AIR QUALITY PERMIT

Issued to:	Stillwater Mining Company Columbus Metallurgical Complex P.O. Box 1209 Columbus, MT 59019	Permit: #2635-12 Administrative Amendment (AA) Request Received: 02/18/04 Department Decision on AA Issued: 05/27/04 Permit Final: 06/12/04 AFS #095-0002

An air quality permit, 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 smelter and refinery in Columbus, Montana. The legal description of the site is Section 27, Township 2 South, Range 20 East, Stillwater County, Montana. A list of permitted equipment is contained in Section I.A of the permit analysis.

B. Current Permit Action

On February 18, 2004, the Montana Department of Environmental Quality (Department) received a request from Stillwater for an administrative amendment (AA) to Permit #2635-11. Specifically, the request involves modifying the catalyst and/or concentrate throughput processing limit in Section II.B.1 of Permit #2635-11 and modifying the corresponding allowable SO_2 limits contained in Section II.A.3 and II.A.4 of Permit #2635-11. Under the current permit action, Section II.A.3 has been modified to combine the smelting circuit #1 and smelting circuit #2 SO_2 emission limits. Further, the current permit action modifies Section II.B.1 to incorporate concentrate and catalyst specific process throughput limits. Finally, the current permit action modifies 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 is proposing the addition of 5 new emission sources to the permitted facility including a concentrate/catalyst bagging and unloading system and four 175,000 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 tons per year, addition of these units can be accomplished in accordance with the de minimis rule.

SECTION II: Limitations and Conditions

A. Emission Limitations

1. Particulate emissions from each smelting circuit (smelting circuit #1 and smelting circuit #2) shall be limited to 0.011 grains per dry standard cubic foot (gr/dscf). This emission limitation applies at each main stack (ARM 17.8.749 and ARM 17.8.1204).

2. Process fugitive emissions are subject to an opacity limitation of 10% (40 CFR Part 60, Subpart LL and ARM 17.8.340).

3. Combined sulfur dioxide emissions from smelting circuit #1 and smelting circuit #2 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

   c. 74 tons per year calculated on a rolling 12-month average

4. A Continuous Emissions Monitoring System (CEMS) to monitor stack volumetric flow rate and record sulfur dioxide emissions discharged to the atmosphere shall be installed and operated on both smelting circuit #1 and smelting circuit #2 to demonstrate compliance with Section II.A.3 of this permit. If the concentrate dryer is the only source of emissions venting through smelting circuit #1, the CEMS on smelting circuit #1 need not be operational (ARM 17.8.749).

   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).

5. Stillwater shall not cause or authorize 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).

6. For smelting circuit #2, the hydrated lime silo shall be controlled by a baghouse. Particulate emissions from the baghouse shall be limited to 0.02 gr/dscf (ARM 17.8.752).

7. Particulate emissions from the concentrate dryer shall be controlled by a baghouse. The concentrate dryer exhaust air stream shall be routed to the concentrate dryer baghouse and then vented to the main stack for smelting circuit #1. Particulate matter emissions from the baghouse shall be limited to 0.011 gr/dscf. This emission limit shall be applied at the main stack for smelting circuit #1 (ARM 17.8.749).

8. 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).

9. Stillwater shall apply water and/or chemical stabilization to the general work area, haul roads, and access roads, as necessary, to control fugitive emissions (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) (0.022 gr/dscf) (40 CFR Part 60, Subpart LL, and ARM 17.8.340).

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

12. 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.1 (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 concentrate and platinum group metal (PGM) catalyst throughput at smelting circuit #1 and smelting circuit #2 shall be limited to the following (ARM 17.8.749):

   a. Concentrate Throughput Limit: 37,550 ton/yr

   b. PGM Catalyst Throughput Limit: 11,000 ton/yr

2. Emissions from the following sources shall be routed to the smelting circuit #1 main stack and through all smelting circuit #1 associated emission control equipment (baghouse and scrubber). Particulate matter emissions from these sources are subject to the emission limit for smelting circuit #1. This emission limit shall be applied at the main stack for smelting circuit #1 (ARM 17.8.749):

   a. Revert Crusher
   b. Furnace Number 1 (includes 4 hoods)
   c. Top Blown Rotary Converter (TBRC) 1-1
   d. TBRC 1-2 (natural gas fired)
   e. #1 Dried Concentrates Bin
   f. #1 TBRC Slag/Catalyst Reverts/Iron Residue Bin
   g. #1 Batch Bin
   h. #1 Electric Furnace Mixed Feed Bin
   i. TBRC 1-1 (propane fired)
   j. EF Matte/TBRC Slag Dryer

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

   a. Furnace Number 2 (includes 6 hoods)
   b. 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

4. 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 (40 CFR Part 60, Subpart LL).

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

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

7. The amount of waste ore, used for lining the slag pit, 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).

C. Testing Requirements

1. Stillwater shall conduct particulate and opacity performance source tests on the main stacks for smelting circuit #1 and smelting circuit #2 to demonstrate compliance with the applicable emission limit(s) in Section II.A.1 and Section II.A.5. The compliance source testing shall be conducted on the smelting circuit #1 and smelting circuit #2 stacks 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 simultaneous SO_2 performance source tests on the smelting circuit #1 and smelting circuit #2 stacks to demonstrate compliance with the emission limits in Section II.A.3.a. The testing shall be conducted on an every 5-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.749 and ARM 17.8.105).

3. 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.8. The test shall be conducted on an every 5-year basis after the initial source test or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.749).

4. Stillwater shall conduct an initial particulate performance source test on the baghouse controlling emissions from the 200-ton dried concentrates silo to demonstrate compliance with the emission limit in Section II.A.10. The test shall be performed within 60 days after achieving the maximum production rate, but not later than 180 days after initial start up of the dried concentrates silo (ARM 17.8.340 and 40 CFR 60, Subpart LL).

5. Stillwater shall conduct an initial particulate performance source test on the baghouse controlling emissions from the hydrated lime silo (smelting circuit #2) to demonstrate compliance with the emission limit in Section II.A.6. The test shall be performed within 60 days after achieving the maximum production rate, but not later than 180 days after initial start up of the hydrated lime silo (ARM 17.8.340 and 40 CFR 60, Subpart LL).

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

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

D. Monitoring and 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. 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(1) that would include 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 or the addition of a new emissions unit. 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. Stillwater shall document, by month, the amount of concentrate and PGM catalyst throughput at smelting circuit #1 and at smelting circuit #2. By the 25th day of each month, Stillwater shall total the amount of concentrate and the amount of PGM catalyst handled at smelting circuit #1 and at smelting circuit #2 during the previous 12 months to verify compliance with the limitations in Section II.B.1. A written report of the compliance verification shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.749).

4. 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 12 months to verify compliance with the limitations in Sections II.B.5. A written report of the compliance verification shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.749).

5. 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 12 months to verify compliance with the limitation in Section II.B.6. A written report of the compliance verification shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.749).

6. Stillwater shall document, by month, the amount of waste ore, used to line the slag pit, 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 12 months to verify compliance with the limitation in Section II.B.7. A written report of the compliance verification shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.749).

7. 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 during the previous 12 months to verify compliance with the limitation in Section II.A.12. A written report of the compliance verification shall be submitted annually to the Department no later than March 1 and may 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).

8. 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. Notification

Stillwater shall provide the Department with written notification of the following dates within the specified time periods:

1. Stillwater shall notify the Department, in writing, within 30 days of the date construction is commenced on any affected facility defined under 40 CFR 60, Subpart LL (ARM 17.8.340 and 40 CFR 60, Subpart LL).

2. Stillwater shall notify the Department within 15 days after the actual date of initial start up of an affected facility defined in 40 CFR 60, Subpart LL (ARM 17.8.340 and 40 CFR 60, Subpart LL).

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 (CEMS, 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 Department's decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board.

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, as amended by the 1991 Legislature, 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. Construction Commencement – Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked (ARM 17.8.762).

Permit Analysis
Stillwater Mining Company – Columbus Metallurgical Complex
Permit #2635-12

I. Introduction

A. Permitted Equipment/Emitting Units. Stillwater Mining Company – Columbus Metallurgical Complex (Stillwater) operates the following Equipment:

Emitting Unit	**Stack**
Smelting Circuit #1	Vents to Stack
Soda Ash Silo (smelting circuit #1)	Vents to Stack
Limestone Flux Feed System (smelting circuit #1)	Vents Inside Building
Pebble Lime Feed System (smelting circuit #1)	Vents Inside Building
Hydrated Lime Silo (smelting circuit #1)	Vents to Stack
Smelting Circuit #2	Vents to Stack
Limestone Flux Bin (smelting circuit #2)	Vents Inside Building
Pebble Lime Feed System (smelting circuit #2)	Vents Inside Building
Hydrated Lime Silo (smelting circuit #2)	Vents to Stack
Gypsum Dumping and Loading	Fugitive Emissions
Ore Dumping and Handling (Slag Pit Liner)	Fugitive Emissions
Haul Roads	Fugitive Emissions
Concentrate Dryer (30-Ton)	Vents to Stack
NSC Dryer	Vents to Stack
Dried Concentrates Silo	Vents to Stack
Smelter Emergency Generator #1 (600 kw)	Vents to Stack
Smelter Emergency Generator #2 (600 kw)	Vents to Stack
Refinery Emergency Generator	Vents to Stack
Steam Generator (15 MMBtu/hr)	Vents to Stack
Fire Assay Area Baghouse	Vents to Stack
Fire Assay Area Fume Hoods (6)	Vents to Stack
Security Area Baghouse	Vents Inside Building
Sample Preparation Area Baghouse	Vents Inside Building
Sample Preparation Dryer #1	Vents Inside Building
Sample Preparation Dryer #2	Vents Inside Building
Sample Preparation Area Fume Hoods (4)	Vents Inside Building
Nickel Sulfate Bagging Unit Baghouse	Vents to Stack
Smelter Slag Material Transfer	Fugitive Emissions
EF Matte/TBRC Slag Dryer	Vents to Stack
TBRC Matte Dryer	Vents to Stack
Refinery Main Scrubber	Vents to Stack
Refinery Electrowin Scrubber	Vents to Stack
Refinery Electrowin Area	Vents Inside Building
SO_2 Hygiene Fan	NA
Granulator	NA
Revert Crushing Area	Vents to Stack
30-ton Wet Concentrate Dryer Feed Hopper	Vents Inside Building
40-ton #2 Dried Concentrates Bin	Vents to Indoor Stack
Dust Bin	Vents to Stack
Secondaries/Iron Residue Bin	Vents Inside Building
TBRC Slag Bin	Vents Inside Building
EF Matte Bin	Vents Inside Building
Security Area Electric Dryers	Vents to Stack
Moffit Smelter Building Heaters (2)	Vents to Stack
Circular Refinery Building Heater	Vents to Stack
Secondary Preparation Building	Vents Inside Building
Refinery Laboratory Scrubbers (2)	Vents to Stack

* Updates to the equipment list are included in the most recent emission inventory on file.

B. Permit History

The original air quality **Permit (#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 1000 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 sulfur dioxide (SO_2) emissions. All process gases from the electric furnace, Top Blown Rotary Converters (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-lb particulate/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-kW portable diesel generators to provide temporary or emergency electricity.

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

Permit #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 alteration was not required.

Permit #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.

Permit #2635-04 was a modification issued on August 1, 1994, to clarify language in a previous permit analysis. Specifically, in the discussion on Permit #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.

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

Permit **#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 Platinum Group Metal (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.

The second smelting circuit resulted in an increase in emissions in tons per year 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 (µm) 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, in tons per year, were approximately 96.2, 86.9, 85.9, 8.14, 1.94 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. Permit #2635-06 included annual emission limits, an operational limit, and reporting requirements to verify that the facility's emissions are less than 100 tons per year 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 pounds per hour on smelting circuit #1 and 235 pound per hour on smelting circuit #2. In addition, the proposed 24-hour rolling average hourly emission rates of 24 pounds per hour 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 tons per year. The Department agreed to increase Smelting Circuit #1's limitation. The SO_2 permitted potential emission rate from the facility is 96.16 tons per year. Permit #2635-06 replaced Permit #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. 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 III of the permit analysis for Permit **#2635-07**.

In addition, Stillwater requested that the production limit of 11,500-ton/year throughput for smelting circuit #1 and the 37,050-ton/year throughput limit for smelting circuit #2, as stated in Permit #2635-06, be re-stated as a combined throughput production limit of 48,550 ton/year through Smelting Circuit #1 and Smelting Circuit #2. The new combined throughput limit was included in Section III.B.1. Permit #2635-07 replaced Permit #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 CEM 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 Permit #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 CEM 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 CEM 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 tons per year, the Department determined that construction and operation of the silo could be accomplished under the provisions of the Administrative Rules of Montana (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. Permit **#2635-08** replaced Permit #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 correspondence, and a subsequent site visit/inspection in August of 2002, the Department determined that, as permitted under Permit #2635-08, the total facility Potential To Emit (PTE) for PM_{10} exceeded the Title V Operating Permit PTE threshold of 100 tons per year 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 actual cubic feet per minute (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 Permit #2635-09. Further, the permit action incorporated all existing equipment into the permitted list of equipment at the facility. Permit **#2635-09** replaced Permit #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 (Permit #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 (Permit #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 III 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 Permit **#2635-10**. Permit #2635-10 replaced Permit #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 Administrative 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 EI information. The full EI for the facility and corresponding calculations would no longer be included in the analysis section of the permit. Stillwater will submit updated EI information as necessary and this information will be maintained in the company file. Permit #**2635-11** replaced Permit #2635-10.

C. Current Permit Action

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

Concentrate material contains a conservative estimate of 11% sulfur while the catalyst material (automotive and petroleum catalysts) contains a conservative estimate of 2% sulfur. Since the SO_2 limits contained in Section II.A.3 and Section II.A.4 of Permit #2635-11 are based on the higher concentrate material sulfur content, Stillwater is proposing separate throughput limits of 37,550 tons/year of concentrate and 11,000 tons/year of catalyst material rather than the overall concentrate/catalyst limit of 48,550 tons/year contained in Section II.B.1 of Permit #2635-11. Further, Stillwater has requested that the allowable hourly SO_2 emission limits contained in Section II.A.4 for smelting circuit #2 be applied to the combined operations of smelting circuit #1 and #2. Regarding the allowable SO_2 annual emission rate, currently, smelting circuit #1 has an

allowable annual SO_2 emission rate of 22 tons per year while smelting circuit #2 has an allowable annual SO_2 emission rate of 74 tons per year, for a total allowable annual SO_2 emission rate of 96 tons per year from the smelting circuits. With the combining of emission limits for the smelting circuits, the overall potential SO_2 emission rate would be 78.31 tons per year, which corresponds to the proposed new separate concentrate and catalyst process throughput limits to be included in Section II.B.1, as explained above. However, Stillwater is proposing a combined annual SO_2 emission rate limit of 74 tons per year as currently required for smelting circuit #2 operated alone. Overall, the AA will result in lower allowable SO_2 emissions than permitted under Permit #2635-11. Emission calculations for the proposed changes described above are included in Section III, Emission Inventory, of the permit analysis to this AA.

In addition, in accordance with ARM 17.8.745 (de minimis rule), Stillwater is proposing the addition of 5 new emission sources to the permitted facility including a concentrate/catalyst bagging and unloading system and four 175,000 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 tons per year, addition of these units can be accomplished in accordance with the de minimis rule. Permit **#2635-12** replaces Permit #2635-11.

D. Additional Information

Additional information, such as applicable rules and regulations, BACT determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit identified above.

II. Applicable Rules and Regulations

The following are partial quotations of some applicable rules and regulations that apply to the operation. The complete rules are stated in the ARMs and are available, upon request, from the Department. Upon request, the Department will provide references for locations 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.

Stillwater is required to conduct simultaneous compliance source testing on smelting circuit #1 and smelting circuit #2 to demonstrate compliance with applicable permitted SO_2 emission limits (Section II.A.3.a). It is the Department's understanding that normal operations for smelting circuit #2 involve precious metals smelting while normal operations at smelting circuit #1 vent the concentrate dryer. Further, the Department believes that the smelting process results in much higher SO_2 emissions than venting the concentrate dryer. Therefore, the Department determined that simultaneous source testing

conducted while smelting circuit #1 is venting the concentrate dryer, and is not involved in smelting operations, would not be representative of capacity SO_2 emissions from Stillwater's precious metals smelting process.

The Montana Source Test Protocol and Procedures Manual requires that compliance source testing be conducted at the highest capacity operations. Therefore, in accordance with Section II.C.7, if Stillwater conducts simultaneous source testing without the smelting process in operation on both of the smelting circuits, the Department will require additional source testing should Stillwater decide to conduct smelting operations on both circuits at the same time at a later date.

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 all 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
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
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 PM_{10}

Stillwater shall comply 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 precautions be taken to control emissions of airborne particulate matter. (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 particulate matter.

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 particulate matter 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. Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per Million British thermal unit (MMBtu) fired.

6. ARM 17.8.340 Standard of Performance for New Stationary Sources. The owner and operator of any stationary source or modification, as defined and applied in 40 CFR Part 60, shall comply with the standards and provisions of 40 CFR Part 60 as listed below.

   Subpart LL - Standards of Performance for Metallic Mineral Processing Plants is applicable to the facility because the facility meets the definition of a metallic mineral processing plant and was constructed after August 24, 1982. The facility is subject to particulate matter and opacity emission standards and monitoring requirements on the scrubber. Further, the facility is subject to NSPS particulate matter limits for the concentrate dryer venting to smelting circuit #1 and the dried concentrates silo.

   Aspects of 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 because it does not meet the definition of a primary copper smelter. Stillwater's smelter is sized and designed to process platinum group metals and only produces copper as a by-product.

7. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. The owner or operator of any existing or new stationary source, as defined and applied in 40 CFR Part 61, shall comply with the standards and provisions of 40 CFR Part 61.

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. The current permit action does not require a permit application fee because it is an administrative 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. This operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

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, alter or use any air contaminant sources that have a Potential to Emit (PTE) greater than 25 tons per year of any pollutant. Stillwater has a PTE greater than 25 tons per year of PM_{10}, SO_2, and 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 was not required to submit an application for the current permit action because it is an administrative action.

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 review was not required for the current permit action because the action is an

administrative amendment.

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 below 250 tons per year 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 tons/year of any pollutant;

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

   c. PTE > 70 tons/year 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 Air Quality Permit #2635-12 for Stillwater, the following conclusions were made:

   a. The facility's permitted PTE is less than 100 tons/year for any pollutant;

   b. The facility's PTE is less than 10 tons/year for any one HAP and less than 25 tons/year for all HAPs;

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

   d. This facility is subject to 40 CFR 60, Subpart LL, as applicable;

   e. This facility is not subject to any current NESHAP standards;

   f. This source is not a Title IV affected source, nor 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 Permit #2635-12 includes federally enforceable limits that allow the facility to stay below the Title V Operating Permit threshold. Therefore, the facility is considered a 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 satisfy 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.

III. Emission Inventory

Facility-Wide Emission Inventory

Existing Potential To Emit (PTE)	**Ton/yr**					
General Source Categories	**PM**	**PM_{10}**	**SO_2**	**NO_x**	**CO**	**VOC**
Precious Metals Smelter	29.08	64.32	74.00	28.98	15.18	1.88
Base Metals Refinery	0.25	2.11	0.05	9.21	7.27	0.48
Analytical Lab	7.19	8.26	0.01	1.09	0.91	0.06
TOTAL FACILITY	**36.52**	**74.69**	**74.06**	**39.28**	**23.36**	**2.42**

* Emission Calculations are based on an annual concentrate/platinum group metals (PGM) catalyst throughput of 11,500 ton/yr for smelter circuit #1 and 37,050 ton/yr for smelter circuit #2. The throughput is limited by permit to a maximum combined limit of 48,550 (37,550 concentrate and 11,000 catalyst) ton/yr through smelter circuit #1 and smelter circuit #2.

** A complete emission inventory (individual emission sources) for Permit #2635-12 is on file with the Department.

Emission Inventory: Permit #2635-12

Concentrate/Catalyst Processing Emission Inventory (ton/yr)	
Material Handled	**SO_2 Emissions**
Concentrate	74.35
Catalyst	3.96
Total	***78.31**
* Under Permit #2635-12, Stillwater proposed an enforceable combined smelting circuit #1 and smelting circuit #2 SO_2 emission limit of 74 tons per year. This proposed annual limit is lower than potential annual SO_2 emissions (78.31 tpy) based on permitted capacity catalyst and concentrate throughput. The lower limit is expressed in Section II.A.3.c of the permit and in the facility-wide emission inventory above.	

Concentrate Parameters

Maximum Material Processed: 37,550 tons/yr (Permit Limit, Permit #2635-12)
Control Efficiency: 99.10% (Scrubber)
Concentrate Sulfur Content: 11% (Conservative Estimate)

SO_2 Emissions:

37,550 ton/yr * 11% S * (2 lb SO_2/l lb S) * (1 – 0.991) = 74.35 ton/yr

Catalyst Parameters

Maximum Material Processed: 11,000 ton/yr (Permit Limit, Permit #2635-12)
Control Efficiency: 99.10% (Scrubber)
Concentrate Sulfur Content: 2% (Conservative Estimate)

SO_2 Emissions:

11,000 ton/yr * 2% S * (2 lb SO_2/l lb S) * (1 – 0.991) = 3.96 ton/yr

De minimis Action						
Source(s)	**PM**	**PM_{10}**	**SOx**	**NOx**	**CO**	**VOC**
Conc-Catalyst Bagging Unloading System	5.34	2.68	0.00	0.00	0.00	0.00
Heaters (4) @175,000 Btu/hr/heater	NA	0.023	0.002	0.070	0.059	0.017
Total	**5.34**	**2.70**	**0.002**	**0.07**	**0.06**	**0.02**

Concentrate-Catalyst Bagging and Unloading System

Parameters:

Maximum Material Handled: 48,550 ton/yr (Permit Limit)
Transfer Points: 2 Transfers (bagging and Unloading)
Control Efficiency: 90% (Building Enclosure)

PM Emissions

Emission Factor: 1.1 lb/ton (AP-42, Table 11.24-2, 08/82, bauxite and alumina)
Calculations: 1.1 lb/ton * 48,550 ton/yr * 0.0005 ton/lb * (1-0.9) * 2 Transfers = 5.34 ton/yr

PM_{10} Emissions

Emission Factor: 0.55 lb/ton (Assume 50% of PM is PM_{10})
Calculations: 0.55 lb/ton * 48,550 ton/yr * 0.0005 ton/lb * (1-0.9) * 2 Transfers = 2.68 ton/yr

Building Heaters (4 Heaters @ 175,000 Btu/hr/heater)

Parameters

Heat Input: 0.175 MMBtu/hr/heater * 4 Heaters = 0.70 MMBtu/hr (Combined 4 Heaters)
Hours of Operation: 8760 hr/yr
Fuel Heating Value: 0.001 MMScf/MMBtu (Natural Gas)

PM Emissions

Assume all PM emissions are PM_{10}.

PM_{10} Emissions

Emission Factor: 7.6 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 7.6 lb/MMscf * 0.001 MMscf/MMBtu * 0.07 MMBtu/hr = 0.00532 lb/hr
0.00532 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.0233 ton/yr

SOx Emissions

Emission Factor: 0.6 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 0.6 lb/MMscf * 0.001 MMscf/MMBtu * 0.07 MMBtu/hr = 0.00042 lb/hr
0.00042 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.0018 ton/yr

NOx Emissions

Emission Factor: 100 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 100 lb/MMscf * 0.001 MMscf/MMBtu * 0.07 MMBtu/hr = 0.070 lb/hr
0.070 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.31 ton/yr

CO Emissions

Emission Factor: 84 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 84 lb/MMscf * 0.001 MMscf/MMBtu * 0.07 MMBtu/hr = 0.059 lb/hr
0.059 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.26 ton/yr

VOC Emissions

Emission Factor: 5.5 lb/MMscf (AP-42 Table 1.4-2, 07/98)
Calculations: 5.5 lb/MMscf * 0.001 MMscf/MMBtu * 0.07 MMBtu/hr = 0.00385 lb/hr
0.00385 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.0169 ton/yr

IV. Existing Air Quality

Stillwater's facility is located in Stillwater County, Montana. Stillwater County is currently classified as attainment/unclassified for all National Ambient Air Quality Standards (NAAQS). The current permit action results in a minor increase in potential emissions of PM, PM_{10}, NO_x, CO, and VOCs; however, since all increased emissions are less than the de minimis threshold

contained in ARM 17.8.745, the Department believes that the current permit action will not result in significant impact to the existing air quality of the area.

V. BACT Determination

A BACT determination is required for each new or altered source. Stillwater shall install on the new or altered sources the maximum air pollution control capability, which is technically practicable and economically feasible, except that BACT shall be utilized. The current permit action is an administrative amendment and does not require BACT review.

VI. Ambient Air Impact Analysis

The Department determined that the current permit action will not result in an exceedance of the Montana or National Ambient Air Quality Standards.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

An environmental assessment was not required for this permit action because it is an administrative action.

Analysis Prepared By: M. Eric Merchant
Date: May 20, 2004