would not impact the local and state tax base and tax revenue. Employment levels would not increase as a result of the proposed project. Overall, impacts to the local and state tax base and tax revenue would not be expected.

D. *Agricultural or Industrial Production*

The proposed project would not displace or otherwise affect any agricultural land or practices because the proposed project would take place within an existing industrial site used for industrial purposes, not agricultural purposes.

E. *Human Health*

The proposed project would result in an increase in allowable emissions from the Stillwater facility. Therefore, the proposed project may result in minor, if any, impacts to human health. As explained in Section 7.F of this EA, deposition of pollutants would occur; however, the Department determined that the proposed project would comply with all applicable air quality rules, regulations, and standards. These rules, regulations, and standards are designed to be protective of human health. Overall, any impacts to human health would be minor and consistent with existing impacts.

F. *Access to and Quality of Recreational and Wilderness Activities*

The proposed project would not impact any access to recreational and wilderness activities because the proposed project would occur at an existing industrial facility used for such purposes.

G. *Quantity and Distribution of Employment*

H. *Distribution of Population*

The proposed project would not impact the quantity and distribution of employment and the distribution of population in the area because employment levels would not change. The proposed project and subsequent modified operations at the facility would not result in new immigration into or emigration out of the area. No impacts to the quantity and distribution of employment or the distribution of population in the area would occur.

I. *Demands for Government Services*

The proposed project would result in minor impacts on the demands for government services because additional time would be required by government agencies to issue MAQP #2635-19 and to assure compliance with applicable rules, standards, and conditions contained in MAQP #2635-19. Overall, any demands for government services to regulate the modified facility would be minor due to the existing industrial nature of the facility.

J. *Industrial and Commercial Activity*

The proposed project would change various aspects of the previously permitted Stillwater operations but would not result in an overall change in facility purpose; therefore, the proposed project would not impact any industrial or commercial activity in the area beyond those impacts already realized through previously permitted Stillwater operations.

K. *Locally Adopted Environmental Plans and Goals*

The Department is not aware of any locally adopted environmental plans and goals affected by issuing MAQP #2635-19. This permit would contain limits for protecting air quality and keep facility emissions in compliance with any applicable ambient air quality standards. The state standards would protect the proposed site and the environment surrounding the site.

L. *Cumulative and Secondary Impacts*

Cumulative and secondary impacts from the proposed project would result in minor impacts to the economic and social aspects of the human environment in the immediate area of operations. Due to the similar nature of the proposed project as related to existing Stillwater operations, there would be relatively little foreseeable change in the industrial production, employment, and tax revenue impacts resulting from the proposed project. In addition, the Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in MAQP #2635-19. Overall, any cumulative and secondary impacts on the economic and social aspects of the human environment in the immediate area of operations would be minor and consistent with existing impacts.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for an increase in the allowable operation of a smelting, base metals refining and analytical laboratory. MAQP #2635-19 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program – Montana Sage Grouse Conservation Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Quality Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: R. Payne
Date: 6/28/19