

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OPERATING PERMIT TECHNICAL REVIEW DOCUMENT**

**Permitting and Compliance Division
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PPL Montana, LLC
Colstrip Steam Electric Station
Section 34, Township 2 North, Range 41 East, Rosebud County, Montana
580 Willow Ave., P.O. Box 38
Colstrip, MT 59323

The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

Facility Compliance Requirements	Yes	No	Comments
Source Tests Required	X		Method 5, Method 6, Method 7, Method 9
Ambient Monitoring Required		X	
COMS Required	X		OP0513-05, Appendix E
CEMS Required	X		OP0513-05 - CO ₂ , Appendix F - SO ₂ and Appendix G - NO _x
Mercury Emissions Monitoring System (MEMS) Required	X		
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		As Applicable
Monthly Reporting Required		X	
Quarterly Reporting Required	X		Opacity, NO _x & SO ₂
Applicable Air Quality Programs			
ARM Subchapter 7 Montana Air Quality Permits (MAQP)	X		MAQP #0513-07
New Source Performance Standards (NSPS)	X		40 CFR 60, Subpart D, Da, and Y
National Emission Standards for Hazardous Air Pollutants (NESHAPS)	X		No, Except for 40 CFR 61, Subpart M
Maximum Achievable Control Technology (MACT)		X	
Major New Source Review (NSR) – includes Prevention of Significant Deterioration (PSD) and/or Non-attainment Area (NAA) NSR	X		
Risk Management Plan Required (RMP)	X		
Acid Rain Title IV	X		OP0513-05, Appendix H
Compliance Assurance Monitoring (CAM)	X		OP0513-05, Appendix I
State Implementation Plan (SIP)	X		General SIP applies

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SECTION I. GENERAL INFORMATION

A. Purpose

This document establishes the basis for the decisions made regarding the applicable requirements, monitoring plan, and compliance status of emission units affected by the operating permit proposed for this facility. The document is intended for reference during review of the proposed permit by the United States Environmental Protection Agency (EPA) and the public. It is also intended to provide background information not included in the operating permit and to document issues that may become important during modifications or renewals of the permit.

Conclusions in this document are based on information provided in the Title V Operating Permit administrative amendment application submitted to the Department of Environmental Quality (Department) by PPL Montana, LLC (PPL) on January 28, 2010. Conclusions in this document are also based on information gathered from the original permit issued April 1973 and August 1981, and the PSD permit issued by the EPA in 1979. Further, information was gathered from the application submitted by the Montana Power Company (MPC) – Colstrip on June 12, 1996, and additional information submitted December 20, 1995, February 9, 1996, September 18, 1996, October 7, 1996, December 16, 1996, and September 16, 1997. Additional submittals were provided on May 14, 1998; August 13, 1998, August 16, 1999; June 26, 2000; May 1, 2001, June 27, 2002, October 10, 2003, October 23, 2007 and December 31, 2008. Additional information was provided in the application for a Montana Air Quality Permit (MAQP) submitted to the Department on January 11, 2005.

B. Facility Location

PPL operates the Colstrip Steam Electric Station consisting of four tangential coal fired boilers and associated equipment for generation of electricity. The Colstrip facility is located in Section 2, Township 2 North, Range 41 East, Rosebud County, Montana.

C. Facility Background Information

Montana Air Quality Permit (MAQP)

On April 23, 1973, **MAQP #513-111472 (#0513-00)** was issued to the MPC for the construction of Units 1 & 2, and on August 26, 1981, MAQP #0513-00 was issued to MPC for the operation of Units 1 & 2.

A petition for modification of the permit was filed by MPC on January 25, 1978. On February 28, 1978, the Board of Health and Environmental Sciences issued a board order to modify the Preconstruction Permit. The modification included changing the height of the two stacks to 525 feet and allowing the inlet sulfur dioxide (SO₂) monitor values to be based on a 3-hour average.

MAQP #0513-01 was issued to MPC to include the installation and operation of a Syncoal Truck Dump and a lime silo bin vent. Syncoal fines and coarse product are combined to form a blend product that will be supplied to Units 1 & 2. The installation and operation of these sources will increase the allowable particulate emissions for Units 1 & 2 by 1.12 tons per year (TPY). MAQP #0513-01 replaced MAQP #0513-00 (513-111472).

MAQP #1187 was issued to MPC on January 20, 1977, for the construction of Units 3 & 4. Because the proposed facility was a major source under the Prevention of Significant Deterioration (PSD) program, the additional review requirements of the PSD program applied to the project. The state did not have authorization to implement the PSD program at the time of the application; therefore, the PSD review was conducted by the EPA. EPA issued a PSD permit for the construction of the facility on September 11, 1979.

MAQP #1187-M1 was issued on February 5, 1980, and **MAQP #1187-M2** was issued on May 26, 1981. The modifications were completed because of changes to the applicable rules and standards of the Administrative Rules of Montana (ARM) and to include changes that had been made at the facility differing from the original application.

On October 13, 1996, **MAQP #1187-03** was issued. The permit correctly identified the actual maximum heat input capacity of Units 3 & 4. The units are each rated at a heat-input capacity of 7573 million British thermal units per hour (MMBtu/hr) with a production capacity of 778 Megawatts. These are nominal capacities for the facility and, depending on plant operating conditions, actual heat input to the facility may be as high as 8000 MMBtu/hr.

MAQP #1187-M2 and the EPA permit contained emission limits for particulate, SO₂, and oxides of nitrogen (NO_x) with units of pounds per MMBtu (lb/MMBtu). To ensure that emissions from the facility were not higher than those on that the original analysis was based, this permit established emission limits for these pollutants in the units of pounds per hour (lb/hr). The new emission limits were established based on the nominal heat input to the boilers of 7573 MMBtu/hr multiplied by the current emission limits in lb/MMBtu. Permit #1187-03 also placed a yearly fuel consumption limit on each unit. The limit was equal to the heat input of each unit operating at the nominal heat input rate of 7573 MMBtu/hr for 8760 hours per year. This limit ensured that emissions of pollutants, that did not have limits in the permit, were not increased above current levels. The permit also incorporated requirements from the PSD permit issued by EPA in 1979. These requirements were incorporated at the request of MPC for the purpose of developing a comprehensive document that contained pertinent requirements from both the state permit and the EPA PSD permit. MAQP #1187-03 replaced MAQP #1187-M2.

On September 30, 1998, **MAQP #1187-04** was issued to MPC for Units 3 & 4. The alteration included incorporation of a 3-hour rolling average SO₂ limit, the 1% inlet sulfur standard that was inadvertently removed during the previous modification, and the removal of the inlet monitor requirement.

The 3-hour SO₂ limit was incorporated in the permit to ensure protection of the 3-hour SO₂ standard. During the last permit action, the maximum heat inputs for Units 3 & 4 were discovered to be 8,000 MMBtu/hr. Because these heat inputs were higher than those in the original permit, the Department and MPC agreed that short-term SO₂ and NO_x emission limits would be implemented. The Department completed modeling for the short-term SO₂ emission limits. MPC was limited to a maximum of 4273 lb/hr of SO₂, averaged over any rolling 3-hour period from both stacks combined. These limits allowed MPC the flexibility of operating Unit 3 or Unit 4 at a higher level at any one time, while continuing to ensure protection of the standard.

The 1% inlet sulfur limit existed in the original permit, but was inadvertently removed during a previous permit action. MPC continued to maintain compliance with the 1% inlet sulfur limit, even though it was not stated in the permit.

The requirement for the inlet sulfur monitor as a compliance demonstration for the inlet sulfur content was replaced with an on-going fuel-sampling analysis. The on-going fuel-sampling analysis yielded a more accurate account of the sulfur content of the fuel, as compared to the sulfur content being correlated to SO₂ emissions.

The permitting action was an alteration of Permit #1187-03 because of the change in the compliance demonstration for the 1% sulfur content limit. The 1% sulfur content limit and demonstration of compliance was included in the February 28, 1978, Board of Health and Environmental Sciences Findings of Fact and Conclusions of Law and Order. The alteration process allowed public involvement in the change in the compliance demonstration method. However, the permitting action

did not result in any change in the emissions from the facility. MAQP #1187-04 replaced MAQP #1187-03.

In letters dated June 18, 1999, and August 16, 1999, MPC and PPL requested that the permits for Units 1 & 2 and Units 3 & 4 be transferred to reflect the new ownership. The transfer of the permits was to occur when the transfer of ownership to PPL Montana, LLC was final. Through the Department's review, it was determined that Units 1 & 2 and 3 & 4 would now be defined as one source. Therefore, the permit modification transferred ownership, as well as combined Permits #0513-01 and #1187-04. The permit conditions remained the same, but were simply combined into one permit. **MAQP #0513-02** replaced Permits #0513-01 and #1187-04.

On September 10, 2000, **MAQP #0513-03** was issued to PPL to conduct a test burn of petroleum coke/Syncoal/Rosebud coal fuel combination in Units 1 & 2. A petroleum coke consumption limit was placed in the permit to ensure that the proposed test burn did not exceed 15 TPY of any pollutant. Because the emissions from this project were less than 15 TPY of any pollutant, the project occurred in accordance with the ARM 17.8.745(1). MAQP #0513-03 replaced MAQP #0513-02.

On May 1, 2001, PPL submitted a completed application to the Department proposing to add petroleum coke to the list of fuels to be used in Units 1 & 2 that are currently permitted to burn Syncoal and Rosebud coal. The alteration to MAQP #0513-03 limited the amount of petroleum coke that could be burned in Units 1 & 2. The conditions included in the permit for the burning of petroleum coke are Section II.A.9, 10, 11, 12, and 13, Section II.B.3 and Section II.F. The permitting action was not considered a major modification under the PSD regulations because the facility was capable of accommodating petroleum coke. **MAQP #0513-04** replaced MAQP #0513-03.

On January 11, 2005, Arnold & Porter LLP, on behalf of PPL, submitted a request for an administrative amendment to MAQP #0513-04. The request was to reduce the 3-hour rolling average SO₂ emissions limit (combined stack limit) for Units 3 & 4 from 4,273 lb/hr to 4,140 lb/hr.

The request was submitted in response to an outstanding concern of the Department and the Northern Cheyenne Tribe regarding emissions modeling for SO₂ increment consumption conducted for the issuance of the 1979 PSD permit for Units 3 & 4.

Included in the permit application, PPL submitted AERMOD modeling to demonstrate compliance with the Class I PSD increment for SO₂ on the Northern Cheyenne Reservation. The Department, in consultation with the EPA Region VIII and the Northern Cheyenne Tribe, requested an additional sensitivity analysis be conducted at a 75% load scenario to comply with national modeling guidance and the model's demonstrated sensitivity to plume rise. PPL submitted the sensitivity analysis demonstrating that the proposed SO₂ limit of 4,140 lb/hr would protect the 3-hour increment on the Northern Cheyenne Reservation.

In addition, PPL submitted a request to the Department on November 20, 2000, to remove the ambient air quality monitoring requirements from MAQP #0513-04 for Units 3 & 4. Based on the request and additional information submitted on October 3, 2001, the Department approved the removal of the monitoring requirements. The Department sent an approval letter dated October 19, 2001, after PPL demonstrated that the potential to cause a violation of the ambient standard is minimal at all sites and monitoring may be removed as provided for in the October 1998 Department guidance.

The permit format, language, and rule references were updated to reflect current Department permit format, language and rule references. **MAQP #0513-05** replaced MAQP #0513-04.

On October 23, 2007, PPL submitted a request for an administrative amendment to MAQP #0513-05.

The request was to incorporate revised NO_x standards for Units 3 & 4, as stipulated by Consent Decree CV-07-40-BLG-RFG-CSO entered on May 14, 2007. In addition, the Department was requested to clarify that the compliance demonstration for the revised limits would be demonstrated for an “operating day” firing any fuel, which would go beyond the Consent Decree requirements. **MAQP #0513-06** replaced MAQP #0513-05.

On December 31, 2008, PPL submitted an application to modify MAQP #0513-06. The modification was to establish a mercury emission limit for Units 1-4, pursuant to ARM 17.8.771, and to provide an analysis of potential mercury control options including, but not limited to, boiler technology, mercury emission control technology, and any other mercury control practices. The application included a proposed mercury emission control strategy, a proposed mercury emission limit, and associated operating requirements for Units 1-4 in order to comply with ARM 17.8.771. The permit action updated rule references, permit format, and the emissions inventory. **MAQP #0513-07** replaced MAQP #0513-06.

On January 28, 2009, PPLM requested an administrative amendment to MAQP #0513-07. The amendment was to update a compliance date for oxides of nitrogen (NO_x) emissions from Colstrip Unit 4 pursuant to Consent Decree CV-07-40-BLG-RFC-CSO (Consent Decree) entered May 14, 2007. A stipulation to the Consent Decree was filed on December 22, 2009 due to the occurrence of a Force Majeure incident, such that a new compliance date for installation and operation of the digital controls, low-NO_x burners and overfire air was established to be March 31, 2010 or seven days after the completion of NO_x emission controls tuning, whichever date is earlier. Tuning was complete on Unit 4 NO_x control systems on January 12, 2010. The amendment updated the permit to reflect the changes to the Consent Decree; specifically, the applicable compliance date in Section II.A.18 and 20 were updated to January 19, 2010. **MAQP #0513-08** was issued on March 9, 2010 and replaced MAQP #0513-07.

Title V Operating Permits

On September 23, 1997, draft **Operating Permit #OP0513-00** was issued to MPC for Units 1 & 2. The permit contained the necessary requirements to comply with the operating permit program requirements and the acid rain permitting requirements.

On October 6, 1997 (prior to the permit becoming final and effective), **Operating Permit #OP0513-01** was issued to MPC to correct errors in Operating Permit #OP0513-00. The permit contained a typographical error in the expiration date. The Montana air quality regulation and the acid rain regulations both require the issuance of permit with a fixed term of 5 years. The permit effective date was January 1, 1998. The expiration date should have been December 31, 2002, instead of 2003. Operating Permit #OP0513-01 replaced Operating Permit #OP0513-00.

On April 12, 2005, the Department issued **Operating Permit #OP0513-02** final and effective. The permit was a renewal of Title V Operating Permit #OP0513-01 and Operating Permit #OP1187-00. The two permits, along with the Acid Rain Permit #AR1187-00 were combined as Operating Permit #OP0513-02. Changes in the permit include the addition of two small propane fueled emergency backup generators at the facility, and the removal of the auxiliary boiler for Units 3 & 4. Also, PPL submitted a CAM Plan for particulate matter (PM) for Units 1-4 in accordance with 40 CFR Part 64. A summary of the CAM plan can be found in Appendix I of the Title V Operating Permit. A complete copy of the CAM plan can be obtained from the Department or the facility.

The Department included a compliance plan/schedule in Section III.A. The Department believed that PPL had not been able to demonstrate compliance with protection of the 3-hour and 24-hour SO₂ increments (ARM 17.8.804 and ARM 17.8.820) on the Northern Cheyenne Reservation. The condition required PPL to submit a narrative description of how the facility would demonstrate

compliance with these increments and provide a schedule for achieving such compliance. Further information can be found in Section I.F. Compliance Demonstration. The permit was also updated to reflect current permit rule citations and format. Operating Permit #OP0513-02 replaced Operating Permits #OP0513-01, #OP1187-00, and #AR1187-00.

The permit action was an administrative amendment to incorporate the changes made to Operating Permit #0513-05. The amendment includes the reduction of the 3-hour rolling average SO₂ emissions limit (combined stack limit) for Units 3 & 4 from 4,273 lb/hr to 4,140 lb/hr. **Operating Permit #OP0513-03** replaced Operating Permit #OP0513-02.

On October 23, 2007, PPL Montana submitted a request to incorporate revised NO_x standards for Units 3 & 4 into PPL's MAQP and Title V permits. The application was deemed complete on December 20, 2007. The request was to incorporate revised NO_x standards for Units 3 & 4, as stipulated by Consent Decree CV-07-40-BLG-RFG-CSO entered on May 14, 2007. In addition, the Department clarified that the compliance demonstration for the revised limits would be demonstrated for an "operating day" firing any fuel, which would go beyond the Consent Decree requirements. **Operating Permit #OP0513-04** replace Operating Permit #OP0513-03.

As part of this significant modification, the Department made the following additional administrative corrections:

- Renumbered the emitting units (EU) in the table under Section II to reflect the current identifications;
- Added EU016, for the alternate fuel loading requirements;
- Removed EU012, for the scrubber relining process, since it was determined that this was a maintenance procedure involving air pollution control for EU001 – EU004 and was in fact an insignificant activity;
- Revised opacity requirements for Units 1 - 4 to include opacity of 20% or greater averaged over 6 consecutive minutes "*except for one 6-minute period per hour of not greater than 27% opacity*" consistent with the NSPS;
- Revised NO_x limitations under Section III.B.7 and III.C.10, to reflect conformance with Acid Rain provisions;
- Added Units 1 & 2 Syncoal and petroleum coke and scrubber operation requirements;
- Changed SO₂ reference test methods from Methods 6 & 6A to Methods 6 & 6C;
- Clarified continuous emission monitoring systems (CEMS) reporting (opacity, SO₂ and NO_x) to be quarterly for Unit 1 – 4. While the Department has historically requested quarterly reporting, the Title V permit was previously inconsistent. This included updates to EU001 – EU004 as well as Appendices E, F, and G;
- Clarified that compliance with the requirements in the consent decree entered 5/14/07 (Consent Decree CV-07-40-BLG-RFC-CSO0 is deemed compliance with the Units 3 & 4 requirements for Best Available Retrofit Technology (BART); and
- Renumbered CEMS regulatory requirements to reflect the revised NSPS – 40 CFR 60, Subpart Da.

On December 31, 2008, PPL submitted an application to modify Operating Permit #OP0513-04 to

include mercury emission limitations under ARM 17.8.771 that were incorporated into MAQP #0513-07 on April 9, 2009. On February 3, 2009, PPL sent a letter to the Department requesting that Steve Christian be designated as an Alternate Responsible Official. Permit #OP0513-04 was updated to reflect the new mercury control requirements and the new Alternate Responsible Official. **Operating Permit #OP0513-05** replaced Operating Permit #OP0513-04.

D. Current Permit Action

On January 28, 2009, PPL requested an administrative amendment to Operating Permit #OP0513-05. The amendment was to update a compliance date for oxides of nitrogen (NO_x) emissions from Colstrip Unit 4 pursuant to Consent Decree CV-07-40-BLG-RFC-CSO (Consent Decree) entered May 14, 2007. A stipulation to the Consent Decree was filed on December 22, 2009 due to the occurrence of a Force Majeure incident, such that a new compliance date for installation and operation of the digital controls, low-NO_x burners and overfire air was established to be March 31, 2010 or seven days after the completion of NO_x emission controls tuning, whichever date is earlier. Tuning was complete on Unit 4 NO_x control systems on January 12, 2010. This amendment updates the permit to reflect the changes to the Consent Decree, specifically compliance dates for Unit 4 NO_x emissions at Sections III.C.14 and 16 have been changed to January 19, 2010. **Operating Permit #OP0513-06** will replace Operating Permit #OP0513-05.

E. Taking and Damaging Analysis

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or damaging of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. As required by 2-10-101 through 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.

F. Compliance Designation

Since Operating Permit #OP0513-05 was issued the Department has conducted 42 compliance activities for the Colstrip Steam Electric Station, including an onsite inspection in November of 2009 and review and approval of the mercury monitoring protocol and relative accuracy test audit. The facility is believed to be in compliance with all applicable operating permit requirements.

History

Upon issuance of Draft Operating Permit #OP0513-02, the Department did not believe that PPL had been able to demonstrate compliance with protection of the 3-hour and 24-hour SO₂ increments (ARM 17.8.820) on the Northern Cheyenne Reservation. Therefore, the Department required PPL to submit a narrative description of how PPL would demonstrate compliance with these increments and provide a schedule for achieving such compliance. The compliance demonstration was to be based on air quality modeling as approved by the Department.

The draft permit requested that PPL submit a final compliance plan for approval within 180 days after final issuance of the facility's Title V Operating Permit #OP0513-02. The final compliance plan was required to contain the following information:

- a. A schedule of remedial measures to assure compliance;
- b. Milestones associated with those measures in appropriate sequence;
- c. A schedule of submission of certified progress reports (no less frequently than every 6 months); and
- d. Any anticipated change in applicable requirements.

The draft permit stated that PPL was required to achieve and demonstrate compliance with protection of the 3-hour and 24-hour SO₂ increments on the Northern Cheyenne Reservation within 18 months after the final issuance of Operating Permit #OP0513-02.

PPL submitted a modeling demonstration to the Department on September 22, 2004, concerning the impact of emissions from Units 3 & 4 on the 3-hour and 24-hour SO₂ increments on the Northern Cheyenne Reservation. The Department and PPL, with participation by the Northern Cheyenne Tribe and EPA Region VIII, discussed this modeling and any appropriate refinements. The Department concurred that if an agreement on the modeling analysis could be reached and appropriate revisions to PPL's emission limits identified prior to this Title V permit being issued Proposed, the compliance schedule may not be necessary.

The modeling raised concerns that emissions from Units 3 & 4 at the allowable 3-hour limit could

cause a violation of the increment on the Northern Cheyenne Reservation. Based on the modeling, PPL submitted a request for an administrative amendment to the facility's MAQP #0513-04 to reduce the 3-hour rolling average SO₂ emissions limit (combined stack limit) for Units 3 & 4 from 4,273 pounds/hour to 4,140 pounds/hour. At this limit, PPL is in compliance with ARM 17.8.820.

The Department requested one further sensitivity analysis be conducted to comply with the national modeling guidance and the model's demonstrated sensitivity to plume rise because the limit requested by PPL left no room for error. The Department and the Northern Cheyenne Tribe proposed that PPL consider 90% of the facility's increment consumption to leave room for error and avoid similar concerns of increment consumption in the future. PPL agreed to research the effects of decreasing the 3-hour limit on the facility's operation within the next several months. However, the modeling submitted by PPL, along with the request to amend Permit #0513-04, met the requirement proposed in Draft Operating Permit #OP0513-02 and therefore condition III.A.17 was removed from Proposed Operating Permit #OP0513-02. The Department proceeded to change the 3-hour SO₂ limit in PPL's MAQP. This limit was included in PPL's Title V permit.

SECTION II. SUMMARY OF EMISSION UNITS

A. Facility Process Description

PPL operates Units 1, 2, 3, & 4 tangential coal fired boilers and associated equipment for the generation of electricity.

B. Emission Units and Pollution Control Device Identification

Emission Units ID	Description	Pollution Control Device/Practice
EU001	Unit #1 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU002	Unit #2 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU003	Unit #3 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU004	Unit #4 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU005	Auxiliary Propane Boiler (1 & 2)	None
EU006	Building Heating Boiler (3 & 4)	Fabric filters/enclosures
EU007	Coal Handling System (1 & 2)	Enclosed conveyors Dust Suppressant Telescopic Chute
EU008	Coal Handling System – (silos, distribution bin, surge pile tunnel, crushing and sampling house, and vacuum cleaning system) (3 & 4)	Fabric filters
EU009	Coal Piles (Wind Erosion)	Sealant on some storage piles, Dust suppression system, Enclosures
EU010	Emergency Diesel Generators	None
EU011	Internal Combustion Engines (Vehicles)	None
EU012	Lime Handling System	Pneumatic Unloading
EU013	Plant Roads	Dust suppressant is applied annually and water is applied as needed
EU014	Process Ponds	Material is wet
EU015	Underground Gasoline Tank	None
EU016	Alternate Fuel Loading (Syn Coal & Pet Coke)	Bin Vent, covered transfer operations
EU017	Tangential Coal Fired Units 1-4 Mercury Emissions	Mercury oxidizer/sorbent
EU018	Mercury Oxidizer/Sorbent Handling Systems (Units 1-4)	Bin Vent Filter

C. Categorically Insignificant Sources/Activities

The following tables list the emission units included as insignificant in PPL's operating permit.

Emissions Unit ID	Description
IEU01	Hydrazine Bulk Storage Tank Vent
IEU02	LPG Vaporizer
IEU03	Unit #1 Cooling Tower
IEU04	Unit #2 Cooling tower
IEU05	Unit #3 Cooling Tower
IEU06	Unit #4 Cooling Tower
IEU07	Waste Site
IEU08	Boiler Chemical Cleaning Process
IEU09	LPG System Safety Valves and Vents
IEU10	Process Tank Vents
IEU11	Process Ponds
IEU12	Boiler Chemical Cleaning Process
IEU13	Diesel Tanks
IEU14	Scrubber Relining Process

Cooling Towers #3 and #4 were included in the original operating permit application as insignificant emission units. The Department questioned this determination and requested information from PPL. The facility submitted additional information on December 16, 1996, in response to a request for information on the operating permit application for Units 1 & 2, which included a statement that Units 1 & 2 do not use any chromium-based compounds in the cooling towers. This also holds true for Units 3 & 4. Since the cooling towers are not major sources or integral part of a major source as defined in Section 112(a)(1) of the Federal Clean Air Act and chromium-based water treatments are not used, the Department agrees with PPL that the cooling towers are not subject to 40 CFR 63 Subpart Q. Therefore, IEU04, IEU05, IEU06, and IEU07 are considered insignificant emission units.

The Building Heating Boiler emissions unit was identified in the original application as insignificant, but has been determined to be a significant emissions unit. It has been determined to be significant because if PPL operates the Building Heating Boiler under the alternative operating scenario there are specific applicable requirements. When PPL is not operating the Building Heating Boiler, there are no emissions and the emissions unit is in compliance with all applicable requirements. PPL is required to perform the necessary monitoring, recordkeeping, and reporting for all applicable requirements.

Two small propane fueled emergency backup generators were added to the insignificant unit list in Operating Permit #OP0513-02. The scrubber relining process was removed as an emitting unit and moved to the insignificant unit list in Operating Permit #OP0513-04.

SECTION III. PERMIT TERMS

A. Emission Limits and Standards

Tangential Coal Fired Boilers 1&2 (EU001 and EU002)

Units 1 & 2 (EU001 and EU002) are subject to 40 CFR 60, Subpart D – Standards of Performance for Fossil-Fuel-Fired Steam Generators for which Construction Commenced After August 17, 1971. Under this provision, EU001 and EU002 have a PM limit of 0.10 lb/MMBtu, a SO₂ limit of 1.2 lb/MMBtu heat input and a NO_x limit of 0.7 lb/MMBtu heat input. Based on the maximum heat input value of the units, PPL is limited to a maximum fuel use of 28% petroleum coke and a maximum of 280,320 tons of petroleum coke during any rolling 12-month period for each emitting unit. The units are also limited to a maximum of 700,800 tons of Syncoal during any rolling 12-month period.

The Department determined 40 CFR 60, Subpart D requirements for the monitors to be less stringent than the requirements of the Acid Rain Provisions contained in 40 CFR Part 75. The basis of this position is that the monitors required by 40 CFR 60, Subpart D are used to indicate compliance. The monitoring requirements of this Operating Permit are to be used to determine compliance. The following sections of 40 CFR Part 60 are not included in the Operating Permit as applicable requirements: 40 CFR §60.45(c) and 40 CFR §60.13(a) through (g) and (i) through (j). These requirements are replaced with the requirements contained in 40 CFR Part 75 and PPL is required to demonstrate compliance using the 40 CFR Part 75 CEMS for SO₂, NO_x, and opacity.

Units 1 & 2 are subject to 40 CFR 60, Subpart Y – Standards of Performance for Coal Preparation Plants. The facility shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements in Subpart Y. Subpart Y affected sources include the truck dump station, the lime silo bin vent, and any other affected source constructed or modified after October 24, 1974.

The Phase II permit requirements for SO₂ have been included in this Operating Permit.

NO_x History

PPL submitted a Phase I Permit Application, NO_x Compliance Plan to EPA Region VIII in August 1996. The application was submitted in accordance with the requirements of 40 CFR §76.9 for an early election unit with a deadline of submittal of January 1, 1997. Units 1 & 2 are Group 1, Phase II boilers. PPL was required to comply with the emission limit of 0.45 lb/mmBtu of heat input on an annual average basis for tangentially fired boilers (40 CFR §76.5) beginning with January 1, 1997, emissions and ending with December 31, 2007.

In accordance with 40 CFR §76.8(d)(1)(ii), EPA was responsible for issuing the early NO_x reduction permit. The state has not been delegated this authority. Under 40 CFR §72.73(b)(2), the Department was required to include, not later than January 1, 1999, the acid rain permit requirements for nitrogen oxides. PPL, under 40 CFR §76.9(b), submitted a Phase II NO_x permit application by January 1, 1998.

On January 1, 2008, the early election plan expired and PPL became subject to the NO_x limitations for Group I, Phase II boilers under 40 CFR 76.7.

Tangential Coal Fired Boilers 3 & 4 (EU003 and EU004)

In the original permit application, PPL identified the exhaust gas temperature, (190°F) and the limit of 1.225 lb/MMBtu on SO₂ emissions as applicable requirements for EU003 and EU004. The minimum exhaust gas temperature and this SO₂ limit were not identified in any air quality permits issued by the Department or by the EPA for EU003 or EU004. These requirements come from the certificate issued as part of the Major Facility Siting Act (MFSA). The Department does not consider these requirements as applicable requirements for operating permit purposes. The MFSA certificate required the Department to issue an MAQP. Based on this, the Department's position is that all the applicable requirements for operating permit purposes are contained in the MAQP.

PPL's EU003 and EU004 are subject to 40 CFR §60.40 (Subpart D) since construction of the units began after 1971 and before September 18, 1978.

The Department determined Subpart D requirements for the monitors to be less stringent than the requirements of the Acid Rain Provisions contained in 40 CFR Part 75. The basis of this position is that the monitors required by 40 CFR 60, Subpart D are used to indicate compliance. The monitoring requirements of this Operating Permit are to be used to determine compliance. The following sections of 40 CFR 60 are not included in the Operating Permit as applicable requirements: 40 CFR §60.45(c) and 40 CFR §60.13(a) through (g) and (i) through (j). These requirements are replaced with the requirements contained in 40 CFR Part 75 and PPL is required to demonstrate compliance using the Part 75 CEMS for SO₂, NO_x, and opacity.

The Department has determined the monitoring requirements contained in Appendix III of the EPA PSD permit issued September 11, 1979, and Sections II.C.1.e., II.C.2., II.E.1., and II.E.2. in MAQP #1187-03 issued October 13, 1996, are duplicate requirements. The Department has determined compliance with 40 CFR Part 75 will be compliance with these requirements for the SO₂, NO_x, and opacity monitors.

The Phase II permit requirements for SO₂ have been included in this Operating Permit.

NO_x History

PPL submitted a Phase I Permit Application, NO_x Compliance Plan to EPA Region VIII in August 1996. The application was submitted in accordance with the requirements of 40 CFR §76.9 for an early election unit with a deadline of submittal of January 1, 1997. Units 3 & 4 are Group 1, Phase II boilers. PPL was required to comply with the emission limit of 0.45 lb/mmBtu of heat input on an annual average basis for tangentially fired boilers (40 CFR §76.5) beginning with January 1, 1997, emissions and ending with December 31, 2007.

In accordance with 40 CFR §76.8(d)(1)(ii), EPA was responsible for issuing the early NO_x reduction permit. The state has not been delegated this authority. Under 40 CFR §72.73(b)(2), the Department was required to include, not later than January 1, 1999, the acid rain permit requirements for nitrogen oxides. PPL, under 40 CFR §76.9(b), submitted a Phase II NO_x permit application by January 1, 1998.

On January 1, 2008, the early election plan expired and PPL became subject to the NO_x limitations for Group I, Phase II boilers under 40 CFR 76.7.

Auxiliary Propane Boiler (EU05)

PPL is required to notify the Department of both start up and shut down of the auxiliary propane heater.

Building Heater Boiler (EU06)

PPL is required to notify the Department of both start up and shut down of the building heater boiler.

No other emission units at the facility contain source specific emissions limits or conditions.

Tangential Coal Fired Units 1-4 Mercury Emissions

New mercury control requirements implemented under the preconstruction permitting program have required that PPL obtain a Montana Air Quality Permit (MAQP) to include mercury provisions under the Administrative Rules of Montana (ARM) 17.8.771 for the Colstrip Plant. On April 9, 2009, the Department issued MAQP #0513-07 with the following mercury limits and operating requirements, which are also reflected in Section III.L of Permit #OP0513-05:

- Beginning January 1, 2010, facility-wide emissions of mercury (Hg) shall not exceed 0.9 pounds per trillion British thermal units (lb/TBtu), calculated as a rolling 12-month average (ARM 17.8.771).
- On each Unit 1-4, PPL shall install a mercury control system that oxidizes and sorbs emissions of mercury. PPL shall implement the operation and maintenance of mercury control systems on or before January 1, 2010 (ARM 17.8.771).

B. Monitoring Requirements

ARM 17.8.1212(1) requires that all monitoring and analysis procedures or test methods required under applicable requirements are contained in Operating Permits. In addition, when the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit.

The requirements for testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance do not require the permit to impose the same level of rigor for all emission units. Furthermore, they do not require extensive testing or monitoring to assure compliance with the applicable requirements for emission units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. When compliance with the underlying applicable requirement for an insignificant emissions unit is not threatened by lack of regular monitoring and when periodic testing or monitoring is not otherwise required by the applicable requirement, the status quo (**i.e., no monitoring**) will meet the requirements of ARM 17.8.1212(1). Therefore, the permit does not include monitoring for insignificant emissions unit.

This permit includes periodic monitoring or recordkeeping for each applicable requirement. The information obtained from the monitoring and recordkeeping will be used by PPL to periodically certify compliance with the emission limits and standards. However, the Department may request additional testing to determine compliance with the emission limits and standards.

Units 1-4 are required to maintain CEMS for SO₂, NO_x, CO₂, and opacity. In addition, the Department determined continuous monitoring is also required for stack gas temperature, stack gas moisture (where necessary), megawatt production, and Btu per hour (as a function of heat rate and megawatt production). Units 1-4 are also required to maintain a MEMS for mercury as of January 1,

2010.

The Department determined that fugitive emission units located at the facility require bi-monthly visual inspections. The method of demonstrating compliance includes a requirement to observe specific sites and to log the information. The log will be kept at the plant site and be available for review during inspections. The compliance demonstration requires verification that visual inspections were performed and they were recorded and a log maintained.

The Department determined this frequency of visual monitoring was sufficient for this facility based on a number of factors. First, the fugitive emissions of many of the locations are controlled using dust abatement techniques. Second, PPL has a Dust Abatement Program in place. The program is used to control fugitive dust emissions at the plant site and for the entire Colstrip area. The Dust Abatement Task Force (DATF) was formed in 1982 and meets at least once per year to set the strategies for the upcoming year's activities as well as to review the pertinent events from the previous year. As a result of the DATF, specific monitoring and control activities have evolved for the Colstrip area. The DATF has worked to ensure that monitoring and control of dust is integrated into the daily activities, which have the potential of creating emissions.

Based on this information, the Department has determined the visual monitoring contained in the operating permit will provide a backup to the existing efforts of the DATF and ensure visual monitoring will continue on an ongoing basis.

C. Test Methods and Procedures

All source test recordkeeping shall be performed in accordance with the Montana Source Test Protocol and Procedures Manual.

The mercury limit will be monitored using Mercury Emission Monitoring Systems (MEMS) pursuant to Appendix J.

D. Recordkeeping Requirements

PPL is required to keep all records listed in the Operating Permit as a permanent business record for at least 5 years following the date of the generation of the record. All source test recordkeeping shall be performed in accordance with the Montana Source Test Protocol and Procedures Manual. If Method 9 tests are conducted, the test reports must be maintained on-site and must be submitted to the Department upon request.

E. Reporting Requirements

Reporting requirements are included in the permit for each emissions unit, and Section V of the Operating Permit "General Conditions" explains the reporting requirements. However, PPL is required to semi-annual and annual monitoring reports to the Department, and to annually certify compliance with the applicable requirements contained in the permit. The reports must include a list of all emission limit and monitoring deviations, the reason for any deviation, and the corrective action taken as a result of any deviation. PPL is also required to submit quarterly reports as required by Section III.B, III.C, and Appendices E, F, G, H, I, and J of Operating Permit #OP0513-05.

SECTION IV. NON-APPLICABLE REQUIREMENTS

The Department reviewed the rules and regulations contained in Section 8 of the original application that PPL identified as non-applicable. The Department included those regulations that it agreed were non-applicable to Units 3 & 4 in the Operating Permit in Section IV along with the reasons for non-applicability.

The Department did not identify all of the rules or regulations identified by PPL. Rules and regulations that identify procedural requirements and those that do not establish emission limits or applicable requirements on the facility.

40 CFR 60, Subpart Da is not applicable because construction of the facility began prior to September 18, 1978, except the CEMS for Units 3 & 4 were determined to be subject to this NSPS.

SECTION V. OTHER CONSIDERATIONS

A. MACT Standards

As of the issuance date of this permit, the Department is aware of one future MACT Standard that may pertain to the Colstrip Steam Electric Station. PPL may be subject to a future Utility MACT following the vacature of the federal Clean Air Mercury Rule.

B. NESHAP Standards

As of the issuance date of this permit, the Department is unaware of any future NESHAP Standards that may be promulgated that will affect this facility.

C. NSPS Standards

As of the issuance date of this permit, the Department is unaware of any future NSPS Standards that may be promulgated that will affect this facility.

D. Risk Management Plan

A Risk Management Plan as defined in 40 CFR Part 68 is required for Units 3 & 4. The facility must comply with 40 CFR 68 requirements no later than June 21, 1999; 3 years after the date on which a regulated substance is first listed under 40 CFR 68.130; or the date on which a regulated substance is first present in more than a threshold quantity in a process, whichever is later.

E. Compliance Assurance Monitoring Plan

In accordance with the Administrative Rules of Montana (ARM) Title 17, Chapter 8, Subchapter 15, a Compliance Assurance Monitoring (CAM) Plan applies to each pollutant-specific emitting unit at a major stationary source (Title V) if the affected unit is subject to a pollutant specific emission limitation or standard; the unit uses a control device to achieve compliance with the applicable limitation or standard; and the unit has a pre-control PTE the regulated pollutant in an amount that exceeds 100% of the Title V major source threshold.

The PPL Costrip facility meets the above criteria for particulate matter (PM). Refer to Appendix I of Operating Permit #OP0513-05 for a summary of the PM CAM plan.