Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
P. O. Box 200901 Helena, MT 59620-0901 (406) 444-2544 Website: www.deq.mt.gov

March 24, 2009

James Parker
PPL Montana, LLC
JE Corette Steam Electric Station
301 Charlene St., P.O. Box 30495
Billings, MT 59101

Dear Mr. Parker:

The Department of Environmental Quality (Department) has made its decision on the Montana Air Quality Permit application for PPL Montana, LLC, JE Corette Steam Electric Station. The application was given permit number 2953-00. The Department's decision may be appealed to the Board of Environmental Review (Board). A request for hearing must be filed by April 8, 2009. This permit shall become final on April 9, 2009, unless the Board orders a stay on the permit.

Procedures for Appeal: Any person jointly or severally adversely affected by the final action may request a hearing before the Board. Any appeal must be filed before the final date stated above. The request for a hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing in triplicate to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, Montana 59620.

Conditions: See attached.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-3490

Brent Lignell
Environmental Engineer
Air Resources Management Bureau
(406) 444-5311

VW:BL
Enclosures

MONTANA AIR QUALITY PERMIT

Issued To:	PPL Montana, LLC JE Corette Steam Electric Station 301 Charlene St., P.O. Box 30495 Billings, MT 59101	Permit: #2953-00 Application Complete: 01/08/09 Preliminary Determination Issued: 02/17/09 Department's Decision Issued: 03/24/09 Permit Final: AFS #: 111-0015

An air quality permit, with conditions, is hereby granted to PPL Montana, LLC (PPLM), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Permitted Equipment

PPLM operates a tangential-fired boiler capable of burning coal or natural gas for generation of electricity. The boiler and associated equipment were not previously required to have a Montana Air Quality Permit (MAQP) as defined in ARM 17.8.743, since the boiler was in operation before November 23, 1968, and has not undergone modification resulting in an increase of the potential to emit of more than 25 tons per year (tpy) of any regulated airborne pollutant. However, the facility now requires an MAQP specific to mercury (Hg) control because the facility is subject to mercury emission limitations under ARM 17.8.771. MAQP #2953-00 establishes a mercury emission limit and associated operating requirements for the boiler in order to comply with ARM 17.8.771.

B. Plant Location

The PPLM JE Corette Steam Electric Station (Corette) is located in Section 2, Township 1 S, Range 26 E in Yellowstone County, Montana. A list of the permitted equipment is located in Section I.A of the permit analysis.

SECTION II: Conditions and Limitations

A. Emission Limitations

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

2. PPLM shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

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

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

5. Beginning January 1, 2010, emissions of mercury from the boiler shall not exceed 0.9 pounds mercury per trillion British thermal units (lb/TBtu), calculated as a rolling 12-month average (ARM 17.8.771).

6. PPLM shall install a mercury control system that oxidizes and sorbs emissions of mercury. PPLM shall implement the operation and maintenance of the mercury control system on or before January 1, 2010 (ARM 17.8.771).

7. PPLM shall comply with all applicable standards and limitations, and the applicable operating, reporting, recordkeeping, and notification requirements contained in 40 CFR Part 75 (ARM 17.8.771).

8. PPLM shall operate and maintain the mercury oxidizer/sorbent handling system, including the bin vent filter system, to provide the maximum air pollution control for that which the system was designed (ARM 17.8.749).

B. Testing Requirements

1. Enforcement of Section II.A.5, where applicable, shall be determined by utilizing data taken from a Mercury Emission Monitoring System (MEMS). The MEMS shall be comprised of equipment as required in 40 CFR 75.81(a) and defined in 40 CFR 72.2. The above does not relieve PPLM from meeting any applicable requirements of 40 CFR Part 75. Testing requirements shall be as specified in 40 CFR Part 75, Section II.B, and II.D of MAQP #2953-00 (ARM 17.8.771).

2. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

3. The Department of Environmental Quality (Department) may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. PPLM 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 emission inventory contained in the permit analysis.

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

2. PPLM shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit***, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to startup 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(l)(d) (ARM 17.8.745).

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

4. The owner or operator of any mercury-emitting generating unit shall report to the Department within 30 days after the end of each calendar quarter, as described in Attachment 2 (ARM 17.8.749):

   a. The monthly average lb/TBtu mercury emission rate, for each month of the quarter;

   b. The 12-month rolling average lb/TBtu emission rate for each month of the reporting quarter;

   c. Number of operating hours that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime); and

5. The first quarterly report must be received by the Department by April 30, 2010, but shall not include 12-month rolling averages. The first quarterly report to include 12-month rolling averages must be received by the Department by January 30, 2011 (ARM 17.8.749).

D. Mercury Emissions Monitoring Systems

A MEMS shall be installed, certified, and operating on the boiler stack outlet on or before January 1, 2010. Said monitor shall comply with the applicable provisions of 40 CFR Part 75. The monitors shall also conform with requirements included in Attachment 2 (ARM 17.8.771).

E. Notification

Within 15 days after actual startup of the mercury control system, PPLM shall notify the Department of the date of actual startup (ARM 17.8.749).

SECTION III: General Conditions

A. Inspection – PPLM 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 (MEMS, continuous emission monitoring system – CEMS, continuous emission rate monitoring system – 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 PPLM fails to appeal as indicated below.

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

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

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board).

A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

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

G. Permit Fee – Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by PPLM may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

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

Attachment 2 (MEMS)

MEMS

a. PPLM shall install, calibrate, certify, maintain, and operate an MEMS to monitor and record the rate of mercury emissions discharged into the atmosphere from all mercury emitting generating units (units) as defined in the Administrative Rules of Montana 17.8.740.

(1) The MEMS shall be comprised of equipment as required in 40 CFR 75.81(a) and defined in 40 CFR 72.2.

(2) The MEMS shall conform to all applicable requirements of 40 CFR Part 75.

(3) The MEMS data will be used to demonstrate compliance with the emission limitations contained in Section II.A.5.

b. PPLM shall prepare, maintain and submit a written MEMS Monitoring Plan to the Department.

(1) The monitoring plan shall contain sufficient information on the MEMS and the use of data derived from these systems to demonstrate that all the gaseous mercury stack emissions from each unit are monitored and reported.

(2) Whenever PPLM makes a replacement, modification, or change in a MEMS or alternative monitoring system under 40 CFR 75 subpart E, including a change in the automated data acquisition and handling system (DAHS) or in the flue gas handling system, that affects information reported in the monitoring plan (e.g. a change to a serial number for a component of a monitoring system), then the owner or operator shall update the monitoring plan.

(3) If any monitoring plan information requires an update pursuant to Section b.(2), submission of the written monitoring plan update shall be completed prior to or concurrent with the submittal of the quarterly report required in c. below for the quarter in which the update is required.

(4) The initial submission of the Monitoring Plan to the Department shall include a copy of a written Quality Assurance/Quality Control (QA/QC) Plan as detailed in 40 CFR 75 Appendix B, Section 1. Subsequently, the QA/QC Plan need only be submitted to the Department when it is substantially revised. Substantial revisions can include items such as changes in QA/QC processes resulting from rule changes, modifications in the frequency or timing of QA/QC procedures, or the addition/deletion of equipment or procedures.

(5) The Monitoring Plan shall include, at a minimum, the following information:

(a) Facility summary including:

(i) A description of each mercury emitting generating unit at the facility.

(ii) Maximum and average loads (in megawatts (MW)) with fuels combusted and fuel flow rates at the maximum and average loads for each unit.

(iii) A description of each unit's air pollution control equipment and a description of the physical characteristics of each unit's stack.

(b) Mercury emission control summary including a description of control strategies, equipment, and design process rates.

(c) MEMS description, including:

(i) Identification and description of each monitoring component in the MEMS including manufacturer and model identifications; monitoring method descriptions; and normal operating scale and units descriptions. Descriptions of stack flow, diluent gas, and moisture monitors (if used) in the system must be described in addition to the mercury monitor or monitors.

(ii) A description of the normal operating process for each monitor including a description of all QA/QC checks.

(iii) A description of the methods that will be employed to verify and maintain the accuracy and precision of the MEMS calibration equipment.

(iv) Identification and description of the DAHS, including major hardware and software components, conversion formulas, constants, factors, averaging processes, and missing data substitution procedures.

(v) A description of all initial certification and ongoing recertification tests and frequencies; as well as all accuracy auditing tests and frequencies.

(d) The Maximum Potential Concentration (MPC), Maximum Expected Concentration (MEC), span value, and range value as applicable and as defined in 40 CFR 75 Appendix A, 2.1.7.

(e) Examples of all data reports required in c. below.

c. PPLM shall submit written, Quarterly Mercury Monitoring Reports. The reports shall be received by the Department within 30 days following the end of each calendar quarter, and shall include, at a minimum, the following:

(1) Mercury emissions. The reports shall include:

(a) The monthly average lb/TBtu mercury emission rate for each month of the quarter;

(b) The 12-month rolling average lb/TBtu emission rate for each month of the reporting quarter. The rolling 12-month basis is an average of the last 12 individual calendar monthly averages, with each monthly average calculated at the end of each calendar month; and

(c) The total heat input to the boiler (in TBtu) for each 12-month rolling period of the quarter.

(2) Mercury excess emissions. The report shall describe the magnitude of excess mercury emissions experienced during the quarter, including:

(a) The date and time of commencement and completion of each period of excess emissions. Periods of excess emissions shall be defined as those emissions calculated on a rolling 12-month basis which are greater than the limitation established in II.A.5.

(b) The nature and cause of each period of excess emissions and the corrective action taken or preventative measures adopted in response.

(c) If no periods of excess mercury emissions were experienced during the quarter, the report shall state that information.

(3) MEMS performance. The report shall describe:

(a) The number of operating hours that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime) during the reporting quarter, broken down by the following categories:

- Monitor equipment malfunctions;
- Non-Monitor equipment malfunctions;
- Quality assurance calibration;
- Other known causes; and
- Unknown causes.

(b) The percentage of unit operating time that the MEMS was unavailable or not operating within quality assurance limits (monitor downtime) during the reporting quarter. The percentage of monitor downtime in each calendar quarter shall be calculated according to the following formula:

$$MEMSDowntime\% = \left(\frac{MEMSDownHours}{OpHours} \right) \times 100 \quad \text{where}$$

MEMSDowntime%	=	Percentage of unit operating hours classified as MEMS monitor downtime during the reporting quarter.
MEMSDownHours	=	Total number of hours of MEMS monitor downtime during the reporting quarter.
OpHours	=	Total number of hours the unit operated during the reporting quarter.

(c) For any reporting quarter in which monitor downtime exceeds 10%, a description of each time period during which the MEMS was inoperative or operating in a manner defined in 40 CFR Part 75 as "out of control." Each description must include the date, start and end times, total downtime (in hours), the reason for the system downtime, and any necessary corrective actions that were taken. In addition, the report shall describe the values used for any periods when missing data substitution was necessary as detailed in 40 CFR 75.30, *et seq*.

(4) The quarterly report shall include the results of any QA/QC audits, checks, or tests conducted to satisfy the requirements of 40 CFR Part 75 Appendices A, B or K.

(5) Compliance certification. Each quarterly report shall contain a certification statement signed by the facility's responsible official based on reasonable inquiry of those persons with primary responsibility for ensuring that all of the unit's emissions are correctly and fully monitored. The certification shall indicate:

(a) Whether the monitoring data submitted were recorded in accordance with the applicable requirements of 40 CFR Part 75 including the QA/QC procedures and specifications of that part and its appendices, and any such requirements, procedures and specifications of an applicable excepted or approved alternative monitoring method as represented in the approved Monitoring Plan.

(b) That for all hours where data are substituted in accordance with 40 CFR 75.38, the add-on mercury emission controls were operating within the range of parameters listed in the quality-assurance plan for the unit, and that the substitute values do not systematically underestimate mercury emissions.

(6) The format of each component of the quarterly report may be negotiated with the Department's representative to accommodate the capabilities and formats of the facility's DAHS.

(7) Each quarterly report must be received by the Department within 30 days following the end of each calendar reporting period (January-March, April-June, July-September, and October-December).

(8) The electronic data reporting detailed in 40 CFR Part 75 shall not be required unless Montana is able to receive and process data in an electronic format.

d. PPLM shall maintain a file of all measurements and performance testing results from the MEMS; all MEMS performance evaluations; all MEMS or monitoring device calibration checks and audits; and records of all adjustments and maintenance performed on these systems or devices recorded in a permanent form suitable for inspection. The file shall be retained on site for at least 5 years following the date of such measurements and reports. PPLM shall make these records available for inspection by the Department and shall supply these records to the Department upon request.

Permit Analysis
PPL Montana, LLC – JE Corette Steam Electric Station
Permit #2953-00

I. Introduction/Process Description

PPL Montana, LLC (PPLM) – JE Corette Steam Electric Station (Corette) – owns and operates a tangential fired boiler capable of burning coal or natural gas and associated equipment for generation of electricity. The facility is located in Section 2, Township 1 S, Range 26 E in Yellowstone County, Montana.

A. Permitted Equipment

Permit #2953-00 applies to operation of a mercury (Hg) emission control system which consists of:

- Oxidizer/sorber injection system
- Oxidizer/sorber handling system
- Ash handling system

B. Source Description

The JE Corette Steam Electric Station is a 163 megawatt (MW) electrical generation unit that burns low sulfur sub-bituminous Powder River Basin (PRB) coal. Coal is currently shipped by rail from the southern Powder River Basin, unloaded, stored in stockpiles, and delivered to plant storage silos by conveyor. Coal stored in storage silos is fed through four coal feeders to four pulverizers, from which the coal is carried to the boiler in a preheated stream of air, and combusted.

High temperatures in the furnace cause oxygen in the combustion air to react with nitrogen in the fuel and combustion air to form oxides of nitrogen (NOx). The boiler is tangentially fired, with concentric firing nozzles, overfire air, and a digital control system to reduce combustion temperatures to control NOx emissions. The net amount of NOx remaining after combustion is the source of NOx emissions from the stack.

The coal burned in the furnace contains some sulfur. Most of the sulfur is converted to sulfur dioxide (SO_2) during combustion, which is the source of SO_2 emissions from the stack.

Combustion of coal creates ash, approximately 30% to 40% of which falls to the bottom of the furnace as bottom ash. The bottom ash is sluiced from the boiler to a temporary storage pond. The ash is periodically removed and transported by truck offsite, where the majority is beneficially reused.

Fly ash, which does not fall to the bottom of the furnace, is carried out of the furnace with boiler exhaust gases. The boiler exhaust gas passes through an air heater to preheat the incoming combustion air and then to the electrostatic precipitator (ESP) where particulate matter is removed. The removed particulate matter (fly ash and mercury sorbent) is collected in hoppers, from which it is pneumatically conveyed to storage tanks, and then to pressurized trucks or rail cars. These vessels transport the material offsite where the majority is beneficially reused. The remainder of the fly ash which is not removed by the ESP is the source of particulate emissions from the stack.

PRB coal contains low levels of mercury which is released upon combustion and is the source or mercury emissions at the facility. Mercury reduction can be accomplished by a control system that first oxidizes elemental gaseous mercury, then provides a particulate medium such as activated carbon (AC) to sorb the oxidized mercury. The AC-bound mercury is then removed by particulate removal devices, such as scrubbers or ESP.

At Corette, a mercury oxidizing/sorbing agent (currently treated activated carbon) will be injected between the boiler and ESP. Additional oxidizer may be applied to the coal as needed. Activated carbon will be delivered by rail or truck, pneumatically unloaded, and stored in a new silo and feed system constructed on-site. Venting of the silo will consist of a bin vent on the silo containing a fabric filter. The activated carbon will be conveyed pneumatically to distribution lances and injected into the exhaust gas stream.

C. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	Department Response
PPLM	Throughout Permit and Permit Analysis	#1. General Comment. Use of the Term "adsorb" and its derivatives. We are concerned that the use of this term to describe the mercury control system may result in the unintended consequence of being too restrictive. There is a level of un-certainty in the scientific community as to the exact mechanism(s) which take place alone or in combination when injected sorbents capture mercury. Due to this level of uncertainty, we recommend replacement of the term "adsorb" and its derivatives with a more general term such as "capture", "reduce", or "sorb", reflective of the fact that the sorbent results in capture or reduction of the amount of mercury in the flue gas through chemical reactions that are not completely understood in all respects.	The Department agrees and has changed the permit to use the word "sorb" in place of "adsorb."
PPLM	Sec. II.A.5, pg. 2	#2. Page 2, Section II A (5), Mercury Emission Standard. PPLM notes that in addition to the requirement to comply with a standard of 0.9 #/TBtu by January 1, 2010, the following provisions also apply to this standard (from ARM 17.8.771) and encourage the Department to modify the language of the permit standard as such: o If the owner or operator of a mercury-emitting generating unit properly implements the mercury control strategy approved pursuant to (1)(c), and the mercury control strategy fails under normal operation to meet the emission rate required in (1)(b) [0.9 #/TBtu], the owner or operator: □ shall notify the department of the failure to meet the emission rate required in (1)(b) by March 1, 2011, or within two months of such failure, whichever is later; and □ may submit an application to the department for a Montana air quality permit or a modification of a Montana air quality permit solely to establish an alternative mercury emission limit [by July 1, 2011, or within six months of the failure].	The Department disagrees. ARM 17.8.771(1)(c) requires the owner or operator of a mercury-emitting unit submit an application "…solely to establish the mercury emission limit from (1)(b) and any necessary operational requirements as a condition of the permit." Because the application is to "solely" establish this emission limit, the Department feels the permit should reflect a similar scope. However, mercury-emitting units are subject to the full provisions of 17.8.771, including avenues of recourse should the mercury control strategy fail to meet the required emission rate under normal operation.
PPLM	Sec. II.D, pg. 3	#3. Page 3, Section II D, Mercury Emissions Monitoring Systems. We believe that, given the state of the art of mercury monitoring, the requirements of 40 CFR Part 75 cannot be fully complied with. Part 75 was compiled for monitoring programs within a cap and trade system, where emissions represented dollars, and 100% data availability was critical for proper operation of the program. However, Montana's mercury control requirements do not utilize such a cap and trade system. PPL Montana encourages the Department to provide a permit provision enabling a collaborative development of source specific monitoring requirements, which takes into account the extreme challenges associated with mercury monitoring and the specific source conditions. We feel this is especially critical at this early juncture in the refinement of field mercury monitoring.	The Department acknowledges the difficulties associate with the 40 CFR 75. However, due to the lack of a more thorough and tested mercury monitoring guidance, the Department feels 40 CFR 75 provides the most relevant foundation for a Mercury Emissions Monitoring System. Furthermore, in collaboration with the owners and operators of mercury-emitting units, the Department utilized 40 CFR 75 in the development of Attachment 2 to Permit #0513-07. Attachment 2 and its references to 40 CFR 75 remain the only consistent mercury monitoring protocol for implementing the Montana state mercury standard independent of vacated federal regulations. The Department has every intention of collaborating with owners and operators of mercy-emitting units as the mercury control strategies become more refined. Since the Department has worked with stakeholders in the past, and is committed to future collaboration, the Department does not feel it is necessary to establish a permit provision requiring collaborative development of source-specific monitoring requirements; thus the permit language will remain as proposed.

Person/Group Commenting	Permit Reference	Comment	Department Response
PPLM	Attachment 2 (MEMS), Sec. b.(5)(a), pg. 5	#4. Page 5, Attachment 2 (MEMS), Condition b. (5). (a), facility summary information. PPL Montana requests confirmation from DEQ that the information required is for descriptive purposes only. We note that if this information is supposed to represent permitted facility characteristics, some of the required information is inappropriate for that purpose. For example, maximum and average loads in MW and fuel flow rates are not enforceable permit limitations for the Corette plant. Maximum heat input, on the other hand, can be considered a permitted facility characteristic due to its link to allowable emissions.	The Department confirms that this information is required for descriptive purposes only.
PPLM	Attachment 2 (MEMS), Sec. c.(1)(c), pg. 6	#5. Page 6 (Attachment 2, (MEMS), Condition c.(1)(c), Requirement to Report Ounces of Mercury (rounded to the nearest thousandth) quarterly. We believe the requirement is unnecessary in this permit. The initial 40 CFR Part 75 requirement to report ounces stemmed from the anticipation of a cap and trade program for mercury, which would equate mercury allowances to ounces of mercury emitted. The standard to which Corette will be subject is a rate in units of #/TBtu. Furthermore, the potential for a future mercury cap and trade program has decreased to nil with the EPA's stated embarkation on a path toward a national MACT standard. Given these facts we see no value to reporting mercury in ounces in quarterly reports.	The Department agrees and has removed the provision that appeared in the Preliminary Determination as c.(1)(c) of Attachment 2 requiring reporting of mercury in ounces.
PPLM	Attachment 2 (MEMS), Sec. c.(1)(d), pg. 6	#6. Page 6 (Attachment 2, (MEMS), Condition c.(1)(d), Requirement to report total heat input in #/TBtu quarterly. We also believe this requirement is unnecessary. This requirement is also related to an anticipated mercury cap and trade program, which as noted above is not in existence and has a very low probability of ever coming about. PPL Montana reports heat input as part of its yearly emission inventory, and reporting this same information quarterly in different units is redundant and inefficient.	The Department believes that reporting total heat input for each 12-month rolling period of the quarter provides another compliance mechanism and is additionally useful for further evaluating facility operations. Therefore, the provision that appeared in the Preliminary Determination as c.(1)(d)(ii) of Attachment 2, requiring the reporting of total heat input for each 12-month rolling period of the quarter, will remain as proposed. This provision is renumbered to c.(1)(c) of Attachment 2 in the Department Decision. However, the Department agrees that reporting total heat input on a monthly and calendar year-to-date basis does not provide a compliance utility. Therefore, the Department has removed the provisions that appeared in the Preliminary Determination as c.(1)(d)(i) and c.(1)(d)(iii) of Attachment 2.
PPLM	Attachment 2 (MEMS), Sec. c.(1)(e), pg. 7	#7. Page 7 (Attachment 2, (MEMS), Condition c.(1) (e), Requirement to report technical specifications for the oxidizing and adsorption agents. We believe this requirement is redundant, in the sense that for many sequential quarters, the mercury capture agents will be the same and PPLM will be repeatedly submitting the same information. We suggest a more efficient reporting requirement comprised of submittal of the relevant technical specifications only when the oxidizing and reduction agents change. In addition, we ask DEQ to clarify the term "technical specifications" as used in this reporting requirement. This clarification will help us to provide DEQ with the information most responsive to its needs and avoid the reporting of superfluous information.	The Department agrees and has removed the provision that appeared in the Preliminary Determination as c.(1)(e) of Attachment 2 requiring technical specifications on oxidizing/sorbing agents. The Department has also removed the parallel permit provision II.C.4.d.

Person/Group Commenting	Permit Reference	Comment	Department Response
PPLM	Attachment 2 (MEMS), Sec. c.(3)(c), pg. 7	#8. Page 7 (Attachment 2, (MEMS), Condition c.(3) (c), Requirement to report additional information when quarterly monitoring down time exceeds 10%. See comment 3 above. We believe that with the stated challenges to mercury monitoring, this threshold is too low and recommend a reporting threshold of 20%.	As discussed in response to PPLM comment #3, the Department acknowledges the difficulties associate with the 40 CFR 75 and the uncertainties related to mercury monitoring. However, the Department feels that the 10% threshold is a reasonable value based on currently available information. Again, the Department has every intention of collaborating with owners and operators of mercy-emitting units as the mercury control strategies become more refined.
PPLM	Throughout Permit Analysis	#9. Permit Analysis, General Comment, Sorbent Technologies, Inc. We note for the record that Sorbent Technologies, Inc, a noted provider of mercury control technologies, merged with Albamarle Corporation and now goes by the company name of Albamarle Sorbent Technologies.	The Department acknowledges this fact and has added a footnote in the permit analysis to reflect the current name of the company.
PPLM	Permit Analysis, pg. 2	#10. Permit Analysis, page 2, Source Description, last paragraph, second line. We recommend the insertion of the following statement as the second sentence of the paragraph: "Additional oxidizer may be applied to the coal as needed". PPLM believes that the use of mercury oxidizer and capture technology encompasses the placement of an oxidizer as needed on the fuel to compliment the injection of a proper sorbent. As stated in our application, the treatment of the fuel with the oxidizer compounds does not impact emissions, nor does the equipment used to apply the oxidizer.	The Department agrees and has inserted the recommended sentence.
PPLM	Permit Analysis, Sec. IV.C, pgs. 9 and 10	#11. Permit Analysis, Section IV. C., Pages 9 and 10, Testing of Mercury Control Strategies at PPL Montana Facilities. PPLM offers the revised description in Attachment 1, to accurately describe the subject testing.	The Department appreciates the narrative provided and has incorporated the language in to the permit analysis.
PPLM	Permit Analysis, Sec. IV.E, pg. 12	#12. Permit Analysis, Section IV. E., Page12, Projected Balance of Plant Impacts, Third Paragraph, 6th line. Change "Corette" to "Colstrip".	The Department agrees and has changed the permit accordingly.
PPLM	Permit Analysis, Sec. V	#13. Permit Analysis, Section V., Emission Inventory. We recommend that the term "nominal" be added as a descriptor for the maximum unit coal consumption term and that the term "design" be used to modify the coal heating value term. These changes would reflect the fact that, while maximum heat input to the boiler will remain constant, coal consumption on a ton/hour basis will change in response to the heating value of the coal.	The Department agrees and has changed the permit accordingly.

II. Applicable Rules and Regulations

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

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

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

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

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

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

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

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of 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 as to create a public nuisance.

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

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

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

1. ARM 17.8.304 Visible Air Contaminants. (1) This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304). (2) This rule requires that no person may 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.

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, PPLM 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. (4) 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 units (Btu) fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

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. PPLM submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality 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 prorate 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 person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year (tpy) of any pollutant. PPLM was in operation before November 23, 1968, and has not undergone any modification resulting in an increase of the potential to emit of more than 25 tpy of any regulated airborne pollutant and therefore does not meet the requirements for a Montana Air Quality Permit (MAQP) as defined in ARM 17.8.743. However, PPLM was required to submit a MAQP application pursuant to ARM 17.8.771.

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. PPLM submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. PPLM submitted an affidavit of publication of public notice for the December 21, 2008, issue of *The Billings Gazette*, a newspaper of general circulation in the City of Billings in the County of Yellowstone, as proof of compliance with the public notice requirements.

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

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

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

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving PPLM 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 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.

15. ARM 17.8.771 Mercury Emission Standards for Mercury-Emitting Generating Units. This rule identifies mercury emission limitation requirements, mercury control strategy requirements, and application requirements for mercury-emitting generating units.

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 a listed source and has a PTE of 100 tpy or more of pollutants subject to regulation under the FCAA; therefore, the facility is major. This modification will not cause a net emission increase greater than significant levels and, therefore, does not require a New Source Review (NSR) analysis. The net emission changes are as follows:

A decrease in mercury emissions will result from the use of the mercury control system. An increase in particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) emissions will result from operation of the sorbent handling system (activated carbon silo) and the ash handling system**.** The net emission changes resulting from the proposed project is summarized in the following table:

Net Emission Changes Due to Operation of Mercury Controls

	Mercury (tpy)	**PM_{10} (tpy)**
Boiler	-0.039	0.0
Sorbent Handling System [1]	0.0	0.000003
Ash Handling System [2]	0.0	0.3
Net Emission Change	-0.039	0.300003

1. Values reflect controlled emissions through bin vent filter with 99.99% control efficiency.
2. Values reflect controlled emissions through systems with 99.0% control efficiency.

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 source having:

   a. PTE > 100 tons/year of any pollutant;

   b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), 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. (1) 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 #2953-00 for PPLM, the following conclusions were made:

   a. The facility's PTE is greater 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 not subject to a current NSPS.

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

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

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

   Based on these facts, the Department determined that PPLM is subject to the Title V operating permit program. PPLM's Title V Operating Permit will be modified to reflect the conditions associated with this permit action.

III. BACT Determination

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

A BACT analysis was not required for the current permit action because PPLM is not proposing to install or operate a new or modified emitting unit.

IV. Mercury Control Technology Analysis

Per ARM 17.8.771, an analysis was submitted by PPLM in Permit Application #2953-00, addressing available methods of controlling mercury emissions from the tangential fired boiler. Mercury control options include, but were not limited to, boiler technology, mercury emission control technology, and any other mercury control practices. This analysis also included PPLM's proposed mercury emission control strategy projected to achieve compliance with the 0.9 pounds per trillion British thermal unit (lb/TBtu) emission limit established in this permit. A summary of PPLM's analysis is provided in the following sections.

A. Screening of Mercury Control Strategies

Pursuant to ARM 17.8.771(1)(c), PPLM, aided by its consultants, screened a broad range of developing and purportedly mature technologies for potential application at the Corette plant. Based upon the results of that screening, potential technologies for further testing at Corette were identified. The following tables summarize the technology screening.

Pre-Combustion Process Mercury Control

Technology	Applicability	Comments
Coal Cleaning	Low	Level of development and availability for Corette's coal type is low and test data indicate that it would not achieve the required level of control. Thermal, hydrothermal, magnetic separation, froth flotation, selective agglomeration, and chemical/biological techniques included in this category.
Coal Treatment	High	Additional oxidizers effective in Powder River Basin (PRB) coals. May not achieve required reductions with coal treatment alone, and caution is required to avoid negative impacts to fly ash marketability. Chloride (Cl), bromine (Br), iodine (I) salts and inorganic polymer electret (IPE) polymer included in this category. Alstom Power Inc.'s (Alstom) KNX™ and Chem-Mod LLC's (Chem-Mod) Mersorb and S-sorb are examples of this technology.
Coal Blending	Low	Corette's SO_2 limits preclude blending with coals (such as bituminous coals) high in oxidizers because these coals also have excessive sulfur. This technology would also not provide required level of control.

Combustion Process Mercury Control

Technology	Applicability	Comments
Boiler Tuning	Low	Tuning alone would not achieve necessary level of control. This was demonstrated in 2006 at Colstrip (see §1.3.B.3 of the Colstrip application for mercury control). Tuning to achieve mercury control would result in efficiency decrease.
Chemical Injection	Medium	Either oxidizers or sorbents injected into the combustion zone have shown promising results. This technology is applicable provided it results in no negative impact on fly ash marketability. Included in this category are the University of North Dakota Energy and Environmental Research Center® (EERC) Sorbent Enhancing Additive 1 (SEA1), Chem-Mod's Mersorb/S-Sorb, and Nalco-Mobotec/ MinPlus sorbent injection (with or without an oxidizer).

Post-Combustion Process Mercury Control

Technology	Applicability	Comments
Baghouse	Low	While this technology may provide adequate control, it is not economical at this time to implement, considering the proven success of less costly controls. Compact hybrid particulate collector (COHPA), non-carbon sorbents, felt filter bag inserts and the Electric Power Research Institute's (EPRI) TOXECON™ are included in this category.
Chemical Injection (Oxidizer)	Medium	Depending upon the oxidizer, may be successful, provided no negative impact to ash marketability. Included in this category are chlorinated and brominated oxidizers (including magnesium chloride (MgCl), EERC's Sorbent Enhancing Additive 2 (SEA2), ozone, and permanganate.
Oxidation Catalyst	Low	Many of these catalysts are still under development, very costly and do not appear to have the capacity to provide adequate control, although they might serve as a polishing device if necessary. This category includes palladium, titanium/vanadium (Ti/V), carbon-based, high loss-on-ignition (LOI) flyash, photochemical oxidation (PCO), and transition metals (iron, chromium, nickel or others).
Chemical Injection (In-flight capture – non carbon based)	Low	Potential significant negative impacts to fly ash marketability. Technologies in early stages of development. Short retention time due to ductwork configuration would inhibit effectiveness. Studies show that many of these sorbents could be injected in the combustion zone and be more effective. Mineral sorbents (reactive clays), amended silicates, sodium tetrasulfide, calcium based sorbents, iron chloride, corn fibers, fly ash re-injection are included in this category.
Mercury Scrubbers	Low	Significant negative impact on ash marketability. These are retrofit technologies that are not economic relative to other potentially successful technologies. Many of these technologies are in early stages of development. Included in this category are EPRI's Mercury Capture by Adsorption (MerCAP™) (gold), electro-catalytic oxidation (ECO) wet scrubber, ADA Environmental Solution's wet scrubber, other metal oxides, Enviroscrub Corporation's Pahlman™ Process, sodium bicarbonate, and condensing heat exchanger.
AC (Activated Carbon) Injection - conventional	Low	Significant negative impact on ash marketability. This category includes plain, brominated, iodated, chlorinated, sulfur impregnated, acoustically enhanced, tire based, and sodium tetrasulfide enhanced activated carbon injection (ACI). Alstom's Mer-Cure™, Sorbent Technologies brominated activated carbon (B-PAC™) and high temperature application activated carbon (H-PAC™) are examples of this technology)
AC Injection – "Concrete Friendly"	High	Proven success in mercury control and low impact to ash marketability characteristics. This category includes Sorbent Technologies Corporation's (Sorbent Technologies) Concrete-Friendly™ powdered activated carbon (C-PAC™).
Plasma Enhanced ESP	Low	Technology still under development. Potentially significant negative impact on fly ash marketability. Retrofit technology that is significantly less economic relative to other potentially successful technologies.
Advanced Hybrid	Low	Same Comment.
Multi Pollutant Retrofit	Low	Same Comment.
Selective Catalytic Reduction	Low	Demonstrated poor success with PRB coals.
Scrubber Operating Modification	Low	Corette does not have a scrubber.
Re – emission Inhibitors	Low	This should not be needed at Corette, since the control device is an ESP and re-emission is usually only encountered with wet scrubbers.

B. Industry-Wide Testing of Mercury Control Strategies

Effective mercury capture from PRB coal has been achieved using mercury control systems to modify the chemistry of mercury emissions so that pollution control devices, such as the ESP at Corette or the wet scrubbers at Colstrip, can capture a large portion of mercury emissions. Mercury control often consists of two stages that work in combination: mercury oxidation and mercury sorption. Oxidation converts elemental gaseous mercury to an oxidized form, which is then capable of being sorbed to a particulate medium such as activated carbon (AC). The AC-bound mercury is then removed by particulate removal devices, such as scrubbers or ESP. Common sorbents include activated carbon, chemically treated (impregnated) carbon, and non-carbon based sorbents such as calcium or clay.

The concentration of mercury in the coal at Corette has been observed at levels up to 9 lb/TBtu, based upon fuel data from mercury-focused testing at Corette. To meet 0.9 lb/TBtu at Corette, a mercury reduction of approximately 90% would be required. Industry testing suggests that mercury control technology applied to Corette would result in emissions projected to achieve the necessary mercury reduction to meet the Montana standard, as illustrated in the following table.

Industry Results for Mercury Control

Vendor	Date	Plant Size/Fuel/Pollution Control	Mercury Reduction (%) [1]
Chem-Mod LLC	10/05	30 MW / Mixed / Dry Scrubber	98
Chem-Mod LLC	11/05	160MW / PRB / ESP	90
Chem-Mod LLC	12/05	163 MW / PRB / ESP [2]	86
Chem-Mod LLC	8/06	80MW / PRB / ESP	87
Chem-Mod LLC	10/06	160 MW / PRB / ESP	98
Chem-Mod LLC	05/08	163 MW / PRB / ESP [2]	93
Alstom Power Inc.	03/05	570 MW / PRB / Spray Dryer ESP [3]	96
Alstom Power Inc.	08/04	330 MW / PRB / Spray Dryer Fabric Filter [3]	86
Alstom Power Inc.	12/04	70MW / PRB / ESP [4]	91
Alstom Power Inc.	11/04	170 MW / PRB Blend / ESP	90
Alstom Power Inc.	08/05	220 MW / PRB / ESP	92
Alstom Power Inc.	10/05	220 MW / lignite / ESP	91
Alstom Power Inc.	09/07	805 MW / PRB / Wet Scrubber [3]	86
Alstom Power Inc.	09/08	330 MW / PRB / Wet Scrubber [3]	96
Sorbent Technologies	08/06	234 MW / PRB / ESP	83
Sorbent Technologies	10/04	80 MW / PRB mix / ESP	94
Sorbent Technologies	09/08	163 MW / PRB / ESP [2]	94
Sorbent Technologies	12/05	150 MW / PRB / ESP	94
		Average	**91**

1. Maximum observed results.
2. Testing conducted at JE Corette.
3. Tests utilized Alstom's KNX™ fuel treatment technology and Mer-Cure™ sorbent injection technology.
4. Tests utilized only Alstom's KNX™ fuel treatment technology.

The mercury control vendors in the above table include Chem-Mod LLC (Chem-Mod), Alstom Power Inc. (Alstom), and Sorbent Technologies Corporation (Sorbent Technologies)[1]. Chem-Mod employs a halogen liquid applied to the fuel and a non-carbon based sorbent injected either during or after combustion. The Chem-Mod system can capture sulfur, heavy metals such as arsenic and mercury, and chloride. Alstom's KNX™/Mer-Cure™ system applies a halogen liquid to the fuel and a carbon based sorbent injected after combustion. The Alstom sorbent can be either treated or untreated carbon. The Alstom system utilizes flue gas modeling for injection system design to ensure optimum dispersal and utilization of injected sorbent, as well as a sorbent processor to optimize the quality of injected sorbent. Sorbent Technologies utilizes a brominated carbon based sorbent injected after combustion; this sorbent both oxidizes and sorbs the gaseous mercury. Sorbent Technologies markets three different powdered activated carbon (PAC) sorbents: brominated PAC (B-PAC™) for cold side ESP applications; Concrete-Friendly™ PAC (C-PAC™); and high-temperature application PAC (H-PAC™). The Sorbent Technologies system also utilizes flue gas modeling for injection system design to ensure optimum dispersal and utilization of injected sorbent.

[1] Sorbent Technologies merged with Albemarle Corporation and now goes by the company name of Albemarle Sorbent Technologies.

C. Testing of Mercury Control Strategies at PPLM Facilities

In 2005, 2006, 2007, and 2008, seven performance tests of mercury control systems were completed at Colstrip and Corette.

Chem Mod's mercury control technology was tested twice at Corette – once in 2005, and again in 2008. The December 2005 test was a five day test focused on multi-pollutant reduction (mercury, sulfur dioxide, and nitrogen oxides). A mercury-specific test was conducted in May, 2008. This test was comprised of nine days of parametric testing, followed by one day of injection at the oxidizer and sorbent injection rates found to maximize mercury removal, followed by two days of multi pollutant testing. The 2005 testing indicated that about 80-85% of the mercury was captured and entombed in the ash, at injection rates (weight % of coal) of S-Sorb of 5-6% and Mer Sorb of 0.5%. Measured mercury emission rates at these conditions were in the 1.8 lb/TBtu range. Mer-Sorb was shown to be an effective oxidizer of elemental mercury, demonstrating an oxidation rate of 85%.

During the 2008 testing, optimum mercury reduction occurred with a Mer-Sorb injection rate of 0.22%. At these conditions, total mercury reduction was about 64%, yielding emission rates of 2.4 lb/TBtu total and 0.21 lb/TBtu elemental mercury. These results indicate the effectiveness of Mer-Sorb in converting elemental to oxidized mercury. The effectiveness of carbon in capturing this oxidized mercury was shown during an instance of fuel rich boiler operation when increased carbon was present in the native fly ash. An emission rate of 0.47 lb/TBtu was achieved; all of this was elemental mercury, indicating an elemental – to –oxidized conversion rate of 90%, an oxidized mercury capture rate of 100%, and an overall mercury percentage reduction from baseline of 93%.

In March, 2006, EERC's SEA1 and SEA2 were tested at Colstrip Unit 3. These additives were injected near the scrubber. At a flue gas concentration of 75 ppm SEA2 (10.3 lb/hr) and 1.5 lb/mmacf (40 lb/hr) carbon, mercury capture of 38% resulted in emission levels of 3.1 lb/TBtu.

In September, 2006, PPLM also conducted a test of combustion modification techniques developed by the Energy Research Center of Lehigh University on Colstrip Unit 3. The results of this control technology showed about 38% reduction in mercury.

The Alstom mercury control technology was tested twice at Colstrip – in September, 2007 on Colstrip Unit 3 and in September, 2008 on Colstrip Unit 2. The demonstration program at Colstrip Unit 3 consisted of four days of Mer-Cure™ parametric testing with three PAC at various injection rates. Following one day of recovery, there were three days of KNX™ solution application on the coal. During the final two days, the Mer-Cure™ system was operated while KNX™ solution application continued. The optimum stack emissions rate, 1.0 lb/TBtu, was achieved with combined Mer-Cure™ and KNX™ technologies. The conditions resulting in this rate were 50 ppm (6.2gal/hr) KNX™ bromine and 1.6 lb/mmacf (382 lb/hr) Mer–Cure™ PAC injection rate. Alstom did not achieve the project target stack emissions rate of 0.9 lb Hg/TBtu because of test equipment limitations but stated that with components sized specifically for Colstrip their mercury control technology would achieve the Montana standard. This was proven true during the Colstrip Unit 2 test.

Colstrip Unit 2 testing of Alstom's mercury control system in September, 2008 followed the same pattern as for Unit 3 – parametric testing followed by longer term testing of the optimum application rates. A KNX™ oxidizer injection rate of 100 ppm (4.9 gal/hr) combined with PAC injection of 0.5 lb/mmacf (33 lb/hr) resulted in an optimum mercury emission rate of 0.82 lb/TBtu.

Albemarle Sorbent Technologies mercury control technology was tested in September 2008 at the Corette plant. The test consisted of 4 days of parametric testing and one day of injection of the optimum rate of sorbent. An optimum mercury emission rate of 0.8 lb/TBtu was achieved with an injection rate of CPAC™ of 4.3 lb/mmacf (167 lb/hour).

The following table summarizes the optimum results from these tests at Corette and Colstrip.

Date	Location	Supplier	Duration	Hg Emissions [1] (lb/TBtu)
12/05	Corette	Chem Mod	5 days	1.8
03/06	Colstrip (3)	EERC	16 days	3.1
09/07	Colstrip (3)	Alstom	10 days	1.0
05/08	Corette	Chem Mod	14 days	2.4
09/08	Colstrip (2)	Alstom	10 days	0.8
09/08	Corette	Sorbent Tech	5 days	0.8

1. Optimum testing results shown. PPLM provided all test results in their application which is on file with the Department.

Results suggest that mercury control technology would reduce mercury emission levels to the Montana standard of 0.9 lb/TBtu. As discussed in section IV.E mercury control technology has not demonstrated significant adverse impacts to the balance of the plant, although long term application of the technology will be necessary to confirm the absence or presence of some balance of plant impacts such as those relating to unit reliability and maintenance.

D. Selected Mercury Control Strategy

The mercury emission control strategy that PPLM will use at Corette is a mercury oxidizing/sorbing-agent injection system. The selection of the technology included, in part, consideration for maintaining ash marketability, primarily as an additive to the concrete production industry. In addition, the selection was based on a screening of available technology, an analysis of industry-wide mercury controls, and site-specific testing conducted at PPLM facilities, including the September 2008 testing of Sorbent Technologies Concrete-Friendly™ activated carbon at Corette. The mercury control system is projected to achieve compliance with the emission limitation of 0.9 lb/TBtu.

E. Projected Balance of Plant Impacts

The application of mercury control technology at Corette has the potential for "balance of plant" impacts. Four potential emission related impacts were assessed during mercury control testing: 1) opacity of emissions, 2) particulate mass emissions, 3) halogen emissions, and 4) the speciation of mercury emissions.

Opacity and particulate mass emissions were measured during the mercury control testing conducted by PPLM to quantify the change (if any) in these parameters at optimum injection rates. No significant negative impact in either of these parameters was measured during testing. Particulate mass emissions were not measurably impacted by the implementation of mercury control technology and opacity increased slightly, but stayed well within regulatory limits. The following table summarizes these results.

Opacity and Particulate Mass Emissions during Mercury Control Testing

Date	Location	Supplier	Baseline		With Mercury Control	
			Particulate (lb/mmBtu)[1]	Opacity (%)	Particulate (lb/mmBtu)	Opacity (%)
3/06	Colstrip (3)	EERC	0.03	NA [2]	0.02	NA
9/07	Colstrip (3)	Alstom	0.02	17.4	0.02	17.7
6/08	Corette	Chem-Mod	0.09	8.9	0.09	8.4
9/08	Colstrip (2)	Alstom	0.04	16.8	0.04	17.2
9/08	Corette	Sorbent Tech	NA [3]	11.1	NA	14.1

1. lb/mmBtu = pounds per million British thermal units.
2. A representative opacity measurement for the 3/06 EERC test was not available because the test focused on injection at only one scrubber vessel and there was no opacity monitor on the scrubber vessel, only on the stack.
3. Additional testing of Sorbent Technologies is planned for 2009 to further optimize this mercury control technology and better define the potential effects to opacity and particulate.

Emissions of particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$) are not expected to increase for two reasons: the implementation of mercury control technology does not change combustion characteristics and the average particle size of the added carbon is well above the 2.5 micron range.

Implementation of mercury control technology does not result in emissions of halogen. Tests for halogen emissions using the U.S. Environmental Protection Agency (EPA) method 26A have been conducted at numerous locations and no halogen emissions and/or emission increases were detected. Testing by PPLM during its mercury control tests confirmed similar results as levels for chloride, bromide, and fluoride were all below detection limits. This is not unexpected since the alkaline nature of PRB coal generated ash should remove halogens.

The speciation of mercury emissions was also evaluated during the mercury control testing. Potential changes to the proportion of oxidized, elemental and particulate mercury are possible with the application of mercury control technology. Test results from mercury control technology testing by PPLM indicate that while total mercury is significantly reduced, the amount of oxidized mercury emitted can increase slightly with application of mercury control technology. The most recent analysis of particulate mercury at Colstrip indicates that particulate mercury makes up a negligible portion of controlled mercury emissions. Since the particulate mercury is negligible, compliance with the Montana mercury rule should be adequately measured with the CMM (Continuous Mercury Monitor). The following table summarizes these results.

Speciation of Mercury Emissions during Mercury Control Testing

Date	Location	Supplier	Condition	Mercury (lb/TBtu)			
				Total	Elemental	Oxidized	Particulate
12/05	Corette	Chem-Mod	Baseline	9.0	8.3	0.7	NA
			Controlled	1.8	1.6	0.2	NA
3/06	Colstrip (3)	EERC	Baseline	4.9	4.9	0.0	0.0
			Controlled	3.1	2.8	0.3	0.6
9/07	Colstrip (3)	Alstom	Baseline	5.6	5.5	0.1	0.0
			Controlled	1.0	0.7	0.3	0.7
6/08	Corette	Chem-Mod	Baseline	6.7	5.9	0.8	NA
			Controlled	2.4	0.2	2.2	NA
9/08	Colstrip (2)	Alstom	Baseline	2.6	2.6	0.0	0.0
			Controlled	0.8	0.6	0.2	0.0
9/08	Corette	Sorbent Tech	Baseline	6.2	5.0	1.1	NA
			Controlled	0.6	0.4	0.2	NA

V. Emission Inventory

Maximum Nominal Coal Consumption:	100 tons/hr
Maximum Operating Hours:	8,760 hrs/yr
Higher Heating Value of Coal (design value):	8,750 Btu/lb
Emission Factor:	0.9 lb/TBtu (permit limit)

Mercury Emissions

(100 tons coal/hr) * (8,760 hr/yr) * (2,000 lb coal/ton coal) * (8,750 Btu/lb coal) * (TBtu 10^{12} Btu) * (0.9 lb Hg/TBtu) * (ton/2,000 lb) = 0.007 tons Hg/yr

VI. Existing Air Quality

The facility is located in Section 2, Township 1 S, Range 26 E in Yellowstone County, Montana. The air quality of this area is classified as unclassified/attainment for the National Ambient Air Quality Standards (NAAQS) for criteria pollutants.

Billings was designated nonattainment by EPA for carbon monoxide (CO) in a Federal Register (FR) notice on March 3, 1978 (43 FR 9010) as a result of the 1977 Clean Air Act Amendments (CAAA). The NAAQS for CO is 9.0 parts per million (ppm) for an 8-hour average concentration, not to be exceeded more than once per calendar year. Control plans were developed to bring Billings back into compliance following the nonattainment designation. The CO violation was attributed primarily to motor vehicle emissions. The final CO control plan was approved in the Federal Register on January 16, 1986 (51 FR 2397). Billings was reevaluated in September 1990, based on the 1990 CAAA and the lack of exceedances in the CO monitoring data for 1988 and 1989. In a November 6, 1991 Federal Register notice (56 FR 56799), Billings was listed as a “not classified” nonattainment area for CO.

VII. Ambient Air Impact Analysis

The Department determined that the impacts from this permitting action will be minor because PPLM is installing pollution control equipment and the emissions increases related to the use of the control equipment are minor and below de minimis thresholds. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VIII. Taking or Damaging Implication Analysis

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

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (e.g., 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.

IX. Environmental Assessment

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

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: PPL Montana, LLC – JE Corette Steam Electric Station

Air Quality Permit Number: 2953-00

Preliminary Determination Issued: 02/17/09
Department Decision Issued: 03/24/09
Permit Final:

1. *Legal Description of Site:* The PPLM Corette facility is located in Section 2, Township 1 S, Range 26 E in Yellowstone County, Montana.

2. *Description of Project:* PPLM is proposing to install and operate mercury emission controls in conjunction with an MEMS.

3. *Objectives of Project:* The project will reduce current mercury emission levels to a maximum of 0.9 lb/TBtu, calculated as a rolling 12-month average and will fulfill requirements of ARM 17.8.771 with respect to applying for a permit to include the applicable mercury emission standard and control strategy requirements.

4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because PPLM demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.

5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a mercury control technology analysis, would be included in Permit #2953-00.

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

7. *The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.*

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Aquatic and Terrestrial Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			X			Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites				X		Yes
J	Cumulative and Secondary Impacts			X			Yes

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

A. Terrestrial and Aquatic Life and Habitats

Any impacts resulting from the proposed project to terrestrial and aquatic life and habitats would be minor because all proposed activities would take place within the defined PPLM Corette property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VII of the permit analysis) would be realized due to dispersion of pollutants.

Terrestrials (such as deer, antelope, rodents, and insects) would use the general area of the facility. The area around the facility is fenced to limit access to the facility. The fencing would likely not restrict access from all animals that frequent the area, but it may discourage some animals from entering the facility property. Therefore, any impacts to terrestrial and aquatic life and habitats would be minor.

B. Water Quality, Quantity and Distribution

Any impacts resulting from the proposed project to water quality, quantity, and distribution would be minor because all proposed activities would take place within the defined PPLM Corette property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VII of the permit analysis) would be realized due to dispersion of pollutants.

Sorbents and coal combustion byproducts (CCB) used in, or resulting from, mercury control have been extensively studied and found to be stable from the standpoint of leachability of captured mercury and other metals. During the evaluations of mercury control technology at Colstrip and Corette, the stability of the used sorbents and CCB was tested using EPA's Toxic Chemical Leaching Procedure (TCLP) for metals. All leachates demonstrated levels of metals well within regulatory limits; most indicating no detectable levels of TCLP metals. Consequently, PPLM expects no impacts to the environment due to leachate from CCB.

In addition, the Department reviewed current literature on the subject of mercury leaching from CCBs. The literature is in substantial agreement on the point that mercury captured with activated carbon does not leach readily from fly ash. A number of leaching methods were used in

the reviewed analyses, including TCLP, a Synthetic Groundwater Leaching Procedure (SGLP), 30-day and 60-day long-term leaching tests, and adaptations of TCLP at lower (2.0) and higher (7.0) pH values. In many cases the dissolved mercury in the leachate was below detection limits, and in all cases was below Federal Maximum Contaminant Level for mercury in drinking water. The Department determined that the use of activated carbon for mercury control would not present a source of groundwater pollution.

C. Geology and Soil Quality, Stability and Moisture

Any impacts resulting from the proposed project to geology and soil quality, stability, and moisture would be minor because all proposed activities with respect to limits and practices associated with limiting mercury emissions would take place within the defined PPLM Corette property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VII of the permit analysis) would be realized due to dispersion of pollutants.

D. Vegetation Cover, Quantity, and Quality

Any impacts resulting from the proposed project to vegetation cover, quantity, and quality would be minor because all proposed activities with respect to limits and practices associated with the proposed permit action would take place within the defined PPLM Corette property boundary, an existing industrial site. Further, minor impact to the surrounding area from the air emissions (see Section VII of the permit analysis) would be realized due to dispersion of pollutants.

E. Aesthetics

Minor impacts to the aesthetic nature of the area would result from the proposed PPLM permit action because all proposed activities would take place within the defined PPLM Corette property boundary, an existing industrial site. Any changes in operational practices to minimize mercury emissions may be visible from locations around the Corette site. However, the Corette site is a previously disturbed industrial location; any aesthetic impacts would be minor and consistent with current industrial land use of the area.

Overall, any impacts to the aesthetic nature of the project area from PPLM's proposed permit action, including construction activities and normal operations resulting in air emissions and deposition of air emissions would be minor.

F. Air Quality

The air quality impacts from the current permit action would be minor because Permit #2953-00 would include conditions limiting emissions of air pollution from the source, specifically by establishing a mercury emissions limit and requiring specific mercury emission control technology.

Department reviewed current literature on the possible loss of mercury to the atmosphere from coal combustion byproducts (CCBs), either as mercury vapor, or biologically-mediated dimethylmercury. Microbial methylation generally requires a good supply of organic matter and an approximately neutral pH level. Ash is generally very poor in organic matter and, in Montana, the ash is alkaline. Research on mercury methylation has indicated that the total mercury volatilization rate tends to be extremely small. The Department determined that it is very unlikely that any measurable amount of mercury could be released to the atmosphere from ash ponds.

Overall, any impacts to the air quality of the project area from PPLM's proposed permit action, including construction activities, normal operations resulting in air emissions, and deposition of air emissions would be minor and in compliance with all applicable state and federal ambient air quality standards.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The Department contacted the Montana Natural Heritage Program (MNHP) in an effort to identify any species of special concern associated with the proposed site location. Search results concluded there are 10 resources in the area. Area in this case is defined by the township and range of the proposed site, with an additional one-mile buffer. The species of special concern identified by MNHP include *Falco peregrinus* (Peregrine Falcon), *Lanius ludovicianus* (Loggerhead Shrike), *Spizella breweri* (Brewer's Sparrow), *Ammodramus savannarum* (Grasshopper Sparrow), *Euderma maculatum* (Spotted Bat), *Apalone spinifera* (Spiny Softshell), *Phrynosoma hernandesi* (Greater Short-horned Lizard), *Sceloporus graciosus* (Common Sagebrush Lizard), *Heterodon nasicus* (Western Hog-nosed Snake), *Lampropeltis triangulum* (Milksnake).

The PPLM site has historically been used for industrial purposes. Any changes in operation associated with minimizing mercury emissions would take place within the PPLM Corette site. Because industrial operations have been ongoing within the existing PPLM Corette property boundary for an extended period of time and potential permitted emissions from PPLM show compliance with all applicable air quality standards, it is unlikely that any of these species of special concern would be affected by the proposed project. Overall, any impacts to any unique endangered, fragile, or limited environmental resources would be minor.

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

Demands on environmental resources of water, air, and energy would be minor. As previously discussed, the proposed permit action would establish a limit for allowable air emissions of mercury and mercury control practices. Therefore, any impacts to air resources in the area would be minor and would be in compliance with applicable standards. Any impacts to the local air resource would be minor as demonstrated through the ambient air quality impact analysis conducted for the proposed permit modification.

Regarding impacts to the environmental resource of water, this permit action does not include any increase in the demand for water. Therefore, any impacts to the demand for water resources in the affected area associated with PPLM operations has been determined to be minor.

With respect to energy, the permit action would not change, in general, the overall amount of power used or produced.

Overall, any impacts to the demands on the environmental resources of water, air, and energy from PPLM's proposed permit action would be minor.

I. Historical and Archaeological Sites

In an effort to identify any historical and archaeological sites near the proposed project area, the Department contacted the Montana Historical Society, State Historic Preservation Office (SHPO). According to SHPO records there have been no previously recorded sites within the designated search locales; however, the absence of cultural properties in the area does not mean that they do not exist, but rather may reflect the absence of any previous cultural resource inventory in the area. SHPO records indicated no previous cultural resource inventory, but SHPO indicated there was a low likelihood cultural properties would be impacted and did not feel a recommendation

for a cultural resource inventory was warranted. The Department determined that due to the previous industrial disturbance in the area (the area is an active industrial site) and the small amount of land disturbance that may be required for the proposed permit action, it is unlikely that any undisturbed existing historical or cultural resource exists in the area and if these resources did exist, any impacts would be minor due to previous industrial disturbance in the area.

J. Cumulative and Secondary Impacts

Overall, any cumulative and secondary impacts from the proposed permit modification on the physical and biological resources of the human environment in the immediate area would be minor due to the fact that the predominant use of the surrounding area would not change as a result of the proposed project. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in Permit #2953-00.

8. *The following table summarizes the potential economic and social effects of the proposed project on the human environment. The "no-action" alternative was discussed previously.*

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production			X			Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities				X		Yes
G	Quantity and Distribution of Employment				X		Yes
H	Distribution of Population				X		Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts			X			Yes

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

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

The proposed permit modification would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) or impact the cultural uniqueness and diversity of the area because the current permit action would not change the current industrial nature of the PPLM operation or the overall industrial nature of the area of operation. The predominant use of the surrounding area would not change as a result of the current permit action. In addition, the overall industrial nature of the surrounding area, as a whole, would not be altered by the proposed PPLM permit action.

C. Local and State Tax Base and Tax Revenue

Any impacts to the local and state tax base and tax revenue would be minor because PPLM would remain responsible for all appropriate state and county taxes imposed upon the business operation. In addition, PPLM employees would continue to add to the overall income base of the area.

D. Agricultural or Industrial Production

The current permit action would not displace or otherwise affect any agricultural land or practices since PPLM operates on an existing industrial site.

E. Human Health

There would be minor potential effects on human health due to limiting mercury air emissions from the operation of the boiler. In addition, Permit #2953-00 would include conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

As discussed in Section 7.F of this EA, PPLM would comply with all applicable ambient air quality standards thereby protecting human health. Overall, the Department determined, based on the ambient air impact analysis that any impact to public health would be minor.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed permit action and overall PPLM operations would not affect access to any recreational or wilderness activities in the area. PPLM would continue to be located at the existing site. The area is comprised of private property with no public access and would continue in this state after issuance of the permit.

G. Quantity and Distribution of Employment
H. Distribution of Population

The current permit action would result in no impacts to the quantity and distribution of employment in the area and/or the distribution of population in the area because the project would not require any additional employees.

I. Demands for Government Services

Demands on government services from the proposed permit modification would be minor because PPLM would be required to procure the appropriate permits (including a state air quality permit) and any permits for the associated activities of the project. Further, compliance verification with those permits would also require minor services from the government. Overall, any demands on government services resulting from the proposed permit modification would be minor.

J. Industrial and Commercial Activity

The current permit action would change various aspects of the previous PPLM operations, specifically related to minimizing mercury emissions associated with the operation of the boiler, but would not result in an overall change in facility purpose; therefore, the proposed permit modification would not impact any industrial or commercial activity in the area.

K. Locally Adopted Environmental Plans and Goals

The current permit action would not contribute to the nonattainment status of any surrounding area. Billings was designated nonattainment by the EPA for carbon monoxide (CO) in a Federal Register (FR) notice on March 3, 1978 (43 FR 9010) as a result of the 1977 Clean Air Act Amendments (CAAA). The National Ambient Air Quality Standard (NAAQS) for CO is 9.0 ppm for an 8-hour average concentration, not to be exceeded more than once per calendar year. Control plans were developed to bring Billings back into compliance following the nonattainment designation. The CO violation was attributed primarily to motor vehicle emissions. The initial CO control plan concentrated on an intersection reconstruction at Exposition and First Avenue. The final CO control plan incorporated computer modeling with the intersection reconstruction, and was approved in the Federal Register on January 16, 1986 (51 FR 2397). Billings was reevaluated in September 1990, based on the 1990 CAAA and the lack of exceedances in the CO monitoring data for 1988 and 1989. In a November 6, 1991 Federal Register notice (56 FR 56799), Billings was listed as a "not classified" nonattainment area for CO.

The Department is unaware of any other locally adopted Environmental plans or goals. The state air quality standards would protect air quality at the proposed site and the environment surrounding the site.

L. Cumulative and Secondary Impacts

Overall, cumulative and secondary impacts from the proposed permit modification on the economic and social resources of the human environment in the immediate area would be minor due to the fact that the predominant use of the surrounding area would not change as a result of the proposed project. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in Permit #2953-00.

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

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action establishes a mercury emission limit and associated operating requirements for the boiler in order to comply with ARM 17.8.771. Permit #2953-00 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

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

Individuals or groups contributing to this EA: Montana Department of Environmental Quality (DEQ) – Air Resources Management Bureau; Montana DEQ – Environmental Management Bureau; Montana Historical Society – State Historic Preservation Office; Natural Resource Information System – Montana Natural Heritage Program.

EA prepared by: Brent Lignell
Date: February 11, 2009