AIR QUALITY PERMIT

Issued To: Continental Energy Services, Inc.
Silver Bow Generation Plant
1120 NW Couch St, Suite 650
Portland, OR 97209

Permit #3165-02
Complete Application Received: 12/06/05
Preliminary Determination Issued: 01/12/06
Department Decision Issued: 02/14/06
Permit Final: 03/02/06
AFS Number: 093-0017

An air quality permit, with conditions, is hereby granted to Continental Energy Services, Inc. - Silver Bow Generation Plant (CES), 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. Plant Location

The nominal 500-megawatt (MW) electrical power generation facility would be located approximately 6 miles west of Butte, Montana. The legal description of the site location is Section 35, Township 3 North, Range 9 West, in Silver Bow County, Montana. A complete list of the permitted equipment is contained in Section I.A. of the permit analysis.

B. Current Permit Action

On September 23, 2005, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a New Source Review (NSR) – Prevention of Significant Deterioration (PSD) application for a modification to Permit #3165-01. The application was deemed complete on December 6, 2005, upon CES's submittal of additional information that was requested by the Department. CES requested the Department to modify the permit to extend the 18-month period for commencement of construction. To comply with Department requirements, CES provided a new application, including a Best Available Control Technology (BACT) analysis, in order to be issued a new PSD permit. With the issuance of the new permit (and its associated requirements), CES would be allowed an additional 18 months to commence construction on the facility.

SECTION II. Conditions and Limitations

A. Emission Limitations

1. CES shall control oxides of nitrogen (NO_x) emissions from each of the natural gas-fired 175-Megawatt (MW) combined cycle turbine/heat recovery steam generator (HRSG) stacks by utilizing low NO_x burners and selective catalytic reduction (SCR) technology (ARM 17.8.752).

2. CES shall control carbon monoxide (CO) emissions from each of the natural gas-fired 175-MW combined cycle turbine/HRSG stacks by operating and maintaining an oxidation catalyst on each of the 175-MW combined cycle turbine/HRSG stacks (ARM 17.8.752).

3. CES shall control particulate matter (PM), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), oxides of sulfur (SO_x) and Volatile Organic Compounds (VOC) emissions from each of the 175-Megawatt combined cycle

turbine/HRSG stacks by utilizing good combustion practices and only combusting pipeline quality natural gas (ARM 17.8.752).

4. Emissions from each of the 175-Megawatt combined cycle turbine/HRSG stacks shall not exceed the following limits while the HRSG duct burners are operating (ARM 17.8.749 and ARM 17.8.752):

NO_x	21.6 pounds per hour (lb/hr) based on a 3-hour average (ARM 17.8.752); 25.2 lb/hr based on a 1-hour average (ARM 17.8.749);
CO	13.1 lb/hr based on a 3-hour average (ARM 17.8.752); 16.8 lb/hr based on a 1-hour average (ARM 17.8.749);
PM_{10}	32.4 lb/hr based on a 1-hour average (ARM 17.8.749); and
VOC	17.0 lb/hr based on a 1-hour average (ARM 17.8.749).

5. Emissions from each of the 175-Megawatt combined cycle turbine/HRSG stacks shall not exceed the following limits while the HRSG duct burners are not operating (ARM 17.8.749 and ARM 17.8.752):

NO_x	9.6 lb/hr based on a 3-hour average (ARM 17.8.752); 12.0 lb/hr based on a 1-hour average (ARM 17.8.749);
CO	6.0 lb/hr based on a 3-hour average (ARM 17.8.752); 8.0 lb/hr based on a 1-hour average (ARM 17.8.749);
PM_{10}	24.1 lb/hr based on a 1-hour average (ARM 17.8.749); and
VOC	4.4 lb/hr based on a 1-hour average (ARM 17.8.749).

6. Each of the two HRSG duct burners shall be limited to a maximum of 4,000 hours of operation during any rolling 12-month time period (ARM 17.8.749).

7. CES 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 six consecutive minutes (ARM 17.8.304).

8. CES 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).

9. CES 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.8 (ARM 17.8.749).

10. CES shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart Da – Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978, which includes, but is not limited to, the following limitations on each HRSG (ARM 17.8.340 and 40 CFR 60, Subpart Da).

PM: 0.03 pounds per million British thermal unit (lb/MMBtu)
NO_x: 0.20 lb/MMBtu

11. CES shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart GG – Standards of Performance for Stationary Gas Turbines, which includes, but is not limited to, the following limitations on each turbine (ARM 17.8.340 and 40 CFR 60, Subpart GG).

NO_x:	113 parts per million volume dry (ppmvd) at 15% Oxygen (O_2)
Sulfur Dioxide (SO_2):	0.015 % by volume at 15% O_2
Fuel:	< 0.8% sulfur by weight

12. CES shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of the Acid Rain Program contained in 40 CFR 72 through 78 (40 CFR 72 through 40 CFR 78).

B. Testing Requirements

1. CES shall test each of the 175-MW turbines/HRSG duct burners for NO_x and CO, concurrently, within 180 days of initial start-up of the turbines, or according to another testing/monitoring schedule as may be approved by the Department, to demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.4 and II.A.5. The Department may consider a test that meets the NO_x and CO emission limits in Section II.A.4 as justification to accept that the emission limits in Section II.A.5 are being met. The NO_x and CO testing shall continue on an every two-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).

2. CES shall test each of the 175-MW turbines/HRSG duct burners for PM_{10} within 180 days of initial start-up of the turbines, or according to another testing/monitoring schedule as may be approved by the Department, to demonstrate compliance with the PM_{10} emission limits contained in Sections II.A.4 and II.A.5. The Department may consider a test that meets the PM_{10} emission limit in Section II.A.4 as justification to accept that the emission limit in Section II.A.5 is being met. The testing shall continue on an every two-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).

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

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

C. Operational Reporting Requirements

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

3. All records compiled in accordance with this permit must be maintained by CES as a permanent business record for at least five 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. CES shall document, by month, the total hours of operation of each HRSG duct burner. By the 25th day of each month, CES shall total the hours of operation of each HRSG duct burner for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.6. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

D. Notification

CES shall provide the Department with written notification of the following activities within the specified time periods (ARM 17.8.749):

1. Commencement of construction of the power generation facility within 30 days after commencement of construction; and

2. Actual start-up date of each of the two 175-MW turbines/HRSG units within 15 days after the actual start-up of each respective turbine/HRSG unit.

E. Applicant Accepted Conditions

CES agreed to implement several mitigation measures, as described in the Record of Decision (ROD) for the CES project. The measures are imposed at the project sponsors' request pursuant to §75-1-201(5)(b), MCA. These mitigation measures are enforceable conditions of the permit and shall remain in the permit for the lifetime of the facility.

1. CES shall provide the Federal Aviation Administration (FAA) with information regarding residential land uses surrounding the generation plant and industrial park, and identify preferred lighting for the exhaust stacks that does not include strobe lights if omission of strobe lights meets FAA and other governmental regulations (MCA §75-1-201(5)(b)).

2. CES shall implement noise control measures at the generation plant such as silencers for decreasing noise generated by combustion turbines, heat recovery steam generators, and steam turbines to comply with the TIFID noise limits during normal operations (MCA §75-1-201(5)(b)).

SECTION III: General Conditions

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

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

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving CES 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 CES may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Construction Commencement – Construction must begin within 18 months of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked (ARM 17.8.762 and ARM 17.8.819).

Permit Analysis
Continental Energy Services, Inc.
Silver Bow Generation Plant
Permit #3165-02

I. Introduction/Process Description

A. Permitted Equipment

Continental Energy Services, Inc. - Silver Bow Generation Plant (CES) proposed to construct and operate two 175-megawatt (MW) Siemens-Westinghouse Model SGT6-PAC 5000F combined cycle gas turbines, and two associated heat recovery steam generators (HRSG) to produce electrical power. Emissions of oxides of nitrogen (NO_x) from each turbine/HRSG unit will be controlled by utilizing low NO_x burners in each turbine and selective catalytic reduction (SCR) technology on each stack. Carbon monoxide (CO) emissions from each turbine/HRSG unit will be controlled by utilizing an oxidation catalyst on each stack. CES will also install and operate a 150-MW steam turbine and associated cooling towers. The natural gas-fired 500-MW electrical power generation facility will operate at the legal location of Section 35, Township 3 North, Range 9 West, Silver Bow County, Montana, which is located approximately 6 miles west of Butte, Montana.

B. Source Description

A gas turbine is an internal combustion engine that operates with rotary rather than reciprocating motion. Gas turbines are essentially composed of three major components: compressor; combustor; and power turbine. The compressor draws in ambient air and compresses it to a pressure of up to 30 times ambient pressure. The compressed air is then directed to the combustor section where fuel is introduced, ignited, and burned. The hot combustion gases are then diluted with additional cool air from the compressor section and directed to the turbine section. Energy is recovered in the turbine section in the form of shaft horsepower; typically greater than 50 percent of the horsepower is required to drive the internal compressor section. The balance of the recovered shaft energy is available to drive the external load unit. The compressor and turbine sections can be a single fan-like wheel assembly, but are usually made up of a series of stages. The compressor and turbine sections may be associated with one or several connecting shafts. In a single shaft gas turbine, all compressor and turbine stages are fixed to a single continuous shaft and operate at the same speed. The single shaft configuration is typically used to drive electric generators.

The power block of the CES project will be composed of two combustion turbines, two HRSGs, one steam turbine, and three power generators - one driven by each turbine. A combination of a turbine and its dedicated power generator is referred to as a turbine unit. A combined cycle facility generates electricity with the combustion turbine from the initial combustion of the fuel and an HRSG from the resulting heat. Within each combustion turbine unit, a mixture of compressed air and natural gas is fired in the combustor to produce compressed hot combustion gases. Expansion of these gases in the turbine rotates the turbine shaft, which turns a generator to produce electricity.

Within the HRSG, exhaust heat from the combustion turbines is used to create steam to drive the steam turbine. Supplemental energy can be added in the HRSG with a natural gas-fired duct burner. The use of the duct burner increases steam production and ultimately increases the steam turbine power output. After passing steam through the steam turbine, the steam is condensed in the cooling towers and returned to the HRSG for reuse.

The CES facility will consist of one steam turbine and two combined cycle gas turbines with staged combustors (Dry-Low NO_x) and SCR technology to control NO_x emissions and an oxidation catalyst to control CO emissions. The Model SGT6-PAC 5000F gas turbines are manufactured by Siemens-Westinghouse and have a nominal power output of 175-MW. The steam turbine has a nominal power output of 150-MW. The nominal power output of the facility is 500-MW.

C. Permit History

On July 20, 2001, a complete permit application was submitted by CES to construct a nominal 500-MW electrical power generation facility approximately 6 miles west of Butte, Montana. The proposed facility would include two 175-MW Siemens-Westinghouse 501FD combined cycle gas turbines and two associated HRSG's to produce electrical power. The facility would also include a 150-MW steam turbine and associated cooling towers. **Permit #3165-00** became final and effective on June 7, 2002.

On October 8, 2003, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a New Source Review (NSR) – Prevention of Significant Deterioration (PSD) application for a modification to Permit #3165-00. The application was deemed complete on January 15, 2004, upon CES's submittal of additional information that was requested by the Department. CES requested that the Department modify the permit to extend the 18-month construction commencement requirement as allowed by 40 Code of Federal Regulations (CFR) 52.21(r)(2) (incorporated by reference in the Administrative Rules of Montana (ARM) 17.8.767(1)(d)). CES submitted the application, including a Best Available Control Technology (BACT) analysis, to demonstrate a "satisfactory showing" that an extension is justified, as required by 40 CFR 52.21(r)(2).

In addition, the Department determined that an oxidation catalyst constitutes BACT for each of the combine cycle turbine/HRSG stacks. Current information in the Environmental Protection Agency (EPA) Reasonably Available Control Technology (RACT)/BACT/LAER Clearinghouse indicates that oxidation catalysts have been recently required as BACT. An oxidation catalyst reduces CO emissions; however, an oxidation catalyst also reduces Hazardous Air Pollutant (HAP) emissions. The oxidation catalyst will reduce formaldehyde emissions from 10.78 tons per year to 1.1 tons per year. Considering the reduction in formaldehyde emissions, the CES facility has the Potential to Emit (PTE) less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs. Therefore, the Department removed conditions that were included in Permit #3165-00 that required CES to comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 63, Subpart Q – National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers.

On February 18, 2004, the Department issued the Preliminary Determination (PD) for Permit #3165-01. On March 19, 2004, CES submitted comments on the limits contained in Section II.A.5 of the PD. Section II.A.5 limits emissions from each of the natural gas fired 175-MW combined cycle turbine/HRSG stacks when the HRSG duct burners are not operating. CES informed the Department that the emissions data, when the HRSG duct burners are not operating, submitted in CES's letter dated January 14, 2004, was incorrect.

CES's comments explained that the emissions data submitted in CES's letter dated January 14, 2004, were based upon an operating scenario that does not represent a worst-case scenario. In addition, the emission data assumed a 90% reduction of NO_x and CO, which is based on standard industry designs of SCR and oxidation catalyst units while duct burners are operating.

CES explained that the 90% reduction was incorrect for times that the HRSG duct burners are not operating because the lower temperatures and lower volumes of pollutants would cause the SCR and oxidation catalyst units to perform less efficiently.

CES provided new emission rates for each of the natural gas fired 175-MW combined cycle turbine/HRSG stacks while the HRSG duct burners are not operating that are based on worst case emission conditions. In addition, CES provided control efficiency's that more accurately depict the control efficiency of the SCR and oxidation catalyst units while the HRSG duct burners are not operating. CES requested that the Department change the emission limits contained in Section II.A.5 of the permit to reflect the correct emissions limits. The Department concurs with CES's comments and changed the emission limits contained in Section II.A.5 of the permit to reflect the correct emission limits. **Permit #3165-01** replaced Permit #3165-00.

D. Current Permit Action

On September 23, 2005, the Department received a NSR – PSD application for a modification to Permit #3165-01. The application was deemed complete on December 6, 2005, upon CES's submittal of additional information that was requested by the Department. CES requested the Department to modify the permit to extend the 18-month period for commencement of construction. To comply with Department requirements, CES provided a new application, including a BACT analysis, in order to be issued a new PSD permit. With the issuance of the new permit (and its associated requirements), CES would be allowed an additional 18 months to commence construction on the facility. **Permit #3165-02** replaces Permit #3165-01.

E. Additional Information

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

F. Montana Environmental Policy Act (MEPA) - Mitigation Measures

As part of the original permit action (Permit #3165-00), CES proposed mitigation measures through the MEPA process. The Department incorporated a portion of those mitigation measures into Permit #3165-00. The conditions pertaining to the mitigation measures are included in Section II.E of Permit #3165-02 and are intended to remain in the permit for the lifetime of the facility.

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 ARMs and are available, upon request, from the Department. Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

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

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

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department. Based on the emissions from the turbines, the Department determined that initial testing for NO_x, CO, and particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) is necessary. Furthermore, based on the emissions from the turbines, the Department determined that additional testing on an every two-year frequency is necessary to demonstrate compliance with the PM_{10}, NO_x and CO limits contained in the permit.

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).

   CES 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:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}

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

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

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged 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, CES 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 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. CES will consume pipeline quality natural gas in the fuel burning equipment, which will meet this limitation.

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.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR 60, Standards of Performance for New Stationary Sources (NSPS). CES's 175-MW turbines are considered NSPS-affected facilities under 40 CFR Part 60 and are subject to the requirements of the following subparts.

   40 CFR Part 60, Subpart Da, Standards of Performance for Electric Utility Steam Generating Units. This subpart applies to both of the 175-MW turbine HRSGs because they are capable of combusting more than 250 million British thermal units per hour (MMBtu/hr) of heat input of fossil fuel.

   40 CFR Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines. This subpart applies to both of the 175-MW turbines because the turbines were constructed after October 3, 1977, and because the turbines have a heat input capacity of greater than 10.7 gigajoules per hour.

8. ARM 17.8.341 Emission Standards for Hazardous Air pollutants. This rule incorporates, by reference, 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants. The potential emissions from the CES power generation facility are less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs; therefore, the CES facility is not subject to the provisions of 40 CFR Part 61. In addition, 40 CFR Part 61 does not contain a standard for CES's source category.

9. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This rule incorporates, by reference, 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories.

40 CFR Part 63, Subpart Q, National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers. Although the cooling towers at the CES facility are operated with chromium-based water treatment chemicals and the cooling towers are an integral part of the CES facility, this subpart does not apply to the cooling towers because CES was required to take a federally enforceable permit condition that requires CES to operate and maintain an oxidation catalyst on each of the combine cycle turbine/HRSG stacks, which will reduce formaldehyde emissions from 10.78 tons/year to 1.1 tons per year. Considering the reduction in formaldehyde emissions, the CES facility has the PTE less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs. 40 CFR Part 63 applies to cooling towers that are operated with chromium-based water treatment chemicals and that are integral parts of a facility that is a major source of HAPs.

40 CFR 63, Subpart YYYY, National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. This subpart, as signed final on August 29, 2003, does not apply to either of the 175-MW turbines because CES was required to take a federally enforceable permit condition that requires CES to operate and maintain an oxidation catalyst on each of the combine cycle turbine/HRSG stacks, which will reduce formaldehyde emissions from 10.78 tons/year to 1.1 tons per year. Considering the reduction in formaldehyde emissions, the CES facility has the PTE less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAPs. 40 CFR 63, Subpart YYYY only applies to turbines that are located at a facility that is a major source of HAPs.

D. ARM 17.8, Subchapter 4 – Stack Height and Dispersion Techniques, including, but not limited to:

1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.402 Requirements. CES must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). The proposed height of the new or altered stack for the CES power generation facility is below the allowable 65-meter GEP stack height.

E. 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. CES submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 When Permit Required--Exclusions. 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.

F. 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 alteration to construct, alter or use any air contaminant sources that have the PTE greater than 25 tons per year of any pollutant. The CES power generation facility has a PTE greater than 25 tons per year for particulate matter (PM), PM_{10}, NO_x, CO, and Volatile Organic Compounds (VOC); therefore, a permit is required.

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

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

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. CES 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. CES submitted an affidavit of publication of public notice for the September 17, 2005, issue of *The Montana Standard*, a newspaper of general circulation in the city of Butte in Silver Bow County, as proof of compliance with the public notice requirements.

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

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. 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 CES 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 altered 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.

G. 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.

The CES facility is a listed source and the potential emissions are greater than 100 tons per year for CO, NO_x, PM, and PM_{10}. The facility also triggers a review of VOC because the potential VOC emissions exceed the significance levels. Based on this information, CES submitted an application to meet the requirement of a PSD review.

H. 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 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 #3165-02 for CES, the following conclusions were made:

   a. The facility's PTE is greater than 100 tons/year for PM, PM_{10}, NO_x, and CO.

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

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

   d. This facility is subject to current NSPS standards (40 CFR 60, Subpart Da and 40 CFR 60, Subpart GG).

   e. This facility is not subject to any current NESHAP standard

   f. This facility is a Title IV affected source.

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

   Based on these facts, the Department determined that the CES facility is subject to the Title V operating permit program. CES submitted a Title V operating permit application on July 20, 2001.

III. BACT Determination

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

A BACT analysis was submitted by CES in Permit Application #3165-02, addressing some available methods of controlling NO_x, CO, VOC, SO_2, and PM/PM_{10} emissions from each of the 175-MW natural gas powered combined cycle turbine/HRSG stacks. The Department reviewed these methods, as well as previous BACT determinations. The Department reviewed the following control options in order to make the following BACT determinations.

A. NO_x BACT

As part of the NO_x BACT analysis, the following control technologies were reviewed: L_oTO_x; SCR; wet chemistry scrubbing; selective non-catalytic reduction; and staged combustion.

With the L_oTO_x control alternative, oxygen and nitrogen are injected at approximately 380 °F to transform nitric oxide (NO) and nitrogen dioxide (NO_2) into N_2O_5 using an ozone generator and a reactor duct. N_2O_5, which is soluble, dissociates in a wet scrubber into nitrogen and water. This system requires oxygen, nitrogen, a cooling water supply, and treatment for the effluent. The estimated control efficiency for a L_oTO_x system is 80-90%, which is comparable to that of an SCR unit. However, the L_oTO_x control technology has only been demonstrated to work in practice on coal-fired industrial boilers. Due to the questions on the effectiveness of using this control technology for a natural gas fired turbine and because the proposed BACT control efficiency is equivalent to that of L_oTO_x, the Department determined that L_oTO_x technology does not constitute BACT for the the 175-MW combined cycle turbine/HRSG stacks.

SCR is a post-combustion gas treatment technique for reduction of NO and NO_2 in the engine exhaust stream to molecular nitrogen, water, and oxygen. In the SCR process, aqueous or anhydrous ammonia (NH_3) or urea is used as a reducing agent, and is injected into the flue gas upstream of the catalyst bed. NO_x and NH_3 combine at the catalyst surface, forming an ammonium salt intermediate, which subsequently decomposes to produce elemental nitrogen and water. The estimated control efficiency of an SCR unit is 65-90%, which is comparable to that of a L_oTO_x system. An SCR unit would cost approximately $4,500 per ton of NO_x removed and SCR units have constituted BACT for large natural gas fired turbines. SCR units typically operate within temperature ranges between 450 and 850 ºF, which is dictated by the catalyst material. The stack temperature for the CES facility is approximately 1050 ºF and the control efficiency of an SCR unit for the 175-MW combined cycle turbine/HRSG unit stacks is estimated to be 90%. The higher exhaust temperature may cause small amounts of ammonia, called ammonia slip, to pass through the catalyst unreacted. Although the overall cost of using this technology to control NO_x emissions from the 175-MW combined cycle turbine/HRSG stacks is comparable to that required by other recently permitted similar sources within the nation and although SCR units have been determined to be BACT for large natural gas fired turbines, the Department determined that SCR technology, alone, does not constitute BACT for the 175-MW combined cycle turbine/HRSG unit stacks because the proposed BACT exceeds SCR technology.

There is no standard model for wet chemistry scrubbing systems. A scrubbing system typically consists of several stages. The stages include converting NO to NO_2, then quenching the NO_2 to induce chemical reactions in an aqueous stage. Chemical reactions are carried out in subsequent stages in order to break down NO_2. The system requires chemical reagents and water treatment or chemical disposal provisions. The number of reagents and treatment requirements varies depending on design. The estimated control efficiency of a wet chemistry scrubber is 80%, which is less than that of L_oTO_x technology and SCR units. In addition, supplementary chemical regents and water treatment requirements would increase the cost per ton of NO_x reduced and other additional control technologies exist that are more favorable for BACT. Further, the proposed BACT requirements are better than wet chemistry scrubbers; therefore, the Department determined that a wet chemistry scrubber does not constitute BACT for the 175-MW combined cycle turbine/HRSG unit stacks.

The use of selective noncatalytic reduction (SNCR) technology is based on the noncatalytic decomposition of NO_x in the flue gas to nitrogen and water using a reducing agent (e.g., ammonia or urea). The reactions take place at much higher temperatures than in an SCR, typically between

1650 °F and 1800 °F. The estimated control efficiency of SNCR technology is 40-60%, which is less than that of L_oTO_x technology and SCR units. In addition, the stack temperature for the proposed turbines is approximately 1050 ºF; so, the use of SNCR would require additional heating of the gas stream because reactions in an SNCR unit typically take place between 1650º F and 1800ºF. The additional heating of the gas stream would result in additional pollutants and would drive up the cost per ton of reduction of air emissions. Further, the residence time that is required for the reaction to occur using SNCR is generally longer than can be accommodated by the exit velocity of a gas turbine. Due to the higher cost per ton of reduction and the lower control efficiency from this technology in comparison with an SCR unit, the potential for increased air emissions, and the technical difficulties of using this control technology, the Department determined that SNCR does not constitute BACT for the 175-MW combined cycle turbine/HRSG unit stacks.

Staged combustion is combustors that reduce NO_x emissions by utilizing lean/lean combustors or rich/lean combustors. Lean/lean combustors allow turbines to operate with an extremely lean air/fuel mixture while ensuring a stable flame. NO_x emission levels are reduced through cooler flame temperatures and avoidance of "hot spots" by premixing the fuel and air. Rich/lean combustors essentially reduce NO_x emissions by staging combustion in a rich zone and then a lean zone. The rich zone produces lower temperatures and higher concentrations of CO and H_2 and decreases the amount of oxygen available for NO_x formation. Before entering the lean zone, the exhaust of the primary zone is quenched by large amounts of air to extinguish the flame and create a lean mixture, thereby reducing NO_x formation during combustion in the lean zone. Staged combustion is identified through a variety of names including Dry-Low Emissions, $SoLoNO_x$, and Dry-Low NO_x. The 175-MW turbine/HRSG units proposed for use at the CES facility utilize Dry-Low NO_x combustors. While staged combustors reduce NO_x emissions below the levels produced by ordinary combustors, the control efficiency of staged combustors is not as high as previously discussed control technologies. Therefore, the Department determined that staged combustion or Dry-Low NO_x combustors, alone, does not constitute BACT for the 175-MW combined cycle turbine/HRSG unit stacks.

CES proposed the utilization of Dry-Low NO_x combustors and the operation and maintenance of an SCR unit to achieve a control efficiency of 90% for NO_x emissions while duct firing and 89% without duct firing from each of the 175-MW combined cycle turbine/HRSG unit stacks as BACT.

CES received updated emissions profiles from Siemens Power Generation (SPG). SPG now offers a reduced-emissions gas turbine (GT) that is otherwise similar to the turbine originally selected for the project and represented in the initial subsequent extension applications. The new model is capable of limiting NO_x emissions – prior to reduction by SCR – to as low as 9 parts per million on a dry volume basis (ppmvd). Vendor data for the previous model indicated NO_x concentrations in the gas turbine exhaust of 25 ppmvd. According to the SPG data sheet, a NO_x concentration of 9 ppmvd at site-specific, worst-case operation conditions and without the duct burners firing, is equivalent to 60 pounds per hour (lb/hr). The comparable NO_x emission rate from the 25 ppmvd configuration, again without the duct burners operating, is 166 lb/hr.

The projected pre-SCR NO_x emissions discussed above are summarized in the following table:

	NO_x	
	Concentration (ppmvd, 20% O_2)	Emission Rate (lb/hr)
Former baseline GT model	25	166
New baseline GT model	9	60

Because a newer Siemens GT model with lower engine exhaust duct NO_x emissions is now available, CES proposes the following revised NO_x emission limits for each turbine when operating without the duct burners operating:

NO_x: 9.6 lb/hr based on a 3-hour average
12.0 lb/hr based on a 1-hour average

These proposed limits were derived from the above projected gas turbine emissions with efficiencies for SCR selected as follows. The destruction and removal efficiencies (DREs) applied to represent SCR effectiveness were based on previous determinations made by the Department, but they were reduced by 5% to account for a significantly lower inlet NOx concentration; the NO_x DREs applied above were 84% for a 3-hour average and 80% for a 1-hour average.

CES proposes that NO_x emission limits when the duct burners are operating remain the same as in Permit #3165-01.

The corresponding proposed BACT NO_x emission limit while the HRSG duct burners are operating is 21.6 lb/hr. The corresponding proposed BACT NO_x emission limit while the HRSG duct burners are not operating is 9.6 lb/hr. EPA's RACT/BACT/LAER Clearinghouse indicates that Dry-Low NO_x combustors/SCR units have been accepted as BACT for NO_x emissions from natural gas fired turbines of similar size at power generation facilities throughout the country. Further, BACT emission limits contained in EPA's RACT/BACT/LAER Clearinghouse are comparable to the proposed BACT emission limits. Therefore, the Department concurs with CES's BACT proposal and determined that the use of Dry-Low NO_x combustors and the operation and maintenance of an SCR unit to meet a NO_x emission limit of 21.6 lb/hr while duct firing and 9.6 lb/hr without duct firing constitutes BACT for each of the 175-MW combined cycle turbine/HRSG stacks.

B. CO and VOC BACT

As part of the CO and VOC BACT analysis, catalytic oxidizers and thermal oxidizers were reviewed.

Oxidation controls ideally break down the molecular structure of an organic compound into CO_2 and water vapor with or without the assistance of a catalyst. Types of oxidation controls are catalytic oxidizers (including regenerative catalytic oxidizers (RCOs)) and thermal oxidizers (including regenerative thermal oxidizers (RTOs)). Control efficiencies for catalytic oxidation and thermal oxidation are the same, typically between 70 and 95%. The BACT analysis assumed a control efficiency of 95%. Technical difficulties associated with controlling CO and VOC emissions from each of the 175-MW combined cycle turbine/HRSG units by oxidation, such as the narrow range of acceptable gas inlet temperatures for oxidation to take place, were identified in the BACT analysis. However, technical difficulties do not make a control technology technically infeasible; therefore, oxidation controls were not eliminated from consideration.

When oxidation controls are designed for either CO or VOC control, the pollutant that the control device was not designed for is controlled less efficiently than the pollutant for which the control device was designed. For example, if typical control efficiency for a CO catalytic oxidizer were 80%, then the corresponding VOC control efficiency would be 20%. The BACT analysis submitted by CES used a CO control efficiency of 80% and a VOC control efficiency of 20% to analyze each pollutant separately. Catalytic oxidation has a cost effectiveness of

$1,864 per ton of CO removed and $84,781 per ton of VOC removed. A cost analysis for thermal oxidizers was not completed because thermal oxidizers would have negative environmental impacts because they would have the potential to increase NO_x emissions; therefore, the Department determined that thermal oxidizers do not constitute BACT for the 175-MW combined cycle turbine/HRSG units.

No additional control would involve using proper combustion practices to minimize CO and VOC emissions. No additional controls do not have an associated control efficiency; rather, CO and VOC emissions would be minimized by utilizing good combustion practices. Because no additional control would have negative impacts on air quality, the Department determined that no additional control will not constitute BACT for the 175-MW combined cycle turbine/HRSG units.

CES received updated emissions profiles from SPG. SPG now offers a reduced-emissions GT that is otherwise similar to the turbine originally selected for the project and represented in the initial subsequent extension applications. The SPG data project a CO concentration in the gas turbine exhaust, without the duct burners operating, of 10 ppmvd. This is the same concentration projected for the older model turbine under similar conditions. Updated SPG calculations equate 10 ppmvd CO to 40 lb/hr at site-specific, worst-case conditions.

The projected CO emissions discussed above are summarized in the following table:

	CO	
	Concentration (ppmvd, 20% O2)	Emission Rate (lb/hr)
Former baseline GT model	10	36.3
New baseline GT model	10	40.0

CES proposes the following revised CO emission limits for each turbine when operating without the duct burners operating:

CO: 6.0 lb/hr based on a 3-hour average
8.0 lb/hr based on a 1-hour average

These proposed limits were derived from the above projected gas turbine emissions with efficiencies for catalytic oxidation selected as follows. The DREs applied to represent catalytic oxidation effectiveness were based on previous determinations made by the Department: CO DREs applied above were 85% for a 3-hour average and 80% for a 1-hour average.

CES proposes that CO emission limits when the duct burner is firing remain the same as in Permit #3165-01.

CES proposed the use of a catalytic oxidizer to achieve a control efficiency of 90% for CO emissions while duct firing and 85% without duct firing from each of the 175-MW combined cycle turbine/HRSG unit stacks as BACT. The corresponding proposed BACT CO emission limit while the HRSG duct burners are operating is 13.1 lb/hr. The corresponding proposed BACT CO emission limit while the HRSG duct burners are not operating is 6.0 lb/hr. EPA's RACT/BACT/LAER Clearinghouse indicates that catalytic oxidizers have been accepted as BACT for control of CO emissions from natural gas fired turbines of similar size at power generation facilities throughout the country. In addition, BACT emission limits contained in EPA's RACT/BACT/LAER Clearinghouse are comparable to the proposed BACT emission limits. Therefore, the Department concurs with CES's BACT proposal and determined that the use of a catalytic oxidizer to meet 13.1 lb/hr while duct firing and 6.0 lb/hr without duct firing

constitutes BACT for CO emissions from each of the 175-MW combined cycle turbine/HRSG stacks. Due to the high cost per ton of reduction ($84,781) of VOC, the Department determined that no additional control constitutes BACT for VOC emissions from each of the 175-MW combined cycle turbine/HRSG stacks.

C. PM/PM_{10} BACT

As part of the PM_{10} BACT analysis, the following control technologies were reviewed: electrostatic precipitators; baghouses; wet scrubbers; and no additional controls.

An Electrostatic Precipitator (ESP) uses electric forces to move particles out of a gas stream and on to collection plates. The particles are given an electric charge by forcing them to pass through the corona that surrounds a highly charged electrode. The electrical field then forces the charged particles to the opposite charged electrode, usually a plate. Solid particles are removed from the collection electrode by a shaking process known as "rapping." ESPs are configured in several ways. The types of ESPs analyzed were the plate wire precipitator, the flat plate precipitator, the tubular precipitator, the wet precipitator, and the two-stage precipitator. Typically, ESPs are designed to handle relatively small volumes of gas; however, a plate wire precipitator could potentially handle the large volume of gas such as the volume produced by the 175-MW combined cycle turbine/HRSG units. However, to the Department's knowledge, plate wire precipitators have not been demonstrated as technically feasible for any existing natural gas fired turbines. EPA's RACT/BACT/LAER Clearinghouse does not list any type of ESP that has been required as a control device for combined cycle turbines. Therefore, because of the uncertainty of treating large volumes of gas with an ESP and because ESPs have not been determined as BACT for recently permitted similar sources, the Department determined that an ESP is technically infeasible for the 175-MW combined cycle turbine/HRSG units.

Baghouses consist of one or more isolated compartments containing rows of fabric filter bags or tubes. The gas stream passes through the fabric filter, where particulate is retained on the upstream face of the bags, while the remaining gas stream is vented to the atmosphere or to another pollution control device. While a baghouse would control up to 99% of PM/PM_{10} emissions, a baghouse has a cost effectiveness of $17,600 per ton of PM/PM_{10} emissions removed. The high volumetric flowrate with a relatively low particulate loading of the exhaust gas makes the total annual cost of a baghouse cost prohibitive. In addition, EPA's RACT/BACT/LAER Clearinghouse does not identify add-on control equipment for controlling PM/PM_{10} emissions from natural gas-fired combined cycle turbines. Therefore, due to the high cost per ton of PM/PM_{10} emissions removed utilizing a baghouse and because baghouses have not been determined to be BACT for other recently permitted similar sources, the Department determined that a baghouse does not constitute BACT for the 175-MW combined cycle turbine/HRSG units.

Wet scrubbers typically use water to impact, intercept, or diffuse a particulate-laden gas stream. With impaction, particulate matter is accelerated and impacted onto a surface area or into a liquid droplet through devices such as venturis and spray chambers. Using interception, particles flow nearly parallel to the water droplets so that the water can intercept the particles. While a wet scrubber would control up to 90% of PM/PM_{10} emissions, using a wet scrubber would result in additional environmental concerns. Due to the large volume of gas flow, a large volume of water would be needed for the wet scrubber. The resulting large volume of waste water or "scrubber sludge" would potentially cause a negative environmental impact. In addition, the high volumetric flow rate with a relatively low particulate loading of the exhaust gas would likely make the total annual cost of a wet scrubber cost prohibitive. Further, EPA's RACT/BACT/LAER Clearinghouse does not identify add-on control equipment for controlling

PM/PM_{10} emissions from natural gas-fired combined cycle turbines. Therefore, due to the possible negative environmental impacts, the cost effectiveness of utilizing a wet scrubber to control PM/PM_{10} emissions, and because wet scrubbers have not been determined to be BACT for other recently permitted similar sources, the Department determined that a wet scrubber does not constitute BACT for the 175-MW combined cycle turbine/HRSG units.

No additional control would involve burning pipeline quality natural gas in each of the 175-MW combined cycle turbine/HRSG units and using proper combustion practices to minimize PM/PM_{10} emissions. No additional controls would minimize PM/PM_{10} emissions by utilizing proper combustion practices and combusting only pipeline quality natural gas in each of the 175-MW combined cycle turbine/HRSG units.

CES proposed no additional controls – proper combustion practices and combusting only pipeline quality natural gas as BACT to control PM/PM_{10} emissions from each of the 175-MW combine cycle turbine/HRSG units. Due to the negative environmental impacts associated with wet scrubbers and because the high volumetric flow rate of gas through the turbines, with relatively low particulate loading, makes the total annual cost of control equipment economically impracticable, the Department concurs with CES's proposal and determined that no additional control (utilizing proper combustion and combusting only pipeline quality natural gas) constitutes BACT for the turbines.

D. SO_2 BACT

SO_2 emissions from the CES do not exceed the significance levels and SO_2 emissions are relatively minor (12.12 tons per year). CES proposed no additional control (combusting only pipeline quality natural gas) as BACT. Due to the low amount of SO_2 emitted from the facility (12.12 tons per year), control equipment would be cost prohibitive. Therefore, the Department concurs with CES's proposal and determined that no additional control (combusting only pipeline quality natural gas) in each of the 175-MW combined cycle turbine/HRSG units constitutes BACT.

The control options selected as part of this review have controls and control costs that are comparable to other recently permitted similar sources. The control options that were selected are capable of achieving the appropriate emission standards.

IV. Emission Inventory

Ton/year						
Source	PM	PM_{10}	NO_x	CO	VOC	SO_x
Gas Turbine #1, 175-MW	105.56	105.56	42.05	26.28	19.27	5.26
Gas Turbine #2, 175-MW	105.56	105.56	42.05	26.28	19.27	5.26
HRSG #1	20.80	16.60	22.40	13.40	27.20	0.80
HRSG #2	20.80	16.60	22.40	13.40	27.20	0.80
Cooling Towers	----	2.63	----	----	----	----
Total	252.72	246.95	128.90	79.36	92.94	12.12

(SOURCE #01)
Siemens-Westinghouse Model SGT6-PAC 5000F 175MW Gas Turbine #1

Size =	175 MW
Hours of Operation =	8,760 hr/yr
Max Fuel Flow =	20,323,200 MMBtu/yr
Heat Input =	2,320 MMBtu/hr
% Sulfur in Fuel =	0.0023
Fuel Heating Value =	1,020 Btu/SCF

PM Emissions
Emission Factor: 24.1 lb/hr (Manufacturer's Information)
Calculations: 24.1 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 105.56 ton/yr

PM_{10} Emissions
Emission Factor: 24.1 lb/hr (Manufacturer's Information)
Calculations: 24.1 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 105.56 ton/yr

NO_x Emissions
Emission Factor: 9.6 lb/hr (BACT Determination)
Calculations: 9.6 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 42.05 ton/yr

CO Emissions
Emission Factor: 6.0 lb/hr (BACT Determination)
Calculations: 6.0 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 26.28 ton/yr

VOC Emissions
Emission Factor: 4.4 lb/hr (Manufacturer's Information)
Calculations: 4.4 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 19.27 ton/yr

SO_x Emissions
Emission Factor: 1.2 lb/hr (Manufacturer's Information)
Calculations: 1.2 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 5.26 ton/yr

(SOURCE #02)
Siemens-Westinghouse Model SGT6-PAC 5000F 175MW Gas Turbine #2
Size = 175 MW
Hours of Operation = 8,760 hr/yr
Max Fuel Flow = 20,323,200 MMBtu/yr
Heat Input = 2,320 MMBtu/hr
% Sulfur in Fuel = 0.0023
Fuel Heating Value = 1,020 Btu/SCF

PM Emissions
Emission Factor: 24.1 lb/hr (Manufacturer's Information)
Calculations: 24.1 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 105.56 ton/yr

PM_{10} Emissions
Emission Factor: 24.1 lb/hr (Manufacturer's Information)
Calculations: 24.1 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 105.56 ton/yr

NO_x Emissions
Emission Factor: 9.6 lb/hr (BACT Determination)
Calculations: 9.6 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 42.05 ton/yr

CO Emissions
Emission Factor: 6.0 lb/hr (BACT Determination)
Calculations: 6.0 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 26.28 ton/yr

VOC Emissions
Emission Factor: 4.4 lb/hr (Manufacturer's Information)
Calculations: 4.4 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 19.27 ton/yr

SO_x Emissions
Emission Factor: 1.2 lb/hr (Manufacturer's Information)
Calculations: 1.2 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 5.26 ton/yr

(SOURCE #03)
Siemens-Westinghouse HRSG#1 (Duct Burner #1)
Hours of Operation = 4,000 hr/yr

PM Emissions
Emission Factor: 10.4 lb/hr (Manufacturer's Information)
Calculations: 10.4 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 20.80 ton/yr

PM_{10} Emissions
Emission Factor: 8.3 lb/hr (Manufacturer's Information)
Calculations: 8.3 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 16.60 ton/yr

NO_x Emissions
Emission Factor: 11.2 lb/hr (Manufacturer's Information)
Calculations: 11.2 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 22.40 ton/yr

CO Emissions
Emission Factor: 6.7 lb/hr (Manufacturer's Information)
Calculations: 6.7 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 13.40 ton/yr

VOC Emissions
Emission Factor: 13.6 lb/hr (Manufacturer's Information)
Calculations: 13.6 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 27.20 ton/yr

SO_x Emissions
Emission Factor: 0.4 lb/hr (Manufacturer's Information)
Calculations: 0.4 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 0.80 ton/yr

(SOURCE #04)
Siemens-Westinghouse HRSG#2 (Duct Burner #2)
Hours of Operation = 4,000 hr/yr

PM Emissions
Emission Factor: 10.4 lb/hr (Manufacturer's Information)
Calculations: 10.4 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 20.80 ton/yr

PM_{10} Emissions
Emission Factor: 8.3 lb/hr (Manufacturer's Information)
Calculations: 8.3 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 16.60 ton/yr

NO_x Emissions
Emission Factor: 11.2 lb/hr (Manufacturer's Information)
Calculations: 11.2 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 22.40 ton/yr

CO Emissions
Emission Factor: 6.7 lb/hr (Manufacturer's Information)
Calculations: 6.7 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 13.40 ton/yr

VOC Emissions
Emission Factor: 13.6 lb/hr (Manufacturer's Information)
Calculations: 13.6 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 27.20 ton/yr

SO_x Emissions
Emission Factor: 0.4 lb/hr (Manufacturer's Information)
Calculations: 0.4 lb/hr * 4000 hr/yr * 0.0005 ton/lb = 0.80 ton/yr

(SOURCE #05)
Cooling Towers

PM_{10} Emissions
* All particulate matter emissions are assumed to be PM_{10}
Emission Factor: 0.60 lb/hr (Manufacturer's Information)
Calculations: 0.60 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.63 ton/yr

Ton/year		
Source	Highest uncontrolled *HAP (Hexane)	Total HAPs
Gas Turbine #1, 175-MW	0.00	2.90
Gas Turbine #2, 175-MW	0.00	2.90
HRSG #1	1.95	2.00
HRSG #2	1.95	2.00
Facility HAP Metals	----------	0.10
Total	3.90	9.90

* A control efficiency of 90% was used for formaldehyde because CES is required to install and maintain an oxidation catalyst to control CO emissions from each of the turbine/HRSG stacks—formaldehyde emissions are expected to be reduced at the same rate as CO because, like CO, formaldehyde is a simple carbon chain that is oxidized at approximately the same rate as CO.

** HAP emission inventory is conservative because a control efficiency was only used for formaldehyde—0% for all other HAPs

*** A compete HAP emission inventory is on file with the Department.

V. Existing Air Quality

The CES facility site is located in Section 35, Township 3 North, Range 9 West, in Silver Bow County, Montana. The air quality of this area is classified as either "Better than National Standards" or unclassifiable/attainment of the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants except PM_{10}. The city of Butte and the surrounding area are classified as a non-attainment area for PM_{10}. The closest boundary of the Butte non-attainment area is approximately 2 to 3 miles Northeast of the CES facility. In addition, the closest PSD Class I area is the Anaconda-Pintler Wilderness, which is located approximately 35 miles West of the CES facility.

VI. Ambient Air Impact Analysis

As part of Permit Application #3165-00, CES submitted ambient air quality modeling to demonstrate compliance with the Montana Ambient Air Quality Standards (MAAQS), NAAQS, and the PSD increments. The modeling was conducted according to the EPA New Source Review Workshop Manual, October 1990 (Draft) and 40 CFR 51, Appendix W – Guideline on Air Quality Models, August 12, 1996 (Revised). The ISC3 model was used along with 3 years of on-site meteorological data (1994-1996) collected at the Rhodia facility and the same 3 years of upper air data collected at Great Falls International Airport Weather Station. The receptor grid was generated from digital elevation model (DEM) files using 7.5 minute United States Geological Survey (USGS) topographical Maps. Receptors were also placed in the Butte PM_{10} non-attainment area to complete a PM_{10} nonattainment area analysis.

Modeling was conducted for PM_{10}, NO_x, CO, VOC, and SO_2 emissions from the CES facility. The analysis also included PM_{10} emissions from the Rhodia facility; however, only fugitive emissions from storage piles were included since the equipment at the Rhodia facility has been removed. All of the modeled concentrations were below the premonitoring de minimis levels and were well within the range of the MAAQS and NAAQS. Table 1 summarizes the results of the ambient air modeling.

Table 1. Ambient Modeling Results						
Pollutant	Avg. Period	Modeled Conc. ($\mu g/m^3$)	Background Conc. ($\mu g/m^3$)	Ambient Conc. ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	MAAQS ($\mu g/m^3$)
PM_{10}	24-hr	79.5	30	110	150	150
	Annual	7.8	8	16	50	50
NO_x	1-hr	51.9	75	127	----------	564
	Annual	1.3	6	7.3	100	94
CO	1-hr	193	1,725	1,918	40,000	26,950
	8-hr	96	1,125	1,221	10,000	10,350
SO_2	1-hr	2.2	35	37	----------	1,800
	3-hr	1.6	26	28	1,300	----------
	24-hr	0.3	11	11	365	365
	Annual	0.04	3	3	80	52
VOC (O_3)	1-hr	22.9	----------	23	235	196

The PSD increment analysis was completed for both PM_{10} and NO_x by modeling for the Class I and Class II increment. CES, ASiMI, and Rhodia were included in the PM_{10} increment analysis, and only CES was included in the NO_x increment analysis because the minor source baseline date had not been triggered for the area. Both increment analyses demonstrated compliance with the appropriate increment. Table 2 summarizes the results of Class I and Class II modeling.

Table 2. Class I and Class II Modeling Results					
Pollutant	Avg. Period	Class II Modeled Conc. ($\mu g/m^3$)	Class II Increment ($\mu g/m^3$)	Class I Modeled Conc.. ($\mu g/m^3$)	Class I Increment ($\mu g/m^3$)
PM_{10}	24-hr	1.0	30	0.03	8
	Annual	7.9	17	0.36	4
NO_x	Annual	0.8	25	0.02	2.5

The Yellowstone Park increment analysis was completed for PM_{10}, NO_x, and SO_2. The Yellowstone Park increment analysis demonstrated compliance with the appropriate increment and the results of the Yellowstone Park modeling is summarized in Table 3.

Table 3. Yellowstone Park Class I Modeling Results			
Pollutant	Avg. Period	Class I Modeled Conc.. ($\mu g/m^3$)	Class I Increment ($\mu g/m^3$)
PM_{10}	24-hr	0.15	8
	Annual	0.02	4
NO_x	Annual	0.0006	25
SO_2	3-hr	0.0064	5
	24-hr	0.02	2
	Annual	0.02	2.5

For the PM_{10} nonattainment area analysis, PM_{10} emissions were modeled with receptors placed on the Butte nonattainment area boundary and within the Butte nonattainment area. The modeling showed that PM_{10} emissions would not significantly contribute to the PM_{10} nonattainment area. The modeled PM_{10} concentrations were 2.4 $\mu g/m^3$ for the 24-hour averaging period and 0.3 $\mu g/m^3$ for the annual averaging period. The PM_{10} modeling significance levels are 5 $\mu g/m^3$ for the 24-hour averaging period and 1 $\mu g/m^3$ for the annual averaging period. Therefore, the PM_{10} nonattainment area analysis demonstrated compliance with the appropriate standards.

Further, analyses for regional haze, Air Quality Related Values (AQRV), Class I Increment, Class I Visibility Impact, and Lake Acidification were performed using ISC3 and CALPUFF. All modeling was forwarded to the EPA, the National Park Service (NPS), and the U.S. Forest Service (USFS).

CES did not submit additional modeling as part of Permit Application #3165-01. However, new or additional modeling was not required because CES was not proposing to increase the pound per hour emission limits for any source. Although the annual emissions contained in the emission inventory show increases in PM, PM_{10}, and SO_2 emissions, all of the air quality analysis performed for Permit Application #3165-00 used the pound per hour emission limits that were placed in Permit #3165-00, which when converted to tons per year, exceed the ton per year emission estimates contained in the emission inventory. This is due to the fact that the ton per year emissions estimates contained in the emission inventory consider the 4,000 hour per year operational limit on the HRSG duct burners, and the pound per hour emission limits used in the air quality analyses do not take the 4,000 hours per year operational limit for the HSRG duct burners into consideration. Further, NO_x emissions and CO emissions have decreased, therefore, the air quality analyses completed for Permit #3165-00 still demonstrate that the CES facility will not cause or contribute to a violation of any air quality standard.

CES did not submit additional modeling as part of Permit Application #3165-02. CES received updated emissions profiles from Siemens Power Generation (SPG). SPG now offers a reduced-emissions gas turbine that is otherwise similar to the turbine originally selected for the project and represented in the initial and subsequent extension applications. The new model is capable of limiting NO_x emissions – prior to reduction by SCR – to as low as 9 ppmvd. Vendor data for the previous model indicated NO_x concentrations in the gas turbine exhaust of 25 ppmvd. According to the SPG data sheet, NO_x concentration of 9 ppmvd at site-specific, worst-case operating conditions and in an unfired condition is equivalent to 60 lb/hour. The comparable NO_x emission rate from the 25 ppmvd configuration, again in an unfired condition, is 166 lb/hr. CES proposed revised NO_x and CO emission limits for each turbine when the duct burners are not operating; therefore, the air quality analyses completed for Permit #3165-00 still demonstrate that the CES facility will not cause or contribute to a violation of any air quality standard.

VII. Taking or Damaging Implication Analysis

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

VIII. Environmental Assessment

An environmental assessment, 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: Continental Energy Services, Inc.
Silver Bow Generation Plant
1120 NW Couch St, Suite 650
Portland, OR 97209

Air Quality Permit Number: 3165-02

Preliminary Determination Issued: January 12, 2006
Department Decision Issued: February 14, 2006
Permit Final: March 2, 2006

1. *Legal Description of Site*: The nominal 500-MW electrical power generation facility would locate approximately 6 miles west of Butte, Montana. The legal description of the proposed site location is Section 35, Township 3 North, Range 9 West, in Silver Bow County, Montana.

2. *Description of Project*: CES proposed to construct and operate a nominal 500-MW electrical power generation facility that would produce electrical power for delivery to the existing power grid. The facility would consist of two nominal 175-MW natural gas powered combined cycle turbines and a 150-MW steam turbine.

3. *Objectives of Project*: The proposed project would provide additional infrastructure and electricity to meet the increased demand for power within the Western United States, specifically those states within the Western System Coordinating Council (WSCC). The facility would sell power into the wholesale market within the interconnected electricity grid of the WSCC. The WSCC has 5 subregions: California; Arizona-New Mexico (includes southern Nevada); Rocky Mountains; Northwestern U.S.; and the Canadian Providences of Alberta and British Columbia.

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 CES 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 BACT analysis, would be included in Permit #3165-02.

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. *Silver Bow Generation Project Environmental Impact Statement:* The Department of Environmental Quality prepared an Environmental Impact Statement (EIS) for the original permit action (Permit #3165-00) for the Silver Bow Generation Plant. The EIS evaluated the potential impacts from the Silver Bow Generation Plant, as well as NorthWestern Energy Corporation's (previously Montana Power, LLC), proposal to upgrade two natural gas compressor stations, construct a new compressor station, and add three twenty inch loops to their natural gas pipeline in order to accommodate CES's project. In addition to the proposals, the EIS also evaluated the potential impact from two alternatives: the no action alternative; and the proposed action with mitigation measures alternative. The Draft EIS was issued December 21, 2001, the Final EIS was issued February 21, 2002, and the Record of Decision was issued March 14, 2002. The Draft EIS, the Final EIS, and the Record of Decision can be obtained from the Department's web site at http://www.deq.mt.gov/eis.asp.

   As a result of the EIS, CES agreed to implement several mitigation measures, as described in the Record of Decision. The measures would be imposed at the project sponsors' request pursuant to §75-1-201(5)(b), MCA. The applicant accepted conditions were included in Section II.E of Permit #3165-00. The mitigation measures are enforceable conditions of the permit and are required to remain in the permit for the lifetime of the facility. Therefore, the mitigation measures would be included in Permit #3165-02.

   On October 8, 2003, CES submitted a NSR – PSD application requesting that the Department modify Permit #3165-00 to extend the 18-month commencement construction requirement. CES submitted the application, including a BACT analysis, to demonstrate a "satisfactory showing" that an extension is justified. CES requested that the emission limits for the facility remain the same as were permitted in Permit #3165-00. However, CO and VOC emissions would be reduced because an oxidation catalyst would be required for BACT. Therefore, the emissions from the facility would be equal to, or less than the emission levels that were analyzed as part of the EIS.

   On September 23, 2005, CES submitted an NSR – PSD application (complete on December 6, 2005) requesting that the Department modify Permit #3165-01 to extend the 18-month commencement construction requirement. CES submitted the application, including a BACT analysis, in order to be issued a new PSD permit. CES requested that the NO_x and CO emission limits for each gas turbine operating, without the duct burners operating, to be reduced and all other emission limits remain the same as were permitted in Permit #3165-01. Therefore, the emissions from the facility would be equal to, or less than the emission levels that were analyzed as part of the EIS.

   Because the emission levels from the facility would be equal to, or less than the emission levels that were analyzed in the EIS, the Department did not re-analyze the impacts from the proposed project. However, the Department did include the ambient air quality analysis that was performed as part of the current permit action (Section 8.F of this EA).

8. 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	Terrestrial and Aquatic 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						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
B. Water Quality, Quantity and Distribution
C. Geology and Soil Quality, Stability and Moisture
D. Vegetation Cover, Quantity, and Quality
E. Aesthetics

The impacts on terrestrial and aquatic life and habitats; water quality, quantity, and distribution; geology and soil quality, stability, and moisture; vegetation cover, quantity, and quality; and aesthetics from the proposed project would be equal to, or less than those analyzed in the EIS. Therefore, no impacts beyond the EIS would be expected. Please refer to Section 7 of this EA and the EIS.

F. Air Quality

CES did not submit additional modeling as part of Permit Application #3165-02. CES received updated emissions profiles from SPG. SPG now offers a reduced-emissions gas turbine that is otherwise similar to the turbine originally selected for the project and represented in the initial and subsequent extension applications. The new model is capable of limiting NO_x emissions – prior to reduction by SCR – to as low as 9 ppmvd. Vendor data for the previous model indicated NO_x concentrations in the gas turbine exhaust of 25 ppmvd. According to the SPG data sheet, NO_x concentration of 9 ppmvd at site-specific, worst-case operating conditions and in an unfired condition is equivalent to 60 lb/hour. The comparable NO_x emission rate from the 25 ppmvd configuration, again in an unfired condition, is 166 lb/hr. CES proposed revised NO_x and CO emission limits for each turbine when the duct burners are not operating; therefore, the air quality analyses completed for Permit #3165-00 still demonstrate that the CES facility will not cause or contribute to a violation of any air quality standard.

G. Unique Endangered, Fragile, or Limited Environmental Resources
H. Demands on Environmental Resource of Water, Air and Energy
I. Historical and Archaeological Sites
J. Cumulative and Secondary Impacts

The impacts on unique endangered, fragile, or limited environmental resources; the demands on environmental resource of water, air and energy; historical sites; and any cumulative and secondary impacts from the proposed project would be equal to, or less than those analyzed in the EIS. Please refer to Section 7 of this EA and the EIS.

9. 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 ECENOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores
B. Cultural Uniqueness and Diversity
C. Local and State Tax Base and Tax Revenue
D. Agricultural or Industrial Production
E. Human Health
F. Access to and Quality of Recreational and Wilderness Activities
G. Quantity and Distribution of Employment
H. Distribution of Population
I. Demands for Government Services
J. Industrial and Commercial Activity
K. Locally Adopted Environmental Plans and Goals
L. Cumulative and Secondary Impacts

The impacts on social structures and mores; cultural uniqueness and diversity; local state tax base and tax revenue; agricultural or industrial production; human health; access to and quality of recreational wilderness activities; quantity and distribution of employment; distribution of

population; demands for government services; industrial and commercial activity; locally adopted environmental plans and goals; and any cumulative and secondary impacts from the proposed project would be equal to, or less than those analyzed in the EIS. Therefore, no impacts beyond the EIS would be expected. Please refer to Section 7 of this EA and the EIS.

Recommendation: An EIS is not required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The EIS conducted for Permit #3165-00 is applicable to the proposed project because emissions from the proposed project would be equal to, or less than those analyzed in the EIS. The EA incorporates the previously conducted EIS; therefore, an additional EIS is not required.

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: Department of Environmental Quality, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: Eric Thunstrom
Date: December 27, 2005