June 2, 2023

Krista Dunning
Big Sky Energy, LLC
Dry Creek Compressor Station
PO Box 2342
Cody, WY 82414

Sent via email: krista@bigsky.energy

RE: Final Permit Issuance for MAQP #5237-01

Dear Krista:

Montana Air Quality Permit (MAQP) #5237-01 is deemed final as of June 2, 2023, by DEQ. This permit is for Big Sky Energy Dry Creek, a natural gas compressor station. All conditions of the Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For DEQ,

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

Troy M. Burrows
Air Quality Scientist
Air Quality Bureau
(406) 444-1452

Montana Department of Environmental Quality
Air, Energy & Mining Division
Air Quality Bureau

Montana Air Quality Permit #5237-01

Big Sky Energy, LLC
Dry Creek Compressor Station
PO Box 2342
Cody, WY 82414

June 2, 2023

MONTANA AIR QUALITY PERMIT

Issued To:	MAQP: #5237-01
Big Sky Energy, LLC	Modification Request Received: 3/29/2023
Dry Creek Compressor Station	Preliminary Decision Issued: 4/20/2023
P.O. Box 2342	Department's Decision: 5/17/2023
Cody, Wyoming 82414	Permit Final: 6/2/2023

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to the Big Sky Energy, LLC (BSE) for the emitting units at the Dry Creek Compressor Station, pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

Section I: Permitted Facilities

A. Plant Location

BSE owns and operates two natural gas-fired rich burn compressor engines, one two-stroke Ajax DPC-300 and one four-stroke Caterpillar G398TA compressor engine up to 530 bhp, at the Dry Creek Compressor Station. The Dry Creek Compressor Station is located in the SE¼ of the SW¼ of Section 34, Township 6 South, Range 21 East, Carbon County, or 45.25817, -109.12600.

B. Current Permit Action

On April 5, 2023, BSE requested the Montana Department of Environmental Quality (DEQ) modify MAQP #5237-00 to remove the existing 360 brake horsepower (bhp) Ajax DPC-360 natural gas compressor engine and to add one Caterpillar G398TA compressor engine up to 530 bhp with the same or lower emissions to the permit. MAQP #5237-01 replaces MAQP #5237-00.

Section II: Limitations and Conditions

A. Operational Requirements

1. Emissions from the Ajax DPC-300 compressor engine shall not exceed the following (ARM 17.8.749):

Oxides of Nitrogen (NO_x)	2.98 pounds per hour (lb/hr)
Carbon Monoxide (CO)	0.60 lb/hr
Volatile Organic Compounds (VOC)	0.66 lb/hr

2. Emissions from the new Caterpillar G398TA compressor engine shall not exceed the following (ARM 17.8.749):

NO_x	2.34 lb/hr
CO	2.34 lb/hr
VOC	0.11 lb/hr

3. BSE may 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).

4. BSE shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in Title 60 Code of Federal Regulations (40 CFR), Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* (ARM 17.8.342 and 40 CFR 63, Subpart ZZZZ).

B. Emission Testing Requirements

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

2. DEQ may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements:

1. BSE shall supply DEQ with annual production information for all emission points, as required by DEQ 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 DEQ by the date required in the emission inventory request. Information shall be in the units required by DEQ. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. BSE shall notify DEQ 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 DEQ, 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 BSE 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 DEQ, and must be submitted to DEQ upon request. These records may be stored at a location other than the plant site upon approval by DEQ (ARM 17.8.749).

D. Notification

BSE shall notify the Department in writing of the date of startup of operation of the new engine within 30 days following the date of startup.

Section III: General Conditions

A. Inspection – BSE shall allow DEQ'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 such as Continuous Emission Monitoring Systems (CEMS) or Continuous Emission Rate Monitoring Systems (CERMS), or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

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

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving BSE 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 DEQ's decision may request, within 15 days after DEQ renders its decision, upon affidavit setting forth the grounds therefor, 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 DEQ'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 DEQ'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, DEQ's decision on the application is final 16 days after DEQ'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 DEQ at the location of the source.

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

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

Montana Air Quality Permit Analysis
Big Sky Energy, LLC
MAQP #5237-01

I. Introduction/Process Description

Big Sky Energy, LLC (BSE) owns and operates two natural gas-fired rich burn compressor engines, one Ajax DPC-300 and one Caterpillar G398TA, at the Dry Creek Compressor Station. The Dry Creek Compressor Station is located at 45.25817, -109.12600, or in the SE¼ of the SW¼ of Section 34, Township 6 South, Range 21 East, Carbon County.

A. Permitted Equipment

The BSE equipment at the Dry Creek Compressor Station consists of:

YEAR INST.	MAKE	MODEL	SIZE
1974	Ajax	DPC-300	300 hp
2022	Caterpillar	G398TA	530 hp

B. Source Description

The Ajax DPC-300 and Caterpillar G398TA rich burn compressor engines were installed at the Dry Creek Compressor Station in 1974 and 2022, respectively. The two original engines, along with other equipment at the Dry Creek Compressor Station, were initially owned, operated, and permitted by Montana Power Company which later became known as Northwestern Energy. For purposes of this document, the term "facility" applies to only the two engines listed above unless otherwise specified.

The production compressors withdraw natural gas from local production wells and increase the gas pressure before entering the mechanical refrigeration plant which removes both water and heavy-end hydrocarbons. The production gas stream then enters the pipeline either to be transmitted west or to the inlet of the storage compressors for injection into the storage field.

C. Permit History

On July 14, 1993, Montana Power Company was issued air quality permit #2784-00 for the operation of their natural gas processing plant and associated equipment, located in the SE¼ of the SW¼ of Section 34, Township 6 South, Range 5 East, Carbon County near Red Lodge, Montana. The Ajax DPC-300 and Ajax DPC-360 two-stroke rich burn compressor engines were part of this processing plant and associated permit. The plant was identified as the Dry Creek Field, Station 056-1 through 4.

On November 18, 2019, BSE notified DEQ of the transfer of ownership of the two Ajax engines at the Dry Creek Compressor Station from Northwestern Energy to BSE and requested that DEQ issue BSE an MAQP for these engines. Northwestern Energy also provided a notice to DEQ dated November 18, 2019, documenting the transfer of ownership of the two Ajax engines to BSE and requesting that the associated permit conditions from MAQP #2784-05 be transferred to BSE. As this transfer of ownership did not involve the construction of any new or

modification of any existing emitting units, this permit issuance is considered an administrative action in accordance with ARM 17.8.764 and ARM 17.8.765(2). All applicable permit conditions for the two Ajax engines have been transferred from MAQP #2784-05 to **MAQP #5237-00**.

D. Current Permit Action

On April 5, 2023, BSE requested the Montana Department of Environmental Quality (DEQ) modify MAQP #5237-00 to remove the existing 360 brake horsepower (bhp) Ajax DPC-360 natural gas compressor engine and to add one Caterpillar G398TA compressor engine up to 530 bhp to the permit. **MAQP #5237-01** replaces MAQP #5237-00.

E. Additional Information

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

II. Applicable Rules and Regulations

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

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by DEQ, 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).

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

4. ARM 17.8.110 Malfunctions. DEQ 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:

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}

BSE must not cause or contribute to a violation of any ambient air quality standard.

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, BSE 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. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.

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. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The Ajax DPC-300 and Cat G398TA are not NSPS-affected sources because they do not meet the applicability criteria of the NSPS for spark ignition reciprocating internal combustion engines.

8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The owner or operator of any affected source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as applicable.

   a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAPs Subpart as listed below.

   b. 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants (HAPs) for Stationary Reciprocating Internal Combustion Engines (RICE). An owner or operator of a stationary reciprocating internal combustion engine (RICE) at a major or area source of HAP emissions is subject to this rule except if the stationary RICE is being tested at a stationary RICE test cell/stand. An area source of HAP emissions is a source that is not a major source. The RICE equipment to be used under MAQP #5237-01 are subject to this subpart because they are stationary RICE operating at an area source of HAP emissions.

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. BSE shall 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 DEQ. A permit fee was submitted on 3/29/2023 with the modification application.

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 DEQ by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by DEQ. 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. DEQ 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 of any pollutant. BSE has the potential to emit more than 25 tons per year of oxides of nitrogen (NO_x); 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, modification, or use of a source. BSE submitted the required 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. BSE submitted an affidavit of publication of public notice for the March 30, 2023 issue of the Carbon County News, a newspaper of general circulation in the Town of Bridger in Carbon 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 DEQ 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 DEQ 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 BSE 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 DEQ'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 DEQ.

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 Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

   This facility is not a major stationary source because this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant (excluding fugitive emissions).

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

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

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

   b. PTE > 10 tons/year of any one hazardous air pollutant (HAP), or PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as DEQ may establish by rule.

   c. PTE > 70 tons/year of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #5237-01 for the BSE equipment at the Dry Creek Compressor Station, the following conclusions were made:

   a. The facility's PTE is < 100 tons/year for any pollutant.

   b. The facility's PTE is < 10 tons/year of any single hazardous air pollutant (HAP) and < 25 tons/year of all HAPs.

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

   d. This facility is not subject to any current NSPS.

   e. This facility is subject to current NESHAP (40 CFR 63 Subparts A and ZZZZ).

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

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

   Based on these facts, DEQ determined that the BSE equipment at the Dry Creek Compressor Station is a minor source of emissions as defined under Title V.

III. BACT Determination

ARM 17.8.752 requires that any new or altered source requiring an air quality permit install the maximum air pollution control capability that is technically practical and economically feasible as established through a Best Available Control Technology (BACT) analysis. The BACT analysis determines the maximum air pollution control technology that is technically practical and economically feasible.

The new compressor engine (530 bhp) is not subject to the requirements of the EPA New Source Performance Standard (NSPS, Subpart JJJJ) because it was manufactured before the applicability date. The new CAT compressor engine is subject to NESHAP, 40 CFR 63,Subpart ZZZZ for a non-emergency, non-black start 4SRB stationary RICE>500 HP. Subpart ZZZZ, Table 2D requires installation of non-selective catalytic reduction (NSCR) to reduce HAP emissions from this

engine size and type. The new CAT engine is equipped with an air fuel ratio (AFR) controller and NSCR.

BACT Analysis Methodology
This BACT analysis follows the procedure outlined in the New Source Review Workshop Manual, Office of Air Quality Planning and Standards, US EPA, Draft - October 1990. The methodology described in the manual is the "top-down" method and consists of five basic steps:
Step 1 - Identify all control technologies;
Step 2 - Eliminate technically infeasible options;
Step 3 - Rank remaining technologies by control effectiveness;
Step 4 - Evaluate most effective controls and document results; and
Step 5 - Select BACT.

Compressor Engine BACT Analysis

CO BACT
A top-down BACT analysis has been performed to determine the CO BACT emission limit and appropriate control devices. Generally available information that has been summarized by MDEQ in past BACT determinations for rich-burn engines has been used as a reference to describe the available CO control technologies.
Step 1 – Identify All Available CO Control Technologies
CO emissions from rich-burn four-stroke compressor engines are typically controlled using non-selective catalytic reduction (NSCR) units and/or AFR controllers to minimize CO and NOx emission rates. CO oxidation catalysts are typically used for lean-burn engines. MDEQ has requested that lean-burn engines also be examined as part of the available CO control technologies. The following is a list of available CO control technologies for compressor engines.

- Rich-burn engines with catalytic oxidation;
- Rich-burn engines with AFR controller;
- Rich-burn engines with NSCR;
- Rich-burn engines with NSCR and AFR;
- Lean-burn engines with catalytic oxidation;
- Lean-burn engines with AFR controller;
- Lean-burn engines with NSCR
- Lean-burn engines with AFR and catalytic oxidation; and
- No additional control.

Rich-Burn Engines with Catalytic Oxidation
Catalytic oxidation cannot be applied to rich-burn engines because of the inherently low oxygen concentrations of the exhaust stream. Excess oxygen is needed by the catalytic oxidizers to oxidize CO to CO_2 efficiently.

Rich-Burn Engines with AFR Controller (CO and NOx Control at the Crossover Point)
Under this control strategy, the proper air-to-fuel ratio is obtained by adjusting the engine to operate at the crossover point, where NOx and CO emissions are equal. At the crossover point, the engine operation is neither too lean nor too rich. Excess hydrocarbons in a rich fuel mixture cause incomplete combustion, thereby lowering the exhaust temperature to a point where the concentration of NOx decreases and the concentration of CO increases.

Conversely, combustion of a lean fuel mixture occurs at higher temperatures accompanied by a higher concentration of NOx and a lower concentration of CO.

combustion engines can be operated manually at the crossover point; however, the engine must be tuned frequently to account for operational changes such as varying engine load, operating temperature, fuel gas quality, etc. While the use of an AFR controller to adjust the engine to operate at the crossover point results in a reasonable reduction of both NOx and CO emissions, an AFR controller operated without additional control does not provide for a reduction in NOx and CO emissions as effectively as other control strategies such as an NSCR or an NSCR unit operated in conjunction with an AFR controller.

Rich-Burn Engine with NSCR

An NSCR unit controls NOx emissions by using available CO and residual hydrocarbons in the exhaust of a rich-burn engine as an NOx reducing agent. Without the catalyst, in the presence of oxygen, the hydrocarbons will be oxidized instead of reacting with the NOx. As the excess hydrocarbon and NOx pass over a honeycomb or monolithic catalyst (usually a combination of noble metals such as platinum, palladium, and/or rhodium), the reactants are reduced to N2, H2O, and CO_2. The noble metal catalyst usually operates between 800°F and 1,200°F; therefore, the unit would normally be mounted near the engine exhaust to maintain a high enough temperature to allow the various reactions to occur. In order to achieve maximum performance, 80% to 90% reduction of NOx concentration, the engine must burn a rich fuel mixture, causing the engine to operate less efficiently.

Like the use of an AFR controller alone, the use of an NSCR unit alone can be used to effectively reduce NOx and CO emissions. However, to effectively reduce pollutants in the gas stream when NSCR is operated as the only control, the engine must burn a rich fuel mixture to achieve maximum performance thereby resulting in lower engine operating efficiency and increased fuel use. Subsequently, an NSCR unit operated alone does not provide as high a reduction in NOx and CO emissions as an NSCR unit with an AFR controller where engine efficiency is increased.

Rich-Burn Engine with NSCR and AFR Controller

In order to provide the most effective use of the catalyst in an NSCR unit, it is necessary to install an electronic AFR controller. This device maintains the proper air-to-fuel ratio thereby increasing fuel efficiency, optimizing the level of reducing agents, and minimizing agents that can poison the catalyst thus providing for the maximum NOx and CO emission reduction and limiting technical difficulties such as engine downtime.

Lean-Burn Engines with Catalytic Oxidation

Catalytic oxidation is a post-combustion technology that has been applied to oxidize CO emissions from lean-burn engines. Lean-burn technology may cause increased levels of CO emissions. In a catalytic oxidation system, CO passes over a catalyst, usually a noble metal, which oxidizes CO into CO_2 at efficiencies of 70% to 90%. Oxidation catalysts are only applicable to lean-burn engines because a high oxygen concentration is needed for the catalyst to oxidize the CO to CO_2.

Lean-Burn Engine with AFR Controller

The lean-burn engine uses a pre-combustion chamber to enclose and ignite a rich mixture of air and fuel. The resulting ignition front fires into the larger main cylinder that contains a

much leaner fuel mixture. Staging the combustion allows for burning a leaner fuel mixture that results in lowering of peak flame temperatures. Lower combustion temperature assures lower NOx concentrations in the exhaust gas stream; however, excess air in the fuel/air mixture can result in increased CO emissions.

NOx and CO emissions from a lean-burn engine can be stabilized by installing an electronic AFR controller. This device maintains the proper air-to-fuel ratio that will optimize the performance of the lean-burn engine. A lean-burn engine with an AFR controller achieves approximately the same reduction in NOx and CO emissions as a rich burn engine fitted with an NSCR and an AFR controller.

Lean-burn engines with AFR control have higher initial costs when compared to rich-burn engines fitted with an NSCR and AFR controller. However, since there is limited add-on equipment, the lean-burn engine requires less maintenance than a rich-burn engine fitted with an NSCR unit and an AFR controller. Therefore, operation of the lean-burn engine typically results in less technical difficulty and downtime and lower operating costs.

Lean-Burn Engine with NSCR Control
As explained earlier, a NSCR can be used to oxidize CO to CO_2. However, in order to achieve maximum performance, the appropriate reduction of CO concentration, the engine must burn a rich fuel mixture, causing the engine to operate less efficiently. NSCR is not considered a technically feasible control option on a lean-burn engine.

Lean-Burn Engine with Catalytic Oxidation and AFR Controller
As stated earlier, catalytic oxidation on a lean burn engine can achieve around 70-90% control of CO. An AFR controller will ensure that the engine operates in the appropriate air to fuel ratio resulting in more stable control of the catalytic oxidizer.

Step 2 - Eliminate Technically Infeasible CO Control Options
Catalytic oxidation applied to a rich-burn engine is technically infeasible because the oxygen concentration from rich-burn engines is not high enough for a catalytic oxidizer to operate properly. NSCR applied to a lean-burn engine is also technically infeasible because the NSCR needs a rich fuel to air ratio to operate effectively.

Step 3 - Rank Control Technologies by CO Control Effectiveness
The following table lists the control technologies and expected control efficiencies for rich-burn compressor engines.

Control Technology	CO Reduction Potential
Rich-Burn with AFR and NSCR (Proposed Option)	90% (more stable control)
Rich-Burn with NSCR	80% - 90%
Rich-Burn with AFR	Varies
No Additional Control	Baseline

Step 4 - Evaluate Most Effective CO Controls and Document Results
The use of AFR and NSCR is the most effective method to control CO emissions for rich-burn engines, and is the control being proposed for the CAT engine.

Step 5 – Select CO BACT
Use of an NSCR with AFR controller has been determined to be economically feasible with little potential for adverse environmental and energy impacts. Because an NSCR with AFR controller offers the highest control efficiency of the feasible control technology options, no further analysis is necessary.
The proposed CO BACT emission limit is 2.0 g/bhp-hr with NSCR and an AFR controller to control the CO emissions from the rich-burn engine.

NO_X BACT
A top-down BACT analysis has been performed to determine the NOx BACT emission limit and appropriate control devices. Generally available information that has been summarized by MDEQ in current BACT determinations for rich-burn engines has been used as a reference to describe the available NOx control technologies.

Step 1 – Identify All Available NOx Control Technologies
NOx emissions from rich-burn four-stroke compressor engines are typically controlled using NSCR units and/or AFR controllers to control CO and NOx emission rates. Lean-burn engines with inherently low NOx emission rates, when appropriate, can be further reduced with selective catalytic reduction (SCR) units. MDEQ has requested that lean-burn engines also be examined as part of the available NOx control technologies. The following is a list of available NOx control technologies for compressor engines.

- Rich-burn engines with SCR;
- Rich-burn engines with NSCR;
- Rich-burn engines with AFR controller;
- Rich-burn engines with NSCR and AFR;
- Lean-burn engines with SCR controller;
- Lean-burn engines with NSCR controller;
- Lean-burn engines with AFR controller;
- Lean-burn engines with SCR and AFR; and
- No additional control

Rich-Burn Engines with SCR
SCR is a post-combustion emission control technology that has been shown to be effective in reducing NOx emission from lean-burn engines because of the excess oxygen in the exhaust stream. SCR units can achieve NOx control efficiencies as high as 90% for lean-burn engines that are operated at a constant load. An SCR unit selectively reduces NOx emission by injecting either liquid anhydrous ammonia or aqueous ammonium hydroxide into the exhaust gas stream prior to the gas stream reaching the catalyst. The catalyst is typically made from noble metals, base metal oxides such as vanadium and titanium, and zeolite-based material. NOx, ammonia (NH3), and O_2 react on the surface of the catalyst to form N_2 and H_2). For an SCR unit to operate properly, the exhaust gas must be within a particular range (typically between 450°F and 850°F). The catalyst that is utilized dictates the temperature range. Exhaust gas temperatures greater than the upper limit will pass the NOx and NH_3 through the catalyst prior to the reaction. NH_3 emissions, called ammonia slip, are a key consideration when specifying an SCR unit.

Typical compressor engines will operate at variable loads thereby creating technical difficulties such as periods of ammonia slip or periods of insufficient ammonia injection.
SCR is only applicable to lean-burn engines because of the required oxygen content of the exhaust stream.

Rich-Burn Engines with NSCR
An NSCR unit controls NOx emissions by using available CO and residual hydrocarbons in the exhaust of a rich-burn engine as an NOx reducing agent. Without the catalyst, in the presence of oxygen, the hydrocarbons will be oxidized instead of reacting with the NOx. As the excess hydrocarbon and NOx pass over a honeycomb or monolithic catalyst (usually a combination of noble metals such as platinum, palladium, and/or rhodium), the reactants are reduced to N_2, H2O, and CO_2. The noble metal catalyst usually operates between 800°F and 1,200°F; therefore, the unit would normally be mounted near the engine exhaust to maintain a high enough temperature to allow the various reactions to occur. In order to achieve maximum performance, 80% to 90% reduction of NOx concentration, the engine must burn a rich fuel mixture, causing the engine to operate less efficiently.

Similar to the use of an AFR controller alone, the use of an NSCR unit alone can be used to effectively reduce NOx and CO emissions. However, to effectively reduce pollutants in the gas stream when NSCR is operated as the only control, the engine must burn a rich fuel mixture to achieve maximum performance thereby resulting in lower engine operating efficiency and increased fuel use. Subsequently, an NSCR unit operated alone does not provide as high a reduction in NOx and CO emissions as an NSCR unit with an AFR controller where engine efficiency is increased.

Rich-burn with AFR Controller (CO and NOx Control at the Crossover Point)
Under this control strategy, the proper air-to-fuel ratio is obtained by adjusting the engine to operate at the crossover point, where NOx and CO emissions are equal. At the crossover point, the engine operation is neither too lean nor too rich. Excess hydrocarbons in a rich fuel mixture cause incomplete combustion thereby lowering the exhaust temperature to a point where the concentration of NOx decreases and the concentration of CO increases. Conversely, combustion of a lean fuel mixture occurs at higher temperatures accompanied by a higher concentration of NOx and a lower concentration of CO. Internal combustion engines can be operated manually at the crossover point; however, the engine must be tuned frequently to account for operational changes such as varying engine load, operating temperature, fuel gas quality, etc. While the use of an AFR controller to adjust the engine to operate at the crossover point results in a reasonable reduction of both NOx and CO emissions, an AFR controller operated without additional control does not provide for a reduction in NOx and CO emissions as effectively as other control strategies such as an NSCR or an NSCR unit operated in conjunction with an AFR controller.

Rich-Burn Engine with NSCR and AFR Controller
In order to provide the most effective use of the catalyst in an NSCR unit, it is necessary to install an electronic AFR controller. This device maintains the proper air-to-fuel ratio thereby increasing fuel efficiency, optimizing the level of reducing agents, and minimizing agents that can poison the catalyst thus providing for the maximum NOx and CO emission reduction and limiting technical difficulties such as engine downtime.

Lean-Burn Engines with SCR
As stated earlier, SCR is only applicable to lean-burn engines because of the required oxygen content of the exhaust stream. SCR can typically reduce NOx emission by 80 to 90%.

Lean-Burn Engines with NSCR
As explained earlier, an NSCR can be used to reduce NOx into N_2. However, in order to achieve maximum performance, 80% to 90% reduction of NOx concentration, the engine must burn a rich fuel mixture, causing the engine to operate less efficiently. NSCR is not a viable control option to control NOx on the lean-burn engine.

Lean-Burn Engine with AFR Controller
The lean-burn engine uses a pre-combustion chamber to enclose and ignite a rich mixture of air and fuel. The resulting ignition front fires into the larger main cylinder that contains a much leaner fuel mixture. Staging the combustion allows for burning a leaner fuel mixture that results in lowering of peak flame temperatures. Lower combustion temperature assures lower NOx concentrations in the exhaust gas stream; however, excess air in the fuel/air mixture can result in increased CO emissions. The NOx and CO emissions from a lean-burn engine can be stabilized by installing an electronic AFR controller. This device maintains the proper air-to-fuel ratio that will optimize the performance of the lean-burn engine. A lean-burn engine with an AFR controller achieves approximately the same reduction in NOx and CO emissions as a rich-burn engine fitted with an NSCR and an AFR controller.

Lean-burn engines with AFR control have higher initial costs when compared to rich-burn engines fitted with an NSCR and AFR controller. However, since there is limited add-on equipment, the lean-burn engine requires less maintenance than a rich-burn engine fitted with an NSCR unit and an AFR controller. Therefore, operation of the lean-burn engine typically results in less technical difficulty and downtime and lower operating costs.

Lean-Burn Engine with SCR and AFR Controller
As stated earlier, SCR is only applicable to lean burn engine, and SCR can achieve around 80-90% control of NOx. An AFR controller will ensure that the engine operates in the appropriate air to fuel ratio resulting in more stable control of the SCR unit.

Step 2 - Eliminate Technically Infeasible NOx Control Options
SCR applied to a rich-burn engine is technically infeasible because the oxygen concentration from rich-burn engines is not high enough for an SCR to operate properly.

Step 3 - Rank Control Technologies by NOx Control Effectiveness
The table below lists the control technologies and expected control efficiencies for rich-burn compressor engines.

Control Technology	NOx Reduction Potential
Rich-Burn with AFR and NSCR (Proposed Option)	90% (more stable control)
Rich-Burn with NSCR	80% - 90%
Rich-Burn with AFR	Varies
No Additional Control	Baseline

Step 4 - Evaluate Most Effective NOx Controls and Document Results
The use of AFR and NSCR is the most effective method to control NOx emissions for rich-burn engines. This method of control is frequently used in the natural gas compression industry. Since this control method is widely used, the control method cannot be ruled out based on economic, environmental, or energy impacts.

Step 5 – Select NOx BACT
Use of an NSCR with AFR controller has been determined to be economically feasible with little potential for adverse environmental and energy impacts. Because NSCR combined with an AFR controller offers the highest control efficiency of the feasible control technology options, no further analysis is necessary. In order to comply with 40 CFR 63, Subpart ZZZZ, Table 2D and Table 5, BSE has installed an AFR controller and NSCR unit.

VOC BACT
A top-down BACT is not necessary since the same control measures for CO emissions can be applied to VOC emissions with similar reduction efficiencies. Since NSCR and AFR have been determined to be BACT for CO, the proposed control for VOC emissions is also NSCR and AFR. The proposed VOC BACT emission limit is 0.11 lb/hr. BSE has proposed using the AP-42 emissions factor (AP-42 Table 3.2-3) for four stroke, rich-burn compressor engines for VOC.

SO_2 BACT
ARM 17.8.752 requires a BACT analysis for SO_2 emissions. Since annual uncontrolled SO_2 emissions are relatively low and add-on control is assumed to be cost-prohibitive, a top down BACT is not presented. The proposed SO_2 BACT conforms to previous BACT determinations made by MDEQ for rich-burn, natural gas-fired, compressor engines.

PM10 BACT
ARM 17.8.752 requires a BACT analysis for PM10 emissions. Since annual uncontrolled PM10 emissions are predicted to be relatively low and add-on is assumed to be cost prohibitive, a top-down BACT analysis for PM10 emissions is not presented. The AP-42 emissions factor (AP-42 Table 3.2-3) for four stroke, rich-burn compressor engines for PM10 is used.

IV. Emission Inventory

	Tons/Year					
	TSP	PM_{10}	SO_x	NO_x	VOC	CO
300 Ajax DPC-300	0.11	0.11	0.01	13.04	2.90	2.61
530 Cat G398TA	0.13	0.32	0.01	10.24	0.15	10.24
Total	0.24	0.43	0.02	23.28	3.05	12.85

PTE Emissions Inventory

Emissions		**PM-10/PM-2.5**	**NOx**	**CO**	**SOx**	**VOC**	**HAPs**
Unit ID	**Emitting Unit**	**(tpy)**	**(tpy)**	**(tpy)**	**(tpy)**	**(tpy)**	**(tpy)**
Existing Equipment							
EU01	300-hp Ajax DPC-300 Compressor Engine	0.74	13.05	2.63	0.006	2.89	0.76
Removed							

EU02	360-hp Ajax DPC-360 Compressor Engine	0.87	15.64	3.11	0.007	3.46	0.90
Added							
EU02	*530-hp Four-Stroke Rich Burn Compressor Engine*	*0.32*	*10.24*	*10.24*	*0.010*	*0.15*	*0.54*
	New Facility PTE Total	**1.06**	**23.29**	**12.87**	**0.016**	**3.04**	**1.30**
Change in Emissions		**-0.55**	**-5.40**	**7.13**	**0.00**	**-3.31**	**-0.36**

Emissions Unit ID	Emitting Unit	PM-10/PM-2.5 (tpy)	NOx (tpy)	CO (tpy)	SOx (tpy)	VOC (tpy)	HAPs (tpy)
Existing Equipment							
EU01	300-hp Ajax DPC-300 Compressor Engine	0.74	13.05	2.63	0.006	2.89	0.76
Removed							
EU02	360-hp Ajax DPC-360 Compressor Engine	0.87	15.64	3.11	0.007	3.46	0.90
Added							
EU02	*530-hp Four-Stroke Rich Burn Compressor Engine*	*0.32*	*10.24*	*10.24*	*0.010*	*0.15*	*0.54*
	New Facility PTE Total	**1.06**	**23.29**	**12.87**	**0.016**	**3.04**	**1.30**
Change in Emissions		**-0.55**	**-5.40**	**7.13**	**0.00**	**-3.31**	**-0.36**

	TPY	Major HAP Threshold
Total HAPs	1.30	25
Highest Single HAP Formaldeyde	0.87	10

Big Sky Energy (BSE)
Dry Creek Compressor Station

Existing Engine #01 Ajax DPC - 300 hp Compressor Engine (Two-Stroke, Rich-Burn)*

Horsepower =	300 bhp		
Potential Hours of Operation =	8,760 hr/yr	Conversions:	
Max. Fuel Combustion Rate =	2.2 MMBtu/hr each		2000 lbs/ton
Fuel Heating Value=	1020 MMBtu/MMscf		453.6 grams/lb

* - Montana AEI applied AP-42 emission factors for two-stroke, lean burn engine in 2021

Pollutant	Emission Factor	Units	Emission Factor Reference	Potential Emissions (lb/hr)	Potential Emissions (ton/yr)
PM_{10} / $PM_{2.5}$	0.0768	lb/MMBtu	AP-42 Table 3.2-1 (07/00)	0.17	0.74
PM (condensable)	0.00991	lb/MMBtu	AP-42 Table 3.2-1 (07/00)	0.02	0.10
NO_X	2.98	lb/hr	MAQP#5237-00 Permit Limit	2.98	13.05
CO	0.60	lb/hr	MAQP#5237-00 Permit Limit	0.60	2.63
SO_X	0.000588	lb/MMBtu	AP-42 Table 3.2-1 (07/00)	0.0013	0.006
VOC	0.66	lb/hr	MAQP#5237-00 Permit Limit	0.66	2.89

Sample Calculation:

NOx Emissions (ton/yr) = ((Emission Factor, lb/hr) x (Hours of Operation)) / (2,000 lb/ton) NOx Emissions (ton/yr) = (2.98 lb/hr) x (8760 hr/yr) / (2000 lb/ton) = 13.05 ton/yr

PM-10 Emissions (ton/yr) = (Emission Factor, lbs/MMBtu) x (Max. Fuel Combustion Rate, MMBtu/hr) x (8760 hrs/yr) / (2,000 lbs/ton) PM-10 Emissions (ton/yr) = (0.0768 lb/MMBtu) x (19272 MMBtu/yr) / (2000 lbs/ton) = 0.74 ton/yr

Hazardous Air Pollutants (HAPs

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
1,1,2,2-tetrachloroethane	79-34-5	6.63E-05	lb/MMBtu		6.39E-04
1,1,2-trichloroethane	79-00-5	5.27E-05	lb/MMBtu		5.08E-04
1,3-butadiene	106-99-0	8.20E-04	lb/MMBtu		7.90E-03
1,3-dichloropropene	542-75-6	4.38E-05	lb/MMBtu		4.22E-04
Acetaldehyde	75-07-0	7.76E-03	lb/MMBtu		7.48E-02
Acrolein	107-02-8	7.78E-03	lb/MMBtu		7.50E-02
Benzene	71-43-2	1.94E-03	lb/MMBtu		1.87E-02
Biphenyl	92-52-4	3.95E-06	lb/MMBtu		3.81E-05
Carbon tetrachloride	56-23-5	6.07E-05	lb/MMBtu		5.85E-04
Chlorobenzene	108-90-7	4.44E-05	lb/MMBtu	AP-42	4.28E-04
Chloroform	67-66-3	4.71E-05	lb/MMBtu	Table 3.2-1	4.54E-04
Ethylbenzene	100-41-4	1.08E-04	lb/MMBtu	(07/00)	1.04E-03
Ethylene dibromide	106-93-4	7.34E-05	lb/MMBtu		7.07E-04
Formaldehyde	50-00-0	5.52E-02	lb/MMBtu		5.32E-01
Hexane	110-54-3	4.45E-04	lb/MMBtu		4.29E-03
Methanol	67-56-1	2.48E-03	lb/MMBtu		2.39E-02
Methylene chloride	75-09-2	1.47E-04	lb/MMBtu		1.42E-03
Naphthalene	91-20-3	9.63E-05	lb/MMBtu		9.28E-04
PAH	---	1.34E-04	lb/MMBtu		1.29E-03
Phenol	684-93-5	4.21E-05	lb/MMBtu		4.06E-04
Styrene	100-42-5	5.48E-05	lb/MMBtu		5.28E-04
Toluene	87-86-5	9.63E-04	lb/MMBtu		9.28E-03
Vinyl chloride	108-95-2	2.47E-05	lb/MMBtu		2.38E-04
Xylene	106-50-3	2.68E-04	lb/MMBtu		2.58E-03
Arsenic	7440-38-2	2.0E-04	lb/MMscf		1.9E-06
Beryllium	7440-41-7	1.2E-05	lb/MMscf		1.1E-07
Cadmium	7440-43-9	1.1E-03	lb/MMscf		1.0E-05
Chromium	7440-47-3	1.4E-03	lb/MMscf	AP-42	1.3E-05
Cobalt	7440-48-4	8.4E-05	lb/MMscf	Table 1.4-4	7.9E-07
Manganese	7439-96-5	3.8E-04	lb/MMscf	(07/98)	3.6E-06
Mercury	7439-97-6	2.6E-04	lb/MMscf		2.5E-06
Nickel	7440-02-0	2.1E-03	lb/MMscf		2.0E-05
Selenium	7782-49-2	2.4E-05	lb/MMscf		2.3E-07
				Totals	0.76

Big Sky Energy (BSE)
Dry Creek Compressor Station

Removed - Engine #02 Ajax DPC - 360 hp Compressor Engine (Two-Stroke, Rich-Burn)*

Horsepower =	360 bhp		
Potential Hours of Operation =	8,760 hr/yr	Conversions:	
Max. Fuel Combustion Rate =	2.6 MMBtu/hr each		2000 lbs/ton
Fuel Heating Value=	1020 MMBtu/MMscf		453.6 grams/lb

* - Montana AEI applied AP-42 emission factors for two-stroke, lean burn engine in 2021

Pollutant	Emission Factor	Units	Emission Factor Reference	Potential Emissions (lb/hr)	Potential Emissions (ton/yr)
PM_{10} / $PM_{2.5}$	0.0768	lb/MMBtu	AP-42 Table 3.2-1 (07/00)	0.200	0.87
PM (condensable)	0.00991	lb/MMBtu	AP-42 Table 3.2-1 (07/00)	0.026	0.11
NO_X	3.57	lb/hr	MAQP#5237-00 Permit Limit	3.57	15.64
CO	0.71	lb/hr	MAQP#5237-00 Permit Limit	0.71	3.11
SO_X	0.000588	lb/MMBtu	AP-42 Table 3.2-1 (07/00)	0.002	0.007
VOC	0.79	lb/hr	MAQP#5237-00 Permit Limit	0.79	3.46

Sample Calculation:

NOx Emissions (ton/yr) = ((Emission Factor, lb/hr) x (Hours of Operation)) / (2,000 lb/ton) NOx Emissions (ton/yr) = (3.57 lb/hr) x (8760 hr/yr) / (2000 lb/ton) = 15.64 ton/yr

PM-10 Emissions (ton/yr) = (Emission Factor, lbs/MMBtu) x (Max. Fuel Combustion Rate, MMBtu/hr) x (8760 hrs/yr) / (2,000 lbs/ton) PM-10 Emissions (ton/yr) = (0.0768 lb/MMBtu) x (22776 MMBtu/yr) / (2000 lbs/ton) = 0.87 ton/yr

Hazardous Air Pollutants (HAPs

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
1,1,2,2-tetrachloroethane	79-34-5	6.63E-05	lb/MMBtu		7.55E-04
1,1,2-trichloroethane	79-00-5	5.27E-05	lb/MMBtu		6.00E-04
1,3-butadiene	106-99-0	8.20E-04	lb/MMBtu		9.34E-03
1,3-dichloropropene	542-75-6	4.38E-05	lb/MMBtu		4.99E-04
Acetaldehyde	75-07-0	7.76E-03	lb/MMBtu		8.84E-02
Acrolein	107-02-8	7.78E-03	lb/MMBtu		8.86E-02
Benzene	71-43-2	1.94E-03	lb/MMBtu		2.21E-02
Biphenyl	92-52-4	3.95E-06	lb/MMBtu		4.50E-05
Carbon tetrachloride	56-23-5	6.07E-05	lb/MMBtu		6.91E-04
Chlorobenzene	108-90-7	4.44E-05	lb/MMBtu		5.06E-04
Chloroform	67-66-3	4.71E-05	lb/MMBtu	AP-42	5.36E-04
Ethylbenzene	100-41-4	1.08E-04	lb/MMBtu	Table 3.2-1	1.23E-03
Ethylene dibromide	106-93-4	7.34E-05	lb/MMBtu	(07/00)	8.36E-04
Formaldehyde	50-00-0	5.52E-02	lb/MMBtu		6.29E-01
Hexane	110-54-3	4.45E-04	lb/MMBtu		5.07E-03
Methanol	67-56-1	2.48E-03	lb/MMBtu		2.82E-02
Methylene chloride	75-09-2	1.47E-04	lb/MMBtu		1.67E-03
Naphthalene	91-20-3	9.63E-05	lb/MMBtu		1.10E-03
PAH	---	1.34E-04	lb/MMBtu		1.53E-03
Phenol	684-93-5	4.21E-05	lb/MMBtu		4.79E-04
Styrene	100-42-5	5.48E-05	lb/MMBtu		6.24E-04
Toluene	87-86-5	9.63E-04	lb/MMBtu		1.10E-02
Vinyl chloride	108-95-2	2.47E-05	lb/MMBtu		2.81E-04
Xylene	106-50-3	2.68E-04	lb/MMBtu		3.05E-03
Arsenic	7440-38-2	2.0E-04	lb/MMscf		2.2E-06
Beryllium	7440-41-7	1.2E-05	lb/MMscf		1.3E-07
Cadmium	7440-43-9	1.1E-03	lb/MMscf		1.2E-05
Chromium	7440-47-3	1.4E-03	lb/MMscf	AP-42	1.6E-05
Cobalt	7440-48-4	8.4E-05	lb/MMscf	Table 1.4-4	9.4E-07
Manganese	7439-96-5	3.8E-04	lb/MMscf	(07/98)	4.2E-06
Mercury	7439-97-6	2.6E-04	lb/MMscf		2.9E-06
Nickel	7440-02-0	2.1E-03	lb/MMscf		2.3E-05
Selenium	7782-49-2	2.4E-05	lb/MMscf		2.7E-07
				Totals	0.90

Big Sky Energy (BSE)
Dry Creek Compressor Station

Added - Engine #02 Caterpillar G398TA - 530 hp Compressor Engine (Four-Stroke, Rich-Burn) (1996)

Horsepower =	530 bhp		
Potential Hours of Operation =	8,760 hr/yr	Conversions:	
Max. Fuel Combustion Rate =	3.8 MMBtu/hr each		2000 lbs/ton
Fuel Heating Value=	1020 MMBtu/MMscf		453.6 grams/lb

Pollutant	Emission Factor	Units	Emission Factor Reference	Potential Emissions (lb/hr)	Potential Emissions (ton/yr)
PM_{10}/ $PM_{2.5}$	0.019	lb/MMBtu	AP-42 Table 3.2-3 (07/00)	0.07	0.32
PM (condensable)	0.00991	lb/MMBtu	AP-42 Table 3.2-3 (07/00)	0.04	0.16
NO_X	2.0	g/bhp-hr	Manufacturer Data	2.34	10.24
CO	2.0	g/bhp-hr	Manufacturer Data	2.34	10.24
SO_X	0.000588	lb/MMBtu	AP-42 Table 3.2-3 (07/00)	0.002	0.010
VOC	0.0296	lb/MMBtu	AP-42 Table 3.2-3 (07/00)	0.11	0.15

Sample Calculation:

NOx Emissions (ton/yr) = (Emission Factor, g/bhp-hr) x (Max. Fuel Combustion Rate, MMBtu/hr) x (8760 hrs/yr) / (2,000 lbs/ton) NOx Emissions (ton/yr) = (2 g/bhp-hr) x (33288 MMBtu/yr) / (2000 lbs/ton) = 10.24 ton/yr

PM-10 Emissions (ton/yr) = (Emission Factor, lbs/MMBtu) x (Max. Fuel Combustion Rate, MMBtu/hr) x (8760 hrs/yr) / (2,000 lbs/ton) PM-10 Emissions (ton/yr) = (0.019 lb/MMBtu) x (33288 MMBtu/yr) / (2000 lbs/ton) = 0.32 ton/yr

Hazardous Air Pollutants (HAPs

Pollutant	CAS No.	Emission Factor (lb/MMBtu)	Units	Emission Factor Reference	Potential Emissions Each Engine (ton/yr)
1,1,2,2-tetrachloroethane	79-34-5	2.53E-05	lb/MMBtu		4.21E-04
1,1,2-trichloroethane	79-00-5	1.53E-05	lb/MMBtu		2.55E-04
1,3-butadiene	106-99-0	6.63E-04	lb/MMBtu		1.10E-02
1,3-dichloropropene	542-75-6	1.27E-05	lb/MMBtu		2.11E-04
Acetaldehyde	75-07-0	2.79E-03	lb/MMBtu		4.64E-02
Acrolein	107-02-8	2.63E-03	lb/MMBtu		4.38E-02
Benzene	71-43-2	1.58E-03	lb/MMBtu		2.63E-02
Carbon tetrachloride	56-23-5	1.77E-05	lb/MMBtu		2.95E-04
Chlorobenzene	108-90-7	1.29E-05	lb/MMBtu		2.15E-04
Chloroform	67-66-3	1.37E-05	lb/MMBtu	AP-42	2.28E-04
Ethylbenzene	100-41-4	2.48E-05	lb/MMBtu	Table 3.2-3	4.13E-04
Ethylene dibromide	106-93-4	2.13E-05	lb/MMBtu	(07/00)	3.55E-04
Formaldehyde	50-00-0	2.05E-02	lb/MMBtu		3.41E-01
Methanol	67-56-1	3.06E-03	lb/MMBtu		5.09E-02
Methylene chloride	75-09-2	4.12E-05	lb/MMBtu		6.86E-04
Naphthalene	91-20-3	9.71E-05	lb/MMBtu		1.62E-03
PAH	---	1.41E-04	lb/MMBtu		2.35E-03
Styrene	100-42-5	1.19E-05	lb/MMBtu		1.98E-04
Toluene	87-86-5	5.58E-04	lb/MMBtu		9.29E-03
Vinyl chloride	108-95-2	7.18E-06	lb/MMBtu		1.20E-04
Xylene	106-50-3	1.95E-04	lb/MMBtu		3.25E-03
Arsenic	7440-38-2	2.0E-04	lb/MMscf		3.3E-06
Beryllium	7440-41-7	1.2E-05	lb/MMscf		2.0E-07
Cadmium	7440-43-9	1.1E-03	lb/MMscf		1.8E-05
Chromium	7440-47-3	1.4E-03	lb/MMscf	AP-42	2.3E-05
Cobalt	7440-48-4	8.4E-05	lb/MMscf	Table 1.4-4	1.4E-06
Manganese	7439-96-5	3.8E-04	lb/MMscf	(07/98)	6.2E-06
Mercury	7439-97-6	2.6E-04	lb/MMscf		4.2E-06
Nickel	7440-02-0	2.1E-03	lb/MMscf		3.4E-05
Selenium	7782-49-2	2.4E-05	lb/MMscf		3.9E-07
				Totals	0.54

V. Existing Air Quality

The air quality of Carbon County is classified as either "better than national standards" or "unclassifiable/attainment" with respect to National Ambient Air Quality Standards (NAAQS) and Montana Ambient Air Quality Standards (MAAQS) for all criteria pollutants.

VI. Ambient Air Impact Analysis

The Laurel SO_2 nonattainment area is approximately 53 kilometers northeast of the Dry Creek Compressor Station, which is the closest nonattainment area to the facility. SO_2 emissions for the Dry Creek Compressor Station are insignificant at less than a tenth of a ton per year. The Dry Creek Compressor Station SO_2 emissions would not contribute to an increase in SO_2 emissions within the Laurel SO_2 nonattainment area. The total SO_2 emissions from this proposed project (as a minor source), at 0.016 tpy, are below the significant emissions rate as defined in ARM 17.8.801(28), and the annual modeling threshold listed in the Montana Modeling Guideline, at 40 tpy.

The primary sources of PM10/PM2.5 emissions are from the two compressor engines located onsite. The proposed 530 hp Caterpillar compressor emissions are calculated based on AP-42 emission factors for PM10/PM2.5. The engine is not equipped with PM10/PM2.5 emissions control devices other than the AFR controller and NSCR unit. The modified BSE Dry Creek facility has a PM10/PM2.5 PTE of 1.06 tpy.

The NOx emissions from this proposed project, at 10.24 tpy for the engine addition, are not near the significant emissions rate as defined in ARM 17.8.801(28). The proposed project decreases the facility-wide NOx PTE by 5.40 tpy NOx. The new facility PTE total for NOx is 23.29 tpy. The Montana Modeling Guideline predated the 1-hour NOx Standard and cannot provide directions with respect to making demonstrations under the updated standard. EPA has provided guidance relevant to this demonstration in the June 2010 Guidance Concerning the Implementation of the 1-hour NO_2 NAAQS for the Prevention of Significant Deterioration Program. This guidance was issued, in part, because of EPA's recognition of the potential difficulty of demonstrating compliance via modeling with the 1-hour standard for a variety of emitting units, for both major and minor sources of NOx. In that guidance, EPA states:

> "Under existing regulations, the applicable significant emissions rate for nitrogen oxides is 40 tons per year. 40 CFR 52.21(b)(23); 40 CFR 51.166(b)(23). The significant emissions rates defined in those regulations are specific to individual pollutants but are not differentiated by the averaging times of the air quality standards applicable to some of the listed pollutants. Although EPA has not previously promulgated a NO_2 standard using an averaging time of less than one year, the NAAQS for SO_2 have included standards with 3-hour and 24-hour averaging times for many years. EPA has applied the 40 tons per year significant emissions rate for SO_2 across all these averaging times. Until the evaluation described above, and any associated rulemaking is completed, EPA does not believe it has cause to apply the NO_2 significant emissions rate any differently than EPA has historically applied the SO_2 significant emissions rate and others that apply to standards with averaging times less than 1 year.

> Under existing regulations, an ambient air quality impact analysis is required for "each pollutant that [a source] would have the potential to emit in significant amounts." 40 CFR 52.21 (m)(1)(i)(a); 40 CFR 51.166(m)(1)(i)(a). For modifications, these regulations require this analysis for "each pollutant for which [the modification] would result in a significant net emissions increase." 40 CFR.52.21 (m)(1)(i)(b); 40 CFR 51.166(m)(l)(i)(b). EPA construes this regulation to mean that an ambient impact analysis is not necessary for pollutants with emissions rates below the significant emissions rates in paragraph (b)(23) of the regulations. No additional action by EPA or permitting authorities is necessary at this time to apply the 40 tpy significant emissions rate in existing regulations to the hourly NO_2 standard [emphasis added]."

The VOC emissions from this proposed project, at 3.04 tpy, are far below the significant emissions rate in ARM 17.8.801(28) and the annual modeling threshold listed in the Montana Modeling Guideline, set at 40 tpy. The proposed project decreased the facility wide PTE for VOC emissions.
The CO emissions from this proposed facility, at 12.87 tpy, are far below the significant emissions rate in ARM 17.8.801(28) and the annual modeling threshold listed in the Montana Modeling Guideline, set at 100 tpy.

Given the nature of the source, the emissions below major source and/or significance thresholds, the unclassified or attainment status of ambient standards in the area (and its remoteness), and relevant guidance documents from MDEQ and EPA, no modeling analyses are needed to demonstrate compliance with the ambient standards. This qualitative analysis provides sufficient evidence of compliance with the NAAQS.

VII. Environmental Assessment

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

Analysis Prepared By: Troy Burrows
Date: 4/20/2023

Big Sky Energy, LLC

Draft Environmental Assessment for

Montana Air Quality Permit #5237-01

Air Quality Bureau

APPLICANT: Big Sky Energy, LLC (BSE)		
SITE NAME: Dry Creek Compressor Station		
PROPOSED PERMIT NUMBER: Montana Air Quality Permit (MAQP) #5237-01		
APPLICATION RECEIVED: 3/29/2023		
APPLICATION DEEMED COMPLETE: 4/5/2023		
LOCATION: SE¼ of the SW¼ of Section 34, Township 6 South, Range 21 East, Carbon County, Montana		**COUNTY: Carbon**
PROPERTY OWNERSHIP:	**FEDERAL ____ STATE ____ PRIVATE _X___**	
EA PREPARER:	**T. Burrows**	
EA Draft Date	**EA Final Date**	**Permit Final Date**
4/20/2023	**5/17/2023**	**6/2/2023**

COMPLIANCE WITH THE MONTANA ENVIRONMENTAL POLICY ACT

The Montana Department of Environmental Quality (DEQ) prepared this Environmental Assessment (EA) in accordance with requirements of the Montana Environmental Policy Act (MEPA). An EA functions to determine the need to prepare an Environmental Impact Statement (EIS) through an initial evaluation and determination of the significance of impacts associated with the proposed action. However, an agency is required to prepare an EA whenever, as here, statutory requirements do not allow sufficient time for the agency to prepare an EIS (ARM 17.4.607(3)(c)). This document may disclose impacts over which DEQ has no regulatory authority.

COMPLIANCE WITH THE CLEAN AIR ACT OF MONTANA

The state law that regulates air quality permitting in Montana is the Clean Air Act of Montana (CAA), §§ 75-2-101, *et seq.*, Montana Code Annotated (MCA). DEQ may not approve a proposed action contained in an application for an air quality permit unless the project complies with the requirements set forth in the CAA and the administrative rules adopted thereunder, ARMs 17.8.101 *et. seq.* The project is subject to approval by the DEQ Air Quality Bureau (AQB) as the potential project emissions exceed the 5 tons per year threshold of regulated pollutants for modifications of permitted facilities (ARM 17.8.743). DEQ's approval of an air quality permit application does not relieve BSE from complying with any other applicable federal, state, or county laws, regulations, or ordinances. BSE is responsible for obtaining any other permits, licenses, or approvals (from DEQ or otherwise) that are required for any part of the proposed action. Any action DEQ takes at this time is limited to the pending air quality permit application currently before DEQ's AQB and the authority granted to DEQ under the Clean Air Act of Montana. This action is not indicative of any other action DEQ may take on any future (unsubmitted) applications made pursuant to any other authority (*e.g.* Montana's Water Protection Act). DEQ will decide whether to issue the pending air quality permit pursuant to the requirements of the CAA alone. DEQ may not withhold, deny, or impose conditions on the permit based on the information contained in this Environmental Assessment. § 75-1-201(4), MCA.

SUMMARY OF THE PROPOSED ACTION

BSE has applied for an MAQP modification under the CAA to request an engine change at the Dry Creek Compressor Station.

This BSE permit action has been assigned MAQP #5237-01 and will increase the horsepower of the compressor site.

BSE's estimated emissions increase from the engine change is nominal or improved for each regulated pollutant, which keeps this BSE permit action as a minor permit modification. BSE has conservatively estimated all project emission increases associated with the replacement engine.

All information included in the EA is derived from the permit application, discussions with the applicant, analysis of aerial photography, topographic maps, and other research tools.

Table 1: Proposed Action Details

Proposed Action	
General Overview	Removing an Ajax DPC-360 and replacing it with a Caterpillar G398TA up to 530 Horsepower
Proposed Action Estimated Disturbance	
Disturbance	There will be no disturbance, as this is on an existing operational site.
Proposed Action	
Duration	The engine is currently in place and scheduled for source testing in April 2023. The engine will remain in place for 30 years or until the permit is revoked.

Construction Equipment	None.
Personnel Onsite	**Operations:** No change is staff is necessary to accommodate this project.
Location and Analysis Area	**Location**: The proposed action is located at the Dry Creek Compressor Station. This parcel is located at 45.259, -109.126, Carbon County, Montana. **Analysis Area**: The area being analyzed as part of this environmental review includes the immediate project area, as well as neighboring lands surrounding the analysis area, as reasonably appropriate for the impacts being considered.
Air Quality	The Draft EA will be attached to the Preliminary Determination Air Quality Permit which would include all enforceable conditions for operation of the emitting units. Any revisions to the EA would be addressed and included in the Final EA attached to the Department's Decision.
Conditions Incorporated into the Proposed Action	The conditions developed in the Preliminary Determination of the MAQP dated April 5, 2023, set forth in Sections II.A-D.

PURPOSE AND BENEFIT FOR PROPOSED ACTION

DEQ's purpose in conducting this environmental review is to act upon BSE's air quality permit application No. 5237-01 to: remove the existing 360 brake horsepower (bhp) Ajax DPC-360 natural gas compressor engine, and to install one Caterpillar G398TA compressor engine up to 530 bhp..

The benefits of the proposed action, if approved, include authorizing BSE to continue current operations unchanged.

Authority to BSE for operation of the Dry Creek Compressor Station would continue until the permit is revoked, either at the request of BSE or by DEQ because of non-compliance with the conditions within the air quality permit.

REGULATORY RESPONSIBILITIES

In accordance with ARM 17.4.609(3)(c), DEQ must list any federal, state, or local, authorities that have concurrent or additional jurisdiction or environmental review responsibility for the proposed action and the permits, licenses, and other authorizations required. BSE must conduct its operations according to the terms of its permit, the CAA, §§ 75-2-101, *et seq*., MCA, and ARMs 17.8.101, *et seq*.

BSE must cooperate fully with, and follow the directives of, any federal, state, or local entity that may have authority over BSE's Dry Creek Compressor Station. These permits, licenses, and other authorizations may include: Carbon County Weed Control Board, Occupational Safety and Health Administration (worker safety), DEQ AQB (air quality) and Water Protection Bureau (groundwater and surface water discharge; stormwater), and Montana Department of Transportation and Carbon County (road access).

EVALUATION AND SUMMARY OF POTENTIAL IMPACTS TO THE PHYSICAL AND HUMAN ENVIRONMENT IN THE AREA AFFECTED BY THE PROPOSED ACTION:

The impact analysis will identify and evaluate direct and secondary impacts. Direct impacts are those that occur at the same time and place as the action that triggers the effect. Secondary impacts mean "a further impact to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action." ARM 17.4.603(18). Where impacts are expected to occur, the impacts analysis estimates the duration and intensity of the impact.
The duration of an impact is quantified as follows:

- **Short-term**: Short-term impacts are defined as those impacts that would not last longer than the proposed operation of the site.
- **Long-term**: Long-term impacts are defined as impacts that would remain or occur following shutdown of the proposed facility.

The severity of an impact is measured using the following:

- **No Impact**: There would be no change from current conditions.
- **Negligible Impact**: An adverse or beneficial effect would occur but would be at the lowest levels of detection.
- **Minor Impact**: The effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.
- **Moderate Impact**: The effect would be easily identifiable and would change the function or integrity of the resource.
- **Major Impact**: The effect would alter the resource.

1. TOPOGRAPHY, GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

The BSE Dry Creek Compressor Station site is located approximately 7.5 miles southwest of Red Lodge, Montana. The site is an existing industrial site that has been a natural gas compressor station since 1974 (see Photo-1 below).

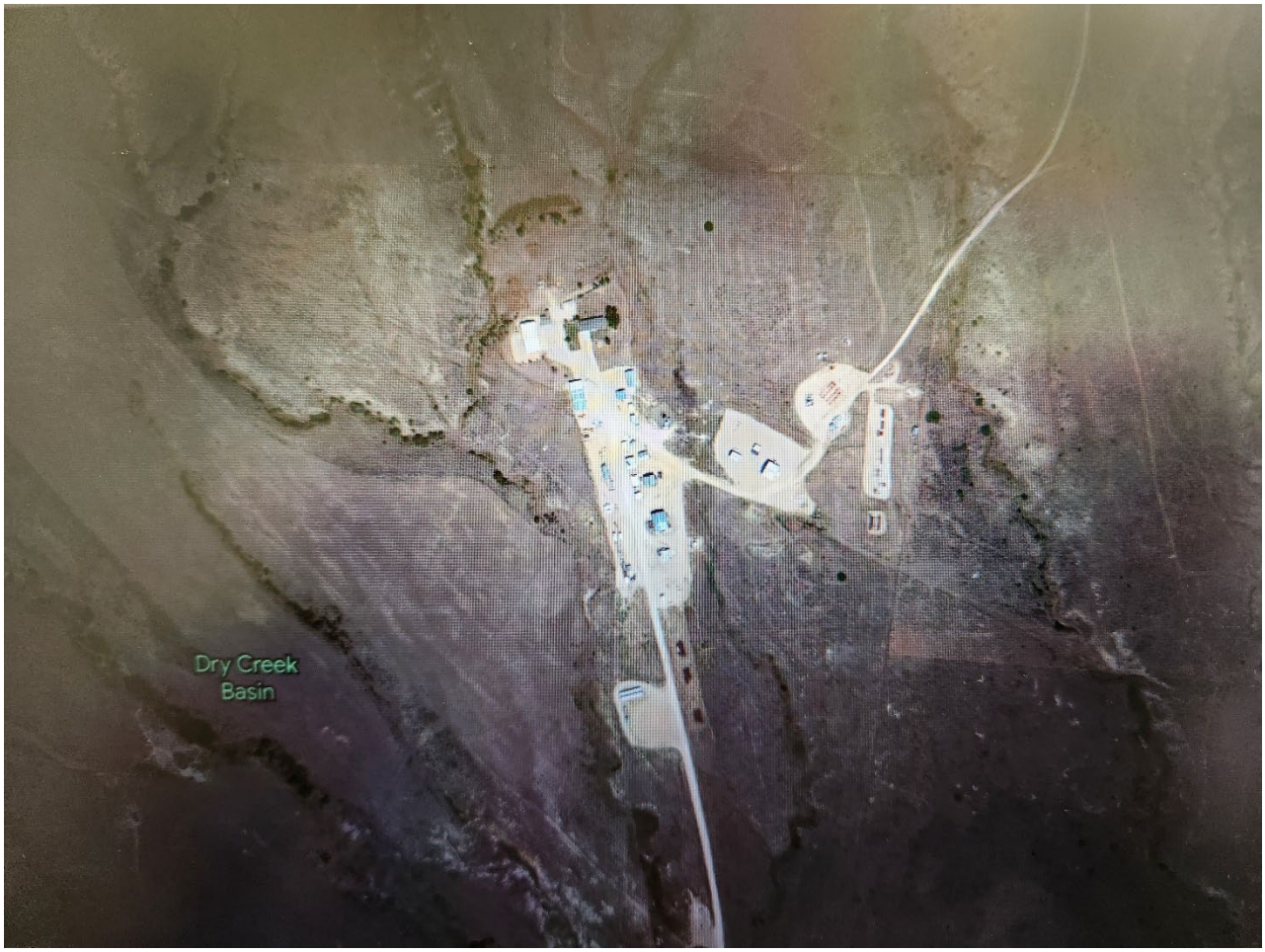
The Station is located on Pleistocene age glacial lake deposits. These sediments are described as two subunits - an upper stratigraphic unit consisting predominantly of non-plastic fine sand and silt and a lower stratigraphic unit consisting mostly of laminated to non-laminated plastic clay and minor amounts of silt. The area is dominated by perennial grasses and forbs with greater than 25% cover. Overall shrub cover is less than 10 percent.

Direct Impacts: The information provided above is based on the geology of the local area. Available information includes the permit application, analysis of aerial photography, topographic maps, and other research tools. None of the planned disturbances at the site is considered first time disturbance. There is no impact expected to topography and geology.

Secondary Impacts: No secondary impacts to topography, geology, stability, and moisture would be expected because the engine is located within the existing BSE property.

Photo-1

BSE Dry Creek Compressor Station - 45.25817, -109.12600, Carbon County, Montana



2. WATER QUALITY, QUANTITY, AND DISTRIBUTION:

No wetlands have been identified on the site.

Direct Impacts: The information provided above is based on the information provided by the applicant for the purpose of obtaining the pending air quality permit.

Precipitation and surface water would generally be expected to infiltrate into the subsurface, however, any surface water that may leave the site could carry sediment from the disturbed site.

No fragile or unique water resources or values are present. No impacts to water quality and quantity, which are resources of significant statewide and societal importance are expected.

Secondary Impacts: No secondary impacts to water quality, quantity and distribution would be expected, nor any impacts from stormwater runoff.

3. AIR QUALITY:

Carbon County is designated as an Unclassifiable/Attainment area for all criteria pollutants according to 40 CFR 81.327.

Direct Impacts: Expected emissions from the proposed action, as submitted in the air quality permit application, are in the permit analysis. The Dry Creek Compressor Station is not a major facility, and the emissions increases are nominal.

Air quality standards, set by the federal government and DEQ are enforced by the AQB and allow for pollutants at the levels permitted within the MAQP. Once the engine change project is complete, project emissions would include particulate matter (PM) species, oxides of NO_X, CO, sulfur dioxide (SO_2), and volatile organic compounds (VOCs). These emissions come from fuel combustion during engine operation.

Air pollution control equipment must be operated at the maximum design for which it is intended ARM 17.8.752(2). Limitations would be placed on the allowable emissions for the new emission source. As part of the air quality permit application, BSE submitted a Best Available Control Technology (BACT) analysis for each pollutant and each emitting unit. These proposed limits were reviewed by DEQ and incorporated into MAQP #5237-01 as federally enforceable conditions. These permit limits cover NO_X, SO_2, VOCs, PM, and CO with associated ongoing compliance demonstrations, as determined by DEQ.

Minor air quality impacts would be anticipated for the proposed action.

Secondary Impacts: Impacts from the operation of the new engine are to be restricted by an MAQP and therefore should have minor secondary air quality impacts.

4. VEGETATION COVER, QUANTITY AND QUALITY:

There are no known rare or sensitive plants or cover types present in the site area. No fragile or unique resources or values, or resources of statewide or societal importance, are present. Natural Gas Line Compression has been conducted at this site since the early 1970's. An air quality permit for the site was first issued in 1974. DEQ requested research using the Montana Natural Heritage Program (MTNHP) website and received the report titled "23DEQ0004_MTNHP_ESR_20230413_092808.zip" dated April 13, 2023. The proposed action is located at the existing Dry Creek Compressor Station in an area where vegetation is limited.

Direct Impacts: The information provided above is based on the information that DEQ had available to it at the time of completing this EA and provided by the applicant. Available information includes the permit application, analysis of aerial photography, topographic maps, geologic maps, soil maps, and other research tools. As the proposed action would be located within the Dry Creek Compressor Station, the vegetation is very limited at the site. No impacts to vegetation cover, quantity and quality are expected.

Secondary Impacts: No secondary impacts are expected since land disturbance at the station and for the operation of the engine would occur in an area with minimal vegetation.

5. TERRESTRIAL, AVIAN, AND AQUATIC LIFE AND HABITATS:

The proposed project would have negligible impacts on terrestrial and aquatic life and habitats. Any construction that would be required would occur within the boundaries of the previously disturbed site. The following species populate the nearby area, but not the specific site: Golden Eagle, Greater Sage-Grouse, Pinyon Jay, Hoary Bat, Black-tailed Prairie Dog, Grizzly Bear, Great Blue Heron, Sage Thrasher, Ferruginous Hawk, and Bald Eagle.

Direct Impacts: The potential impact (including cumulative impacts) to terrestrial, avian, and aquatic life and habitats would be negligible, due to the long-term industrial nature of the site.

Secondary Impacts: No secondary impacts to terrestrial, avian, and aquatic life and habitats stimulated or induced by the direct impacts analyzed above would be expected.

6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

The proposed project would not cause any impacts to the unique endangered, fragile, or limited environmental resources in the area. The project would occur within a previously disturbed area. According to the Montana State Historic Preservation Office, there is low likelihood of disturbance to any known archaeological or historic site, given any previous industrial disturbance in an area.

Direct Impacts: The potential impact (including cumulative impacts) to species would be negligible.

Secondary Impacts: The proposed action would have no secondary impacts to endangered species because the permit conditions are protective of human and animal health and all lands involved in the proposed action.

7. HISTORICAL AND ARCHAEOLOGICAL SITES:

The proposed project would not cause any impacts to the historical and archaeological sites in the area. The project would occur within a previously disturbed area. It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are within the Area of Potential Effect, and are over fifty years old, SHPO recommends that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place.

However, should structures need to be altered, or if cultural materials are inadvertently discovered during this proposed action, SHPO requests their office be contacted for further investigation.

Direct Impacts: Although the search by SHPO has identified some historical and archaeological sites, the refinery reconfiguration project is not expected to impact any new locations that are not already in industrial activity. Therefore, no impacts to historical and archeological sites would be expected.

Secondary Impacts: No secondary impacts to historical and archaeological sites are anticipated since the proposed action is located on land currently in industrial use.

8. SAGE GROUSE EXECUTIVE ORDER:

The project would be in core sage grouse habitat, as designated by the Sage Grouse Habitat Conservation Program (Program) at: http://sagegrouse.mt.gov.

Direct Impacts: The proposed action is located within Sage Grouse EO habitat but is on an existing industrial site that has been a natural gas compressor station since 1974, so no direct impacts would occur. Should the site be closed in the future, BSE would reclaim the site and revegetate the area.

Secondary Impacts: No secondary impacts to sage grouse or sage grouse habitat would be expected.

9. AESTHETICS:

The site would look essentially the same as it did prior to the project.

Direct Impacts: Impacts would be negligible. Noise levels are not expected to change beyond the station boundary.

Secondary Impacts: The engine replacement would not be expected to have an impact on the aesthetics because it would be situated on property currently in industrial use and its noise would not be expected to differ any from the surrounding property.

10. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

The site is located in an area characterized by industry and is confined to the current footprint of the facility property.

Direct Impacts: The proposed action will maintain facility operation at or near current levels. There is no direct impact on the demands on environmental resources. See the Air Quality and Water Quality sections of the EA to review the potential impacts from the proposed action regarding air and water resources.

Secondary Impacts: These changes are expected to have no significant secondary impact.

11. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:

The engine change is taking place on the existing compressor station property.

Direct Impacts: No other environmental resources are known have been identified in the area beyond those discussed above. Hence, there is no impact to other environmental resources.

Secondary Impacts: No secondary impacts to other environmental resources are anticipated as a result of the proposed action.

12. HUMAN HEALTH AND SAFETY:

The applicant would be required to adhere to all applicable state and federal safety laws. The access to the public would continue to be restricted to this property.

Direct Impacts: Negligible changes in impacts to human health and safety are anticipated as a result of this project action. There would be some slight change in emissions from the new engine. These activities, however, are regulated by other state and federal laws to ensure they are operated safely.

Secondary Impacts: No secondary impacts to human health and safety are anticipated as a result of the proposed action.

13. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:

The proposed project would occur within a previously disturbed site. The site is currently being used for natural gas compression. No agricultural production would be lost as a result of the proposed project. The project would allow BSE to continue to compress natural gas. There is no agricultural activity at the site**.**

Direct Impacts: Impacts on the industrial, commercial, and agricultural activities and production in the area would be negligible.

Secondary Impacts: No secondary impacts to industrial, commercial, and agricultural activities and production are anticipated as a result of the proposed action.

14. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

The number of employees at the site will not change.

Direct Impacts: The proposed action would be expected to have no impact on the overall distribution of employment.

Secondary Impacts: No secondary impact is expected on long-term employment from the proposed action because the same employee base would be used.

15. LOCAL AND STATE TAX BASE AND TAX REVENUES:

The proposed action would be expected to have negligible impacts on the local and state tax base and tax revenue.

Direct Impacts: Local, state, and federal governments would be responsible for appraising the property, setting tax rates, collecting taxes, from the companies, employees, or landowners benefiting from this operation. A negligible impact is expected on the tax base and revenue with the proposed action.

Secondary Impacts: No secondary impacts to local and state tax base and tax revenues are anticipated as a result of the proposed action.

16. DEMAND FOR GOVERNMENT SERVICES:

The proposed action is in an industrial area.

Direct Impacts: Compliance review and assistance oversight by DEQ AQB would be conducted in concert with other area activity when in the vicinity. The proposed action would have only minor impacts on demand for government services, mainly through oversight by DEQ AQB.

Secondary Impacts: No secondary impacts are anticipated on government services with the proposed action.

17. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

Direct Impacts: BSE's proposed action is on property which is already zoned as Industrial. No impacts from the proposed action would be expected relative to any locally adopted community planning goals.

Secondary Impacts: No secondary impacts to the locally adopted environmental plans and goals are anticipated as a result of the proposed action.

18. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

The current site of the proposed action is in an area of industrial use. The site is approximately 60 miles northeast of Yellowstone National Park. No wilderness areas or other recreational sites are in the vicinity.

Direct Impacts: There would be no impacts to the access to wilderness activities as none are in the vicinity of the proposed action.

Secondary Impacts: No secondary impacts to access and quality of recreational and wilderness activities are anticipated as a result of the proposed action.

19. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Direct Impacts: The project would not add to the population or require additional housing, therefore, no impacts to density and distribution of population and housing are anticipated.

Secondary Impacts: No secondary impacts to density and distribution of population and housing are anticipated as a result of the proposed action.

20. SOCIAL STRUCTURES AND MORES:

Based on the required information provided by BSE, DEQ is not aware of any native cultural concerns that would be affected by the proposed action on this existing compressor station facility.

Direct Impacts: The proposed action is located on an existing industrial site, no disruption of native or traditional lifestyles would be expected, therefore, no impacts to social structure and mores are anticipated.

Secondary Impacts: No secondary impacts to social structures and mores are anticipated as a result of the proposed operations.

21. CULTURAL UNIQUENESS AND DIVERSITY:

Based on the required information provided by BSE, DEQ is not aware of any unique qualities of the area that would be affected by the proposed action on this existing refinery facility.

Direct Impacts: No impacts to cultural uniqueness and diversity are anticipated from this project.

Secondary Impacts: No secondary impacts to cultural uniqueness and diversity are anticipated as a result of the proposed action.

22. PRIVATE PROPERTY IMPACTS:

The proposed action would take place on privately-owned land. The analysis below in response to the Private Property Assessment Act indicates no impact. DEQ does not plan to deny the application or impose conditions that would restrict the regulated person's use of private property so as to constitute a taking. Further, if the application is complete, DEQ must take action on the permit pursuant to § 75-2-218(2), MCA. Therefore, DEQ does not have discretion to take the action in another way that would have less impact on private property—its action is bound by a statute

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

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

23. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Due to the nature of the proposed action, no further direct or secondary impacts are anticipated from this project.

ADDITIONAL ALTERNATIVES CONSIDERED:

No Action Alternative: In addition to the analysis above for the proposed action, DEQ is considering a "no action" alternative. The "no action" alternative would deny the approval of the proposed action. The applicant would lack the authority to conduct the proposed activity. Any potential impacts that would result from the proposed action would not occur. The no action alternative forms the baseline from which the impacts of the proposed action can be measured.

Other Ways to Accomplish the Action: In order to meet the project objective to replace an old engine with a newer, more efficient model, the relative disturbed area and energy inputs and therefore the associated emissions would not be substantially different than the proposed action.

If the applicant demonstrates compliance with all applicable rules and regulations as required for approval, the "no action" **alternative** would not be appropriate. Pursuant to, § 75-1-201(4)(a), (MCA) DEQ "may not withhold, deny, or impose conditions on any permit or other authority to act based on" an environmental assessment.

CUMULATIVE IMPACTS:

Cumulative impacts are the collective impacts on the human environment within the borders of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location and generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through preimpact statement studies, separate impact statement evaluation, or permit processing procedures.

Although additional permits may be necessary for this facility in the future, without a pending permit application containing the requisite information, DEQ cannot speculate about which permits may be necessary or which permits may be granted or denied. There may, therefore, be additional cumulative impacts (*e.g.* to water) associated with this facility in the future, but those impacts would be analyzed by future environmental reviews associated with those later permitting actions. This environmental review analyzes only the proposed action submitted by BSE, which is the air quality permit regulating the emissions from the equipment as listed in the "proposed action" section, above.

DEQ considered potential impacts related to this project and potential secondary impacts. Due to the limited activities in the analysis area, cumulative impacts related to this proposed action would be minor.

PUBLIC INVOLVEMENT:

Scoping for this proposed action consisted of internal efforts to identify substantive issues and/or concerns related to the proposed action. Internal scoping consisted of internal review of the EA document by DEQ Air Permitting staff. Additionally, the EA for the BSE facility was reviewed extensively.

Internal efforts also included queries to the following websites/ databases/ personnel:
- Montana State Historic Preservation Office
- Montana DEQ
- Montana Natural Heritage Program

A fifteen-day public comment period occurs along with the Preliminary Determination on MAQP #5237-01 and is posted to the DEQ website.

OTHER GOVERNMENTAL AGENCIES WITH JURSIDICTION:
The proposed action would be fully located on privately-owned land. All applicable local, state, and federal rules must be adhered to, which, at some level, may also include other local, state, federal, or tribal agency jurisdiction. Other Governmental Agencies which may have overlapping, or sole jurisdiction include but may not be limited to: Carbon County Commission or County Planning Department (zoning), Carbon County Weed Control Board, Occupational Safety and Health Administration (worker safety), DEQ AQB (air quality) and Water Protection Bureau (groundwater and surface water discharge; stormwater), DNRC (water rights), and MDT and Carbon County (road access).

NEED FOR FURTHER ANALYSIS AND SIGNIFICANCE OF POTENTIAL IMPACTS
Under ARM 17.4.608, DEQ is required to determine the significance of impacts associated with the proposed action. This determination is the basis for the agency's decision concerning the need to prepare an environmental impact statement and refers to DEQ's evaluation of individual and cumulative impacts. DEQ is required to consider the following criteria in determining the significance of each impact on the quality of the human environment:

1. The severity, duration, geographic extent, and frequency of the occurrence of the impact.

   "Severity" is analyzed as the density of the potential impact while "extent" is described as the area where the impact is likely to occur. An example could be that a project may propagate ten noxious weeds on a surface area of 1 square foot. In this case, the impact may be a high severity over a low extent. If those ten noxious weeds were located over ten acres there may be a low severity over a larger extent.

   "Duration" is analyzed as the period in which the impact may occur while "frequency" is analyzed as how often the impact may occur. For example, an operation that occurs throughout the night may have impacts associated with lighting that occur every night (frequency) over the course of the one season project (duration).

2. The probability that the impact will occur if the proposed action occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur.

3. Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts.

4. The quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources and values.

5. The importance to the state and to society of each environmental resource or value that would be affected.

6. Any precedent that would be set as a result of an impact of the proposed action that would commit the DEQ to future actions with significant impacts or a decision in principle about

such future actions.

7. Potential conflict with local, state, or federal laws, requirements, or formal plans.

The significance determination is made by giving weight to these criteria in their totality. For example, impacts with moderate or major severity may be determined to be not significant if the duration of the impacts is considered to be short-term. As another example, however, moderate or major impacts of short-term duration may be considered to be significant if the quantity and quality of the resource is limited and/or the resource is considered to be unique or fragile. As a final example, moderate or major impacts to a resource may be determined to be not significant if the quantity of that resource is high or the quality of the resource is not unique or fragile.

Preparation of an EA is the appropriate level of environmental review under MEPA if statutory requirements do not allow sufficient time for an agency to prepare an environmental impact statement, pursuant to ARM 17.4.607. An agency determines whether sufficient time is available to prepare an environmental impact statement by comparing statutory requirements that establish when the agency must make its decision on the proposed action with the time required to obtain public review of an environmental impact statement plus a reasonable period to prepare a draft environmental review and, if required, a final environmental impact statement.

SIGNIFICANCE DETERMINATION

The severity, duration, geographic extent, and frequency of the occurrence of the primary, secondary, and cumulative impacts associated with the proposed action would be limited. BSE proposes to exchange an older natural gas compressor engine for a newer, more efficient model.

DEQ has not identified any significant impacts associated with the proposed action for any environmental resource. Approving BSE's air quality permit application would not set precedent that commits DEQ to future actions with significant impacts or a decision in principle about such future actions. If BSE submits another permit application, DEQ is not committed to approving those applications. DEQ would conduct a new environmental assessment for any subsequent air quality permit applications sought by BSE. DEQ would decide on BSE's subsequent application based on the criteria set forth in the CAA.

DEQ's issuance of a modified MAQP to BSE for this proposed operation also does not set a precedent for DEQ's review of other applications, including the level of environmental review. A decision of on the appropriate level of environmental review is made based on case-specific considerations of the criteria set forth in ARM 17.4.608.

DEQ does not believe that the proposed action has any growth-inducing or growth-inhibiting aspects or that it conflicts with any local, state, or federal laws, requirements, or formal plans. Based on a consideration of the criteria set forth in ARM 17.4.608, the proposed state action is not predicted to significantly impact the quality of the human environment. Therefore, currently, preparation of an EA is determined to be the appropriate level of environmental review under MEPA.

Environmental Assessment and Significance Determination Prepared By:

T. Burrows	**Air Quality Permitter**
Name	**Title**

EA Reviewed By:

C. Henrikson	**Air Quality Engineer**
Name	**Title**

References

Air Quality Permit Application Received March 29, 2023
Montana State Historical Preservation Office (SHPO) Report Received April 12, 2023
Montana Natural Heritage Program (Email Report) Received April 13, 2023
Montana Cadastral GIS Layer
Air Quality Bureau Permitted Source List-GIS Layer

ABBREVIATIONS and ACRONYMS

AQB – Air Quality Bureau
ARM - Administrative Rules of Montana
BACT – Best Available Control Technology
BMP - Best Management Practices
BSE – Big Sky Energy, LLC
CAA – Clean Air Act of Montana
CFR - Code of Federal Regulations
CO - carbon monoxide
DEQ – Department of Environmental Quality
DNRC – Department of Natural Recourses and Conservation
EA – Environmental Assessment
EIS – Environmental Impact Statement
EPA - U.S. Environmental Protection Agency
FCAA - Federal Clean Air Act
MAQP – Montana Air Quality Permit
MCA – Montana Code Annotated
MEPA – Montana Environmental Policy Act
MPDES - Montana Pollutant Discharge Elimination System
MTNHP - Montana Natural Heritage Program
NO_X - oxides of nitrogen
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter of 10 microns and less
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns and less
PPAA - Private Property Assessment Act
Program - Sage Grouse Habitat Conservation Program
PSD - Prevention of Significant Deterioration
SHPO - Montana State Historic Preservation Office
SOC - Species of Concern
SO_2 - sulfur dioxide
tpy – tons per year
U.S.C. - United States Code
VOC - volatile organic compound

Table III: Summary of Potential Impacts from the Engine Change.

Potential Impact	Affected Resource and EA Section Reference	Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)	Probability[5] Impact Would Occur	Cumulative Impacts	Proposed Measures to Reduce Impact (by applicant)	Significant (yes/ no)
Soil Disturbance/ Stormwater Runoff	I. TOPOGRAPHY, GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE. II. WATER QUALITY, QUANTITY, AND DISTRIBUTION	**S**-low: Very little disturbance due to installation of the new engine. **E**-low: Total surface disturbance would be minimal. **D/F**- Impacts from the proposed action will continue throughout the duration of the station operation. **U/F**-Not unique or particularly fragile.	Unlikely	There would be limited change to the impact on this site from the proposed action which has been used as a natural gas compressor station since the 1970s.	BSE will continue follow reasonable precautions for storm run-off and fugitive dust.	No
VOC, NO_X, CO, SO_2, PM emission release as well as fugitive dust	III. AIR QUALITY	**S**-low: BSE conservatively identified all sources that will have an increase in emissions. **E**-none: No surface disturbance is anticipated. **D/F**- Impacts from the proposed action will continue throughout the duration of the refinery operation. **U/F**-Not unique or particularly fragile.	Certain	There would be limited change to the impact on this site from the proposed action which has been used as a natural gas compressor station since the 1970s.	Emission control technologies such as Best Available Control Technology (BACT) limits, federal NSPS, NESHAP, and MACT requirements.	No

Potential Impact	Affected Resource and EA Section Reference	Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)	Probability[5] Impact Would Occur	Cumulative Impacts	Proposed Measures to Reduce Impact (by applicant)	Significant (yes/ no)
Impacts to Historical and Archaeological Sites	VII. HISTORICAL AND ARCHAEOLOGICAL SITES:	**S** -low: All areas proposed for disturbance have been previously disturbed. No impact to sites would be anticipated. **E** – small: Site has been compressor station since 1970's. **D/F** – Impacts from the proposed action will continue throughout the duration of the refinery operation and, any disturbance to archaeological sites would be permanent. **U/F**-Not unique or particularly fragile.	Unlikely	Impacts to historical and archaeological sites associated with the proposed action would minimally add to the cumulative impacts around the area since the property has previously been disturbed since the compressor station began operation in the 1970s.	SHPO recommendations would be followed by BSE upon discovery of any historical site significance.	No
Noise Increases and Visual Changes	IX. AESHETICS	**S**-low: Noise would not be expected to increase above current baseline. **E**-small: The equipment would be installed on the interior of an existing parcel. Not readily visible to public. **D/F**- Impacts from the proposed action will continue throughout the duration of the refinery operation. **U/F**-Not unique or particularly fragile.	Unlikely	No discernable changes in noise would likely occur. Visual differences would not change the fact the site is already a compressor station.	None proposed	No

Potential Impact	Affected Resource and EA Section Reference	Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)	Probability[5] Impact Would Occur	Cumulative Impacts	Proposed Measures to Reduce Impact (by applicant)	Significant (yes/ no)
Energy Use Increase Onsite and Transportation Energy Use Increases	X. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY	**S**-none: **E**-small: Minimal change is expected. **D/F**- Energy use at BSE would be on-going for the duration of the facility life. **U/F**-Not unique or particularly fragile.	Unlikely	Minimal change of cumulative impacts are expected from the proposed action because the compressor station will continue to operate normally.	None proposed	No
Traffic Increases and Employee Exposure to New Equipment	XII. HUMAN HEALTH AND SAFETY	**S**-low: The proposed action does not anticipate any increase in staff. **E**-small: the station will not be increasing staff to support the proposed action. **D/F**- Traffic and employee personnel impacts would be on-going for the duration of the facility life. **U/F**-Not unique or particularly fragile.	Unlikely	Overall traffic and personnel impacts will remain as they were before the engine change.	None proposed.	No
Property's Continued Use for Industrial Activities	XIII. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION	**S** -low: The existing industrial property has been identified to be modified. **E** – small: The existing industrial property has been identified to be modified. **D/F** – Duration of the life of the station. **U/F**-Not unique or particularly fragile.	Unlikely	Future capital projects would be limited in finding physical space to install new equipment without the demolition of existing equipment.	None proposed.	No

Potential Impact	Affected Resource and EA Section Reference	Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)	Probability[5] Impact Would Occur	Cumulative Impacts	Proposed Measures to Reduce Impact (by applicant)	Significant (yes/ no)
Tax Base and Employment Would Remain Unchanged	XIV. QUANTITY AND DISTRIBUTION OF EMPLOYMENT XV. LOCAL AND STATE TAX BASE AND TAX REVENUES XIX. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING	**S** -low; No impacts are expected from the proposed action. **E** – low: No increase in permanent employees for area. **D/F** – Duration of the life of the station. **U/F**-Not unique or particularly fragile	Unlikely	No expected change.	None proposed.	No

Definitions are quantified as follows:

• Short-term: Short-term impacts are defined as those impacts that would not last longer than the proposed operation of the site.

• Long-term: Long-term impacts are defined as impacts that would remain or occur following shutdown of the proposed facility.

1. Severity describes the density at which the impact may occur. Levels used are low, medium, high.

The severity of an impact is measured using the following:

• No impact: There would be no change from current conditions.

• Negligible: An adverse or beneficial effect would occur but would be at the lowest levels of detection.

• Minor: The effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.

• Moderate: The effect would be easily identifiable and would change the function or integrity of the resource.

• Major: The effect would alter the resource.

2. Extent describes the land area over which the impact may occur. Levels used are small, medium, and large.

3. Duration describes the time period over which the impact may occur. Descriptors used are discrete time increments (day, month, year, and season).

4. Frequency describes how often the impact may occur.

5. Probability describes how likely it is that the impact may occur without mitigation. Levels used are: impossible, unlikely, possible, probable, and certain.