December 6, 2024

Michael Duplantis
Crusoe Energy Systems, Inc.
Storvik-Johnson Facility
1641 California St. Suite 400
Denver, CO 80202

Sent via email: mduplantis@crusoeenergy.com

RE: Final Permit Issuance for MAQP #5315-00

Dear Mr. Duplantis:

Montana Air Quality Permit (MAQP) #5315-00 is deemed final as of November 30, 2024, by DEQ. This permit is for Crusoe Energy Systems, Inc-Storvik-Johnson Facility; producing electricity from field gas using four natural gas-fired engines. All conditions of the Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For DEQ,

Eric Merchant
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

Craig Henrikson
Environmental Engineer, P.E.
Air Quality Bureau
(406) 444-6711

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

Montana Air Quality Permit #5315-00

Crusoe Energy Systems, Inc.
Storvik-Johnson Facility
1641 California St. Suite 400
Denver, CO 80202

November 30, 2024

Montana Air Quality Permit

Issued To: Crusoe Energy Systems, Inc.
1641 California St. Suite 400
Denver, CO 80202

MAQP: #5315-00
Application Received: 8/30/2024
Application Complete: 9/26/2024
Preliminary Determination Issued: 10/25/2024
Department's Decision Issued: 11/13/2024
Permit Final: 11/30/2024

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Crusoe Energy Systems, Inc. (Crusoe), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

Section I: Permitted Facilities

A. Permitted Equipment

Crusoe proposes to install and operate up to four Waukesha 9394 GSI engines (or equivalent) each rated at 2,500 brake horsepower (hp) or less.

The engines would be used to generate electricity through the combustion of field gas that would otherwise be flared from existing oil and gas infrastructure. Each engine utilizes an air fuel ratio controller (AFR) and Non-Selective Catalytic Reduction (NSCR) to reduce emissions.

B. Plant Location

This facility would be located approximately 2.7 miles west of the town of Nohly, in Section 18, Township 26 North, Range 59 East, in Richland County, 48.000263°N, latitude and -104.152961°W, longitude. This site is known as the Storvik-Johnson site.

Section II: Conditions and Limitations

A. Emission Limitations

1. The combined maximum rated brake horsepower (bhp) of the engine(s) shall not exceed 10,000 brake horsepower (ARM 17.8.749).

2. Emissions from each individual 2,500 hp generator engine at the Storvik-Johnson site shall not exceed the following (ARM 17.8.749 and ARM 17.8.752):

PM, PM_{10}, $PM_{2.5}$ – 0.06 lb/hr or 0.01 grams per brake horsepower (g/bhp-hr)
NOx – 0.83 lb/hr or 0.15 g/bhp-hr
CO – 1.65 lb/hr or 0.30 g/bhp-hr
VOC – 0.17 lb/hr or 0.03 g/bhp-hr
SO_2 – 0.012 lb/hr

3. Crusoe shall operate and maintain a non-selective catalytic reduction (NSCR) unit and an air/fuel ratio (AFR) controller on each generator engine (ARM 17.8.749 and ARM 17.8.752).

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

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

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

7. Crusoe shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in Title 40 Code of Federal Regulations (CFR) 60, Subparts A and JJJJ (ARM 17.8.340, ARM 17.8.749 and 40 CFR 60, Subpart(s) A and JJJJ).

8. Crusoe shall comply with all applicable standards and limitations, and the reporting, recordkeeping and notification requirements contained in 40 CFR 63, Subpart A, Subpart ZZZZ (ARM 17.8.342, ARM 17.8.749 and 40 CFR 63, Subpart(s) A and ZZZZ).

B. Testing Requirements

1. Crusoe shall demonstrate compliance with the NO_X, CO, and VOC limits in Section II.A.2 via source testing within 180 days after equipment commencement. Source testing shall be conducted for NO_X, CO, and VOCs simultaneously. Compliance test results are determined by the average of three 1-hour or longer runs. Results shall be submitted to the DEQ to demonstrate compliance with the emission limitations in Section II.A.2 (ARM 17.8.105 and ARM 17.8.749).

2. Following the calendar date of the initial compliance demonstration, compliance with the applicable emission limits shall be demonstrated via source testing for NOx, CO, and VOCs simultaneously within 8,760 operating hours or 3 years, whichever comes first. Source testing shall follow the applicable methods defined in 40 CFR 60 Subpart JJJJ, or equivalent methods as approved in writing by the DEQ. Future compliance demonstration shall be required at the same frequency for each engine on site from the date of the last compliance demonstration (ARM 17.8.105, ARM 17.8.749, ARM 17.8.340, 40 CFR 60 Subpart JJJJ, and 40 CFR 60 Subpart KKKK).

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

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

C. Operational Reporting Requirements

1. Crusoe shall supply the DEQ with annual production information for all emission points, as required by the 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 the DEQ by the date required in the emission inventory request. Information shall be in the units required by the DEQ. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505). Crusoe shall submit the following information annually to the DEQ by March 1 of each year; the information may be submitted along with the annual emission inventory (ARM 17.8.505).

   a. annual production

2. Crusoe 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 (ARM 17.8.745).

   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 Crusoe 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).

4. Crusoe shall annually certify that the Storvik-Johnson Site emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204(3)(b). The annual certification shall comply with the certification requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emissions inventory information (ARM 17.8.749 and ARM 17.8.1204).

D. Notification

   Crusoe shall notify DEQ in writing of the date of commencement of operation of each generator engine within 30-days following the date of commencement (ARM 17.8.749).

SECTION III: General Conditions

A. Inspection – Crusoe 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 Crusoe fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Crusoe 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 Crusoe 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 (MAQP) Analysis
Crusoe Energy Systems, Inc. – Storvik-Johnson Site
MAQP #5315-00

I. Introduction/Process Description

This facility is to be located approximately 2.9 miles west of Nohly, Montana, in Section 18, Township 26 North, Range 59 East, in Richland County, 48.000263°N, latitude and -104.142961°W, longitude, and is known as the Storvik-Johnson Site.

A. Permitted Equipment

Crusoe proposes to install up to four (4) 2,500 brake horsepower (bhp) Waukesha 9394 GSI generator engines at the Storvik-Johnson Site.

B. Source Description

The engines will utilize field gas that would otherwise be sent to a process flare for combustion. The generator engines would produce electricity to power local data centers.

C. Response to Public Comments

Person/Group Commenting	Permit Reference	Comment	DEQ Response
Dusty Weber	General Comment	I am in full support of DEQ issuing this permit.	No permit changes were incorporated.

D. 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 the Department of Environmental Quality (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).

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

4. ARM 17.8.110 Malfunctions. (2) 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 the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}
11. ARM 17.8.230 Fluoride in Forage

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

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

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter.

   (2) Under this rule, Crusoe 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 17.8.316 Incinerators. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any incinerator, particulate matter in excess of 0.10 grains per standard cubic foot of dry flue gas, adjusted to 12% carbon dioxide and calculated as if no auxiliary fuel had been used. Further, no person shall cause or authorize to be discharged into the outdoor atmosphere from any incinerator emissions that exhibit an opacity of 10% or greater averaged over 6 consecutive minutes.

6. 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.

7. 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.

8. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). Crusoe is considered an NSPS affected facility under 40 CFR Part 60 and is subject to the requirements of the following subparts.

   a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:

   b. 40 CFR 60, Subpart JJJJ Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. The proposed engines will be ordered after June 12, 2006, and manufactured after either July 1, 2007, or July 2, 2008, as applicable

based on horsepower. Therefore, the engines operated at this facility are subject to this regulation.

9. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR Part 63, shall comply with the requirements of 40 CFR Part 63, as listed below:

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

   b. 40 CFR 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Subpart ZZZZ applies to the new reciprocating engines but compliance with Subpart ZZZZ is demonstrated by compliance with 40 CFR 60 Subpart JJJJ.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to DEQ. Crusoe submitted the appropriate permit application fee for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to 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. Crusoe has a PTE greater than 25 tons per year of Oxides of Nitrogen (NO_X) and Carbon Monoxide (CO); therefore, an air quality permit is required.

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

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

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Crusoe submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Crusoe submitted an affidavit of publication of public notice for the *August 31, 2024,* issue of the *Sidney Herald*, a newspaper of general circulation in the Town of Sidney in Richland 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 Crusoe 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 17.8.760 Additional Review of Permit Applications. This rule describes DEQ's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.

12. 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.

13. 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).

14. 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.

15. 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.

16. ARM 17.8.770 Additional Requirements for Incinerators. This rule specifies the additional information that must be submitted to DEQ for incineration facilities subject to 75-2-215, Montana Code Annotated (MCA).

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

F. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is 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 source having:

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

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

   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. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #5315-00 for Crusoe, the following conclusions were made:

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

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

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

   d. This facility is subject to current NSPS (40 CFR 60, Subparts A and JJJJ).

   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.

   g. This source is not a solid waste combustion unit.

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

   Based on these facts, DEQ determined that Crusoe will be a minor source of emissions as defined under Title V. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, Crusoe will be required to obtain a Title V Operating Permit.

III. BACT Determination

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

Crusoe proposes to install and operate up to four Waukesha 9394 GSI engines (or equivalent) each rated at 2,500 brake horsepower (hp) or less.

A BACT analysis was submitted by Crusoe in permit application for MAQP #5315-00 addressing some available methods of controlling pollutant emissions from the Storvik-Johnson Site. An incompleteness letter was sent to Crusoe on September 24, 2024, due to a conflict with the information submitted regarding the VOC BACT limit, and for missing information related to SO_2 and PM BACT information. The following control options have been reviewed by DEQ to make the BACT determination,

NO_X Emissions

Identify all Available Control Technologies
The following options were reviewed for NOx control.

- Water/steam injection
- Dry low NOX combustion
- Selective catalytic reduction (SCR)
- Selective non-catalytic reduction (SNCR)
- Non-selective catalytic reduction (NSCR)
- Oxidation catalyst
- EMx catalyst system

Eliminate Technically Infeasible Options
Both water/steam injection and dry low NO_X combustion are technologies that would require modifications to the proposed engines. Therefore, these technologies are deemed technically infeasible for the proposed engines.

SCR and SNCR require specific exhaust temperatures for optimal destruction and the exhaust temperatures for the proposed engines are not within the required range for either SCR or SNCR. Because the exhaust temperature from the proposed engines would be below the recommended ranges these technologies are deemed technically infeasible for the proposed engines.

Oxidation catalyst is best suited for lean burn engines and therefore is also eliminated from consideration due to the proposed Waukesha engines being four-stroke rich-burn (4SRB).

Rank and Evaluate the Remaining Control Technologies
The two remaining identified technologies include NSCR and EMx catalyst. Each of these technologies are considered technically feasible for the proposed engines. EMx is able to operate at the exhaust temperature produced by the proposed engines, but the costs associated with EMx are more than the costs associated with a non-selective catalyst.

Select the BACT
The NSCR is estimated to provide up to 90 percent emission reduction Therefore, NSCR with air fuel ratio controller (AFR) is selected as BACT for NOx for the proposed engines.

VOC and CO Emissions

Identify all Available Control Technologies
The following options were reviewed for VOC and CO control.

- EMx
- NSCR with an AFR Controller

VOC and CO emissions primarily occur as the result of incomplete combustion. Similar to NOx control, catalysts that react with CO and VOC's can be used to convert these pollutants to CO_2. Therefore, EMx and NSCR constitute available control technologies for the proposed engines.

Eliminate Technically Infeasible Options
Both EMx and NSCR with an AFR controller are technically feasible for the control of VOC and CO emissions from the proposed engines. Because these technologies are the same control technology analyzed for the control of NOx, these control technologies are applied for the control of VOC and CO from the proposed engines.

Rank and Evaluate the Remaining Control Technologies
Because NSCR with an AFR controller is deemed BACT for NOx, and this technology is also capable of co-benefit control of VOC and CO emissions, EMx will not be considered further.

Finding the optimum point in a slightly rich environment can produce very high destruction efficiencies for both CO, VOCs, and NO_X at the same time. Just as for NO_X, the use of an AFR is necessary to control the concentration in a slightly rich environment.

Select the BACT
Therefore, employing NSCR with an AFR controller, which uses a 3-way catalyst to treat CO, VOC's and NOx, is deemed BACT for the proposed engines.

SO_2 and PM Species
The following options were reviewed for SO_2 and PM species.

Because of the nature and composition of field gas, annual SO_2 emissions from the proposed operations are estimated at only 0.02 tons per year therefore, any add-on SO_2 control would be cost-prohibitive and deemed economically infeasible for the proposed project on a cost per ton of SO_2 removed basis. Therefore, a top-down BACT analysis is not presented. The proposed SO_2 BACT is the combustion of low sulfur field gas with no add-on controls. The proposed SO_2 BACT conforms to previous BACT determinations made by DEQ for similar engines.

ARM 17.8.752 requires a BACT analysis for PM, PM_{10} and $PM_{2.5}$ emissions. Because of the nature and composition of field gas, annual PM emissions are predicted to be very low (see Section IV, Emission Inventory); therefore, any add-on control would be cost-prohibitive and deemed economically infeasible for the proposed project on a cost per ton of PM removed basis. Therefore, a top-down BACT analysis for PM emissions is not presented.

The proposed PM BACT is combustion of low sulfur field gas with no add-on controls. The proposed PM BACT conforms to previous BACT determinations made by DEQ for similar engines.

The proposed engines operating with NSCR and an AFR controller are capable of achieving the following emission rates. Therefore, pollutant-specific BACT limits for the proposed engines are as follows:

Proposed BACT Limits:

PM, PM_{10}, $PM_{2.5}$ – 0.06 lb/hr or 0.01 grams per brake horsepower (g/bhp-hr)
NOx – 0.83 lb/hr or 0.15 g/bhp-hr
CO – 1.65 lb/hr or 0.30 g/bhp-hr
VOC – 0.17 lb/hr or 0.03 g/bhp-hr
SO_2 – 0.012 lb/hr

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

IV. Emission Inventory

CONTROLLED	**Tons/year**							
Emission Source	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_X**	**CO**	**VOC**	**SO_2**	**HAPs**
2,500 bhp Compressor Engines (4) (combined)	0.97	0.97	0.97	14.45	28.97	2.9	0.02	4.18
Total Emissions	**0.97**	**0.97**	**0.97**	**14.45**	**28.97**	**2.9**	**0.02**	**4.18**

Calculations:

Waukesha Engine(s), 10,000 hp

Note: Emissions are based on the power output of the engine (2500 hp).		
Operational Capacity of Engine = 4 engines	4	**engines**
Brake horsepower total	10,000	**bhp**
Pounds per gram	0.002204	**lb/gr**
Hours of Operation = 8,760.00 hr/yr	8760	**hr/yr**
PM Emissions:		
PM Emissions = 0.97 ton/yr (Assume all PM < 1.0 um)	0.97	**ton/yr**
PM-10 Emissions:		
Emission Factor = 0.01 gr/bhp-hr (BACT)		
Calculation: ((0.01 gr/bhp-hr) * (2500 hp) * (0.0022 lb/gr) = 0.06 lbs/hr	0.06	**lb/hr**
Calculation: ((0.01 gr/bhp-hr) * (10,000 hp) * (8,760 hr/yr) * (0.0022 lb/gr) / (ton/2000 lb) = 0.97 ton/yr	0.97	**ton/yr**
PM2.5 Emissions		
Emission Factor = 0.01 gr/bhp-hr (BACT)		
Calculation: ((0.01 gr/bhp-hr) * (2500 hp) * (0.0022 lb/gr) = 0.06 lbs/hr	0.06	**lb/hr**
Calculation: ((0.01 gr/bhp-hr) * (10,000 hp) * (8,760 hr/yr) * (0.0022 lb/gr) / (ton/2000 lb) = 0.97 ton/yr	0.97	**ton/yr**

NOx Emissions:		
Emission Factor = 0.15 gr/bhp-hr (BACT) Calculation: ((0.15 gr/bhp-hr) * (2500 hp) * (0.0022 lb/gr) = 0.83 lbs/hr Calculation: ((0.15 gr/bhp-hr) * (10,000 hp) * (8,760 hr/yr) * (0.0022 lb/gr) / (ton/2000 lb) = 14.49 ton/yr	14.49	**ton/yr**
CO Emissions:		
Emission Factor = 0.3 gr/bhp-hr (BACT)	0.3g/bhphr	-
Calculation: ((0.30 gr/bhp-hr) * (10,000 hp) * (8,760 hr/yr) * (0.0022 lb/gr) / (ton/2000 lb) = 28.97 ton/yr	28.97	**ton/yr**
VOC Emissions:		
Emission Factor = 0.03 gr/bhp-hr (BACT)	0.03	**gr/bhp-hr**
Calculation: ((0.03 gr/bhp-hr) * (10,000 hp) * (8,760 hr/yr) * (0.0022 lb/gr) / (ton/2000 lb) = 2.89 ton/yr	2.89	**ton/yr**
SO_X Emissions:		
Emission Factor = 5.88 lbs/MMBTU, 5.88 lbs/MMBTU*1500 BTU/SCF*114.1 MMSCF/yr/8760 hrs	0.012	**lb/hr**
Calculation: ((4 engines) * (8,760 hr/yr) * (0.012 lb/hr) / (ton/2000 lb) = 1.402 ton/yr	0.2	**ton/yr**
HAPs Emissions		
Emission Factor = 0.24 lb/hr	0.24	**lb/hr**
Calculation: ((4 engines) * (8,760 hr/yr) * (0.24 lb/hr) / (ton/2000 lb) = 4.205 ton/yr	4.18	**ton/yr**

V. Existing Air Quality

Richland County is currently designated as attainment/unclassifiable for all pollutants.

VI. Ambient Air Impact Analysis

DEQ determined, based on amount of allowable emission, that the impacts from this permitting action will be minor. DEQ believes it will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, DEQ conducted q private property taking and damaging assessment. See Section 21 of the Environmental Assessment.

VIII. Environmental Assessment

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

FINAL ENVIRONMENTAL ASSESSMENT

CRUSOE ENERGY SYSTEMS INC.

11/13/2024

Air Quality Bureau

Air, Energy, and Mining Division

Montana Department of Environmental Quality

Table of Contents

Project Overview

COMPANY NAME:	Crusoe Energy Systems Inc.
EA DATE:	October 25, 2024
SITE NAME:	Storvik-Johnson Facility
MAQP#:	5315-00
Application Received Date:	August 30, 2024

Location

Township 26N, Range 59E Section 18
County: Richland

The facility location is proposed for 48.000263°N, latitude and -104.152961°W, longitude.

PROPERTY OWNERSHIP: FEDERAL STATE PRIVATE X

Compliance with the Montana Environmental Policy Act

Under the Montana Environmental Policy Act (MEPA), Montana agencies are required to prepare an environmental review for state actions that may have an impact on the human environment. The proposed action is considered to be a state action that may have an impact on the human environment and, therefore, the Department of Environmental Quality (DEQ) must prepare an environmental review. This Environmental Assessment (EA) will examine the proposed action and alternatives to the proposed action and disclose potential impacts that may result from the proposed and alternative actions. DEQ will determine the need for additional environmental review based on consideration of the criteria set forth in Administrative Rules of Montana (ARM) 17.4.608. DEQ may not withhold, deny, or impose conditions on the Permit based on the information contained in this EA (§ 75-1- 201(4), MCA).

Proposed Action

Crusoe Energy Systems, Inc. has applied for a Montana Air Quality Permit under the Clean Act of Montana to construct and operate four engines which would receive field gases and combust these in the engines producing electricity for a data center. The project subject to the proposed action would be located on private land in Richland County, Montana. All information included in this EA is derived from the permit application, discussions with the applicant, analysis of aerial photography, topographic maps, and other research tools.

Purpose and Need

Under MEPA, Montana agencies are required to prepare an environmental review for state actions that may have an impact on the human environment. The Proposed Action is considered to be a state action that may have an impact on the human environment and, therefore, DEQ must prepare an environmental review. This EA will examine the proposed action and alternatives to the proposed action and disclose potential impacts that may result from the proposed and alternative actions. DEQ will determine the need for additional environmental review based on consideration of the criteria set forth in ARM 17.4.608.

TABLE 1: SUMMARY OF ACTIVITIES PROPOSED IN APPLICATION

Table 1. Summary of Proposed Activities in Application	
General Overview	The proposed action would allow the construction and operation of a facility to combust previously flared field gases by routing the gases to four engines to produce electricity. The electricity would be utilized by a small data center. The permit would authorize the use of up to four 2,500 hp engines.
Duration and Timing	Construction: The estimate for construction is that no more than one months time would be required to deliver and install the engines. Operation: Operation of the facility would be expected to occur on a year round continuous basis. Demobilization would be limited to removing the engines from the site, and removing the infrastructure powered by the electricity from the engines.
Estimated Disturbance	The application has indicated that no new ground disturbance is needed for the construction as the property is currently already in oil and gas extraction. DEQ has assumed that a small amount of ground coverage would occur based on the physical size of the engines. Each engine is approximately 15 feet long by 7 feet wide and 9.5 feet tall. The engine sits on a framework platform. Total ground coverage would be less than 500 ft^2.
Equipment	Four 2,500 horsepower engines, capable of firing on field gas to produce electricity.
Location	Township 26N, Range 59E Section 18 County: Richland
Personnel on-site	Construction: Mobilization would be limited to setting the engines, piping the supply lines to the engines, and hooking up electrical connections. This would be expected to involve less than ten staff personnel. Operation: Existing company staff would oversee operation of the equipment on an as needed basis.
Location and Analysis Area	The analysis area for this permit action is the area shown in Figures 1 and 2, and the immediate area surrounding the Storvik Facility. Figure 2 identifies the analysis area with the Storvik site at the center of an approximate one mile square area.
Air Quality	The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to air quality.
Water Quality	This project would not affect water quality. There is no use of water on the engines. The Applicant would be required to comply with the applicable local, county, state, and federal requirements pertaining to water quality.
Erosion Control and Sediment Transport	This project is on property currently in use for oil and gas extraction. This project would not contribute to additional erosion or sediment transport. The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to erosion control and sediment transport.

Cultural resources	The property is already in use as industrial property, and there would be no effects on cultural resources. The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to cultural resources.
Aesthetics	The property is already in use as industrial property, and there would be negligible effects on aesthetics. The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to aesthetics.
Hazardous Substances	This project does not contribute any hazardous substances to the facility. The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to hazardous substances.
Weed Control	The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to weed control.
Reclamation Plans	The property is already in use as industrial property, so no reclamation is necessary.
Solid Waste	This project would have no effect on solid waste in the area. The Applicant is required to comply with the applicable local, county, state, and federal requirements pertaining to solid waste.

Cumulative Impact Considerations	
Past Actions	This is a new air quality permit but there are other oil and gas related operations in the area. The number of oil and gas operations within Richland County contributes to the release of VOCs from venting directly to atmosphere, combustion in existing flares and engines, and also combustion as would occur in these new engines. Collectively the VOCs released directly to atmosphere and the combustion of gases release other criteria pollutants and GHGs. These sources individually may not release large amounts of pollutants but together the area emissions including eastern Montana, North and South Dakota represent industries for which EPA has been developing additional rules targeting emission reductions.
Present Actions	This is a new air quality permit. Crusoe recently has applied for other similar operations in Richland County all with the purpose of generating electricity for data centers. Other identical, or nearly identical applications are currently being processed by AQB. Some of these actions are in the same Township and Range but none are within the same section, and none within a linear mile distance. None are considered within the analysis area which identified the Storvik Site in the center of approximately a one mile by one mile square boundary.
Related Future Actions	No information is available regarding future actions.

Project Location Latitude 48.000263, and Longitude -104.152961

Figure 1. Approximate Storvik Facility Location

The proposed Storvik location is shown left of center by the largest colored circle. The red circles are registered oil and gas sites with the AQB. Purple dots are other permitted oil and gas sites with the AQB There are no registered or permitted sites within one mile of the proposed Storvik location.

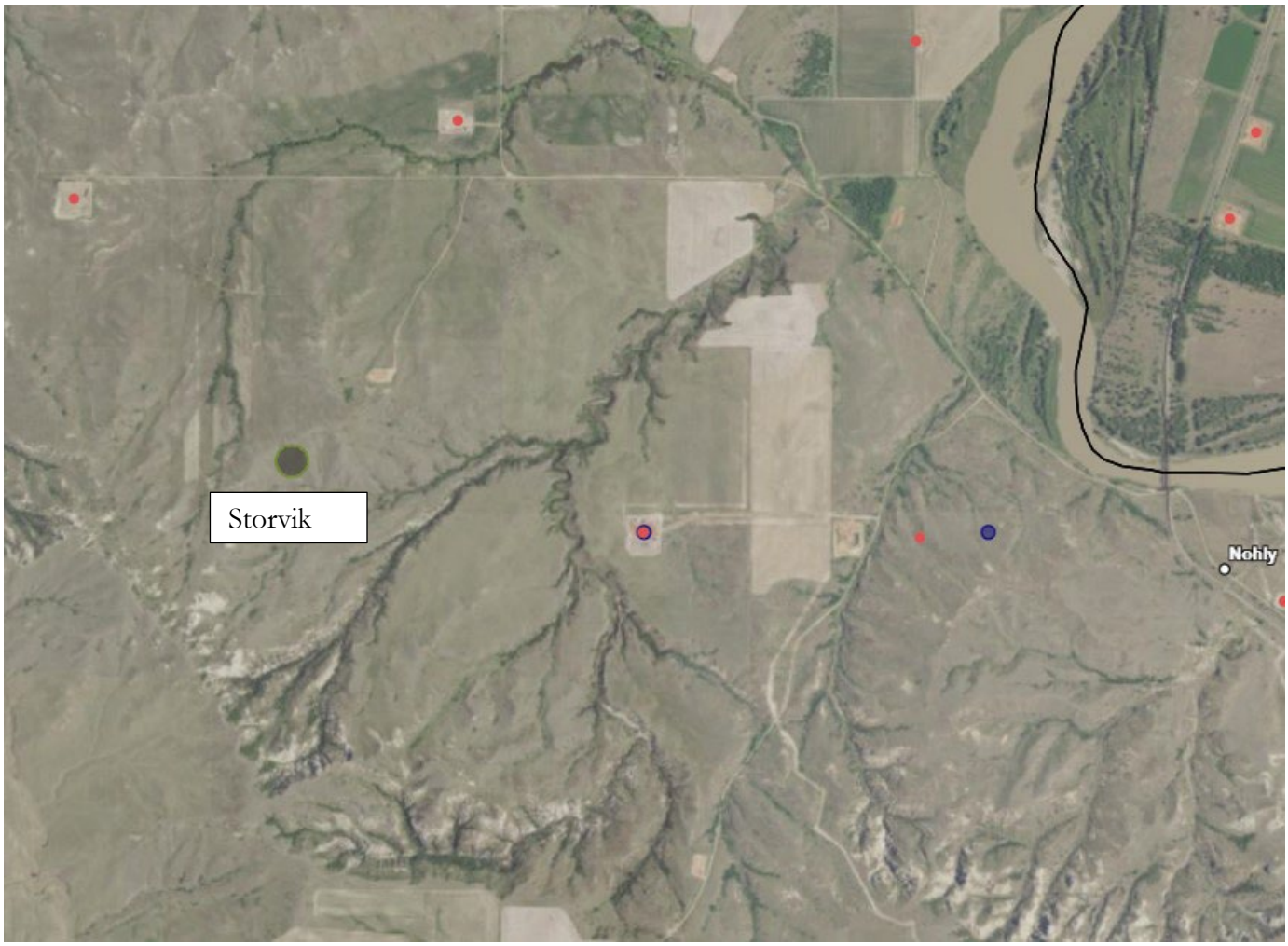

Figure 2. Zoomed in Analysis Area for Storvik (Approximately one square mile with the Storvik Site located at the center)

The proposed project lies within Section 18, Township 26 North, Range 59 East as shown.

EVALUATION OF AFFECTED ENVIRONMENT AND IMPACT BY RESOURCE:

The impact analysis will identify and evaluate whether the impacts are direct or secondary impacts to the physical environment and human population in the area to be affected by the proposed project. Direct impacts occur at the same time and place as the action that causes the impact. Secondary impacts are 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 would occur, the impacts will be described.

Cumulative impacts are the collective impacts on the human environment within the borders of Montana that could result from 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 impacts must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures. The activities identified in Table 1 were analyzed as part of the cumulative impacts assessment for each resource.

The duration is quantified as follows:

- Construction Impacts (short-term): These are impacts to the environment during the construction period. When analyzing duration, please include a specific range of time.

- Operation Impacts (long-term): These are impacts to the environment during the operational period. When analyzing duration, please include a specific range of time.

The intensity of the impacts 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.

1. Geology and Soil Quality, Stability, and Moisture

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. Soils in the affected area are made up primarily of Zahill loams with a 15-60 percent slopes. Characteristics of this soil classification include distance to water table of more than 80 inches. There is no prime farmland. The engines would rest on the top of the ground and require minimal foundational support infrastructure with ground coverage of less than 500 ft^2.

Direct Impacts:

Construction of the proposed facility would require new land disturbance associated with groundwork and installation of permitted equipment requiring less than 500 ft^2 of ground coverage. This disturbance would occur on private land previously disturbed by agricultural and grazing operations. No unique or important geological formations exist in the affected area and no impacts to bedrock would be expected from construction activities associated with the proposed project. Therefore, no impacts to geology would be expected.

The operation of heavy equipment necessary to construct the proposed facility would only last about one month and impact soil quality, stability and moisture in the small, affected area. However, because the proposed project is small by industrial standards (≤ 500 ft^2) and because the affected property constitutes previously disturbed land, any expected adverse direct impacts to soil quality, stability, and moisture from construction of the proposed facility would be short-term and minor. No beneficial direct impacts to soil quality, stability and moisture would be expected because of the proposed project.

Secondary Impacts:

Following construction of the proposed facility, no additional or new ground disturbing activities would occur. The proposed project would not be expected to cause or contribute to a violation of the applicable primary or secondary national ambient air quality standards (NAAQS). See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any adverse secondary impacts to soil quality, stability and moisture would be long-term and minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

Short-term cumulative impacts to soil stability, and moisture would be expected because Crusoe is installing and operating 4 new 2,500 bhp engines on the site, but it is already in an industrial area with oil and gas infrastructure near the location.

2. Water Quality, Quantity, and Distribution

This project would not impact any surface or groundwater in the area. The project is proposed on property that is already in use for oil and gas extraction, and properties surrounding this proposed site are covered with numerous oil and gas well sites.

Direct Impacts:

A limited amount of water may be required to control fugitive dust emissions from construction activities. Water used to control fugitive dust would likely be sourced off-site and transported to the affected site or sourced from local water resources. Further, due to the relatively small size and anticipated limited duration of the construction phase of the proposed project a relatively limited amount of water would be necessary. Therefore, any adverse direct impacts to water quantity would be short-term and negligible. Further, Crusoe would be required to use reasonable precautions to control fugitive dust resulting from construction activities. Therefore, fugitive dust generated during construction activities would not be expected to cause or contribute to a violation of the applicable NAAQS for particulate matter. Water would not be required for ongoing normal facility operations; therefore, no impacts to water distribution would be expected because of the proposed project.

Secondary Impacts:

Following construction of the proposed facility, no additional or new ground disturbing activities would occur. The ongoing use of unpaved roads to access the proposed facility would occur and would be expected to generate minimal fugitive dust as it is estimated the same personnel already in the area would perform necessary maintenance. However, Crusoe would be required to use reasonable precautions to control fugitive dust resulting from facility operations. Therefore, fugitive dust generated during operations would not be expected to cause or contribute to a violation of the applicable NAAQS for particulate matter. Operation of the permitted equipment would result in the emission of other regulated airborne pollutants. The proposed project would not be expected to cause or contribute to a violation of the applicable primary or secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protections, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Any adverse direct impacts would be long-term and minor. No beneficial impacts would be expected because of the proposed action.

Cumulative Impacts:

No cumulative impacts are expected because of the proposed project.

3. Air Quality

Air quality in the area affected by the proposed project is currently unclassifiable or in compliance with applicable NAAQS. No significant point-sources of air pollution exist in the area affected by the proposed project. Existing sources of air pollution in the area are limited and generally include dispersed oil and gas facilities similar to the proposed project, fugitive dust associated with high wind events and exposed ground, vehicle travel on paved and unpaved roads (fugitive dust), vehicle exhaust emissions, and various agricultural practices (vehicle exhaust emissions and fugitive dust).

Applicants are required to comply with all laws relating to air, such as the Federal Clean Air Act, NAAQS set by the Environmental Protection Agency (EPA), and the Clean Air Act of Montana. In addition, MAQP #5315 provides federally enforceable conditions regarding the emitting units themselves, pollution controls, and requires the applicant to take reasonable

precautions to limit fugitive dust from this location.

Direct Impacts:

Fugitive dust emissions resulting from construction of the proposed facility may adversely impact air quality. However, Crusoe must use reasonable precautions to limit fugitive dust generated during normal facility operations. Further, no air quality restrictions exist for the affected area; therefore, the proposed project would not be expected to cause or contribute to a violation of the applicable NAAQS for particulate matter (fugitive dust). Therefore, any direct impacts would be short-term, negligible, consistent with existing impacts, and mitigated by implementation of enforceable reasonable precautions for dust.

Adverse air quality impacts would be minor because of the proposed project. See permit analysis for more information regarding air quality impacts. The majority of pollutants from the proposed project would be related to the combustion of field gases which are similar in composition to natural gas. This would result in the release of NO_X, CO, SO_2, VOCs, and particulate matter.

The proposed project would generate electricity to power a data center through the combustion of field gas gathered from multiple well pads that would otherwise be flared from an existing oil and gas facility, thereby eliminating or limiting emissions associated with flaring activities. Any beneficial impacts to air quality from eliminating or limiting the flaring of field gas would be long-term and minor.

The emission inventory shown here is for up to four 2,500 horsepower engines operating up to 8,760 hours per year (unlimited operation). The emission inventory is based on emission factors provided by the manufacturer, and further based on EPA's AP-42 Emission factors and on limits proposed and approved as Best Available Control Technology (BACT).

CONTROLLED Emissions	**Tons/year**							
Emission Source	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_X**	**CO**	**VOC**	**SO_2**	**HAPs**
2,500 bhp Compressor Engines (4) (combined)	0.97	0.97	0.97	14.45	28.97	2.9	0.02	4.18
Total Emissions	**0.97**	**0.97**	**0.97**	**14.45**	**28.97**	**2.9**	**0.02**	**4.18**

Secondary Impacts:

Emissions from the proposed project would use BACT and would not be expected to cause or contribute to a violation of the health and welfare-based primary and secondary NAAQS. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. See permit analysis for more detailed information regarding air quality impacts. Any adverse impacts would be long-term and minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

Cumulative impacts from the operation of the Storvik facility are restricted by conditions and limits contained in the MAQP; therefore, any expected air quality impacts would be minor. The Richland County area also has other stationary sources, many of which are similar power generators for data centers, and all contribute to the overall air quality in Richland County, Montana. The cumulative impacts of these other emitters and the proposed action would not have an adverse impact to air quality. Impacts from the Proposed Action are limited by enforceable conditions and limits contained in the MAQP and BACT must be used. There are other oil and gas operations within the same township and range but none within the same section and none within a mile linear distance. These other sites contribute to the release of VOCs from venting directly to atmosphere, combustion in flares, and also combustion as would occur in these engines. Collectively the VOCs released directly to atmosphere and the combustion of gases release other criteria pollutants and GHGs. Because emissions from the proposed project, and all other similar or related projects located in the affected area are regulated, any adverse cumulative impacts to air quality would be short- and long-term and minor. Further, the proposed project would generate electricity to power a data center through the combustion of field gas gathered from multiple well pads that would otherwise be flared from an existing oil and gas facility, thereby eliminating or limiting emissions associated with flaring activities. Any beneficial cumulative impacts to air quality from eliminating or limiting the flaring of field gas would be long-term and minor.

4. Vegetation Cover, Quantity, and Quality

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations.

Direct Impacts:

Construction of the proposed facility would require new land disturbance associated with groundwork and installation of the proposed facility requiring less than 500 ft^2 of ground coverage and one month of construction. During operations, 500 ft^2 of land would be used for placement of the proposed equipment and thus no longer available as rangeland. Further, any plant species located within the 500 ft^2 area may be eliminated or otherwise adversely impacted by construction activities. This disturbance would occur on private land previously disturbed by agricultural and grazing operations. Therefore, any adverse direct impacts from construction activities would be short- and long-term, limited by the small size of the affected site, consistent with existing impacts from prior agricultural and grazing disturbances, and minor. Emissions from the proposed project would not be expected to cause or contribute to a violation the secondary NAAQS. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. See permit analysis for more detailed information regarding air quality impacts. Therefore, any adverse direct impacts would be short- and long-term and minor. No beneficial direct impacts would be expected because of the proposed project. Therefore, any adverse direct impacts associated with a small footprint of 500 ft^2 would not be expected to displace any vegetation of special concern or threatened or endangered species.

Secondary Impacts:

Construction and operation of the proposed facility may result in the propagation of noxious weeds. Crusoe would be expected to manage and control noxious weeds in the affected area as required by the Richland County Weed Board. Therefore, any adverse secondary impacts would be long-term, mitigated by noxious weed control activities, and minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

Minor cumulative impacts to vegetation cover, quantity, and quality are expected from this permitting action as it would require the construction and operation of up to four 2500 bhp engines to generate electricity for a data center.

5. Terrestrial, Avian, and Aquatic Life and Habitats

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. Wildlife species in the affected area include the species of concern identified in Section 6 below as well as various other plains species such as deer, raptors, and rodents. No water resources exist in the project area so no aquatic species would be expected to be present in the area.

Direct Impacts:

Construction of the proposed facility would require land disturbance associated with groundwork and installation of equipment requiring less than 500 ft^2 of ground coverage and would last up to one month. This disturbance would occur on private land previously disturbed by agricultural and grazing operations. Therefore, any species identified in the MTNHP reports, as discussed in Section 6, that may be displaced by construction activities would likely relocate to nearby, similar habitats. Emissions from the proposed project would not be expected to cause or contribute to a violation of the secondary NAAQS. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Any adverse direct impacts would be short-term, similar to existing impacts, and minor. No impacts to aquatic life and habitat are expected because of the proposed project, as there are no aquatic environments located within the project boundary. Further, the affected area includes other similar habitat nearby, and avian species are readily mobile, therefore, no direct impacts to avian life and habitat would be expected. No beneficial impacts would be expected because of the proposed project.

Secondary Impacts:

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. Because the landscape surrounding the affected site is previously disturbed, any species displaced by facility operations would be expected to relocate to nearby similar, nearby habitats. Further, the proposed project would not be expected to violate the Secondary NAAQS, which provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Any adverse secondary impacts would be long-term and minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impacts would be expected to terrestrial, avian and aquatic life.

6. Unique, Endangered, Fragile, or Limited Environmental Resources

DEQ conducted a search using the Montana Natural Heritage Program (MTNHP) webpage with file downloads saved to the AQB project file. The query was run and downloaded on September 9, 2024. The polygon selected was the immediate area surrounding the proposed site described by the following coordinates: Latitude 47.96929°N to 48.04056°N and Longitude -104.09222°W to -104.20706°W.

The proposed project is not in core, general or connectivity sage grouse habitat, as designated by the Sage Grouse Habitat Conservation Program at: http://sagegrouse.mt.gov.

Species of concern identified in the MTNHP report include the following: Species of concern included: Blue Sucker, Iowa Darter, Northern Redbelly Dace, Paddlefish, Pallid Sturgeon, Sauger, Shortnose Gar, Sickelfin Chub, Sturgeon Chub, Viburnum lentago, Black-billed Cuckoo, Northern Myotis, Whooping Crane, Long Eared Myotis, Least Tern, and Piping Plover. Most of these species are outside of the analysis area but included in the MTNHP polygon area. Most of these species appear to be in the MTNHP report due to a possible canal, and the Missouri River to the north-east. The canal is approximately 1.7 miles, and the Missouri River is just over 2 miles away.

Direct Impacts:

The Sage Grouse Habitat Conservation Program has stated that the proposed project would not occur in core, general or connectivity sage grouse habitat. Therefore, impacts to sage grouse would not occur. Noted species of concern identified from the MTNHP report mostly indicate species related to surface water which is not present at the proposed site. Therefore, no direct impacts to the MTNHP identified *species of concern* would be expected because of the proposed project. Numerous other terrestrial and avian species such as deer, raptors, and rodents, may also use the affected area, including the project area, for all or part of their life cycle. However, because the project area is surrounded by similar habitats, any species displaced by construction and/or operation of the permitted facility would be expected to relocate to nearby, similar habitat. Any adverse direct impacts would be short-and long-term, consistent with existing impacts, and minor.

Secondary Impacts:

According to the MTNHP as stated above, there are some species of concern located or potentially located in the affected area. Operation of the proposed facility would require less than 500 ft^2 of ground coverage. Further, emissions from the proposed project would not be expected to cause or contribute to a violation of the health and welfare-based NAAQS. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. No secondary impacts would be expected to unique, endangered, fragile or other environmental resources.

Cumulative Impacts:

No cumulative impacts would be expected.

7. Historical and Archaeological Sites

The Montana State Historic Preservation Office (SHPO) was notified of the application and SHPO conducted a file search and provided a letter dated September 10, 2024.

This project is proposed on land that is currently in use for oil and gas extraction. The applicant has indicated that no new physical disturbance would occur with the proposed project, however DEQ has assumed that at a minimum at least 500 ft^2 of ground will be covered by the four engines. There are two records from SHPO for records related to Section 18, Township 26 North, Range 59 East. This includes a Cultural Resource Inventory request dated December 2011; and a Cultural Resource Inventory request dated November 2022, specifically identified for well-pads.

One site 24RL0662 was noted in the report identified as a Historic Cairn/Land Marker. The status was "unresolved" and as long as the land marker was not disturbed for the earlier inventory, no additional concerns were raised.

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.

No underground disturbance would be required for the proposed action as the engines just sit on skids located on top of the ground surface.

Direct Impacts:

According to the SHPO, there has been one previously recorded historical or archaeological site identified within the search area. Site 24RL0662 was noted in the report identified as a Historic Cairn/Land Marker. The same rationale would apply here, as long as the land marker was undisturbed, no impact would occur. Therefore, no direct impacts from construction activities would be expected because of the proposed project.

Secondary Impacts:

According to the State Historical Preservation Society, there has been one previously recorded historical or archaeological site identified within the search area. Further, the proposed project would not be expected to violate the Secondary NAAQS. See air quality impacts analysis in the permit analysis. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings, including historical buildings. Therefore, any direct impacts would be long-term and negligible. No beneficial direct impacts would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impacts to historical and archaeological sites are anticipated since the proposed action site is located on land previously disturbed by agricultural and livestock grazing activities and adjacent to land currently used for oil and gas extraction. Further, there was a single site identified which would not be expected to be disturbed.

8. Aesthetics

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations.

Direct Impacts:

Construction of the proposed facility would require less than 500 ft^2 of disturbance associated with groundwork and installation of the proposed action. This disturbance would occur on private land previously disturbed by agricultural and grazing operations. Therefore, any adverse direct impacts would be short-term, consistent with existing impacts, and negligible to minor. No beneficial direct impacts would be expected because of the proposed project.

Secondary Impacts:

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. Emissions from the proposed project would not be expected to cause or contribute to a violation of the health and welfare-based NAAQS. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any adverse secondary impacts would be long-term, consistent with existing impacts in the affected area, and negligible to minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

With this permitting action, negligible cumulative impacts on the aesthetics are anticipated as the site is small in industrial terms and is in close proximity to existing well-pads which also have equipment in place contributing to visual and auditory observations.

9. Demands on Environmental Resources of Land, Water, Air, or Energy

The proposed project is small by industrial standards and is located in an area primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. Fossil fuel use would be limited to the burning of field gas.

Direct Impacts:

Some direct impacts to land, water and air would be expected because of the proposed project, as identified by the corresponding impacts analyses above. Further, construction of the proposed facility would involve limited operation of heavy equipment and the combustion of fossil fuels would be required for the operation of such equipment. Any adverse direct impacts related to construction would be short-term and negligible. No beneficial direct impacts would be expected because of the proposed project.

Secondary Impacts:

Some secondary impacts to land, water and air would be expected because of the proposed project, as identified by the corresponding impacts analyses above. Further, the proposed project would generate electricity to power a data center through the combustion of field gas gathered from multiple well pads that would otherwise be flared from an existing oil and gas facility. Therefore, any adverse secondary impacts to energy resources would be long-term, negligible, and mitigated by the use of available field gas to power operations. Any secondary impacts associated with the use of field gas that

would otherwise be flared would be long-term, minor, and beneficial.

Cumulative Impacts:

Minor cumulative impacts on environmental resources of land, water, air, or energy are anticipated as a result of this permitting action. The number of oil and gas operations within Richland County contributes to vehicle traffic, inspections by various agencies, and employees for many sites. Collectively the large number of sites in the area would have minor cumulative impacts to land, water, air, and energy.

10. Impacts on Other Environmental Resources

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations.

Direct Impacts:

Fugitive dust emissions resulting from construction of the proposed facility may adversely impact air quality in the affected area. However, Crusoe must use reasonable precautions to limit fugitive dust generated from construction activities; therefore, the proposed project would not be expected to cause or contribute to a violation of the applicable NAAQS for particulate matter (fugitive dust). See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any adverse direct impacts to other environmental resources would be short-term and minor. No beneficial direct impacts would be expected because of the proposed project.

Secondary Impacts:

Proposed operations would not be expected to cause or contribute to a violation of the public welfare-based Secondary NAAQS. See permit analysis for more detailed information regarding air quality impacts. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Therefore, any adverse secondary impacts to other environmental resources would be long-term and minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

No other environmental resources, beyond the resource areas already covered within this EA would result in any known additional cumulative impacts.

11. Human Health and Safety

The engines proposed must meet the permit compliance conditions included in MAQP #5315-00. Personnel physical hazards would be present for high temperatures and noise specific to the engines.

Direct Impacts:

Construction activities involve the potential for adverse direct impacts to human health and safety. However, construction operations would be subject to OSHA standards, which are designed to be protective of human health and safety. Further, residents of the affected area would not be allowed on-site during construction of the proposed facility.

Also, fugitive dust emissions resulting from construction of the proposed facility may adversely impact air quality in the affected area. However, Crusoe must use reasonable precautions to limit fugitive dust generated from construction activities; therefore, the proposed project would not be expected to cause or contribute to a violation of the applicable NAAQS for particulate matter (fugitive dust). See permit analysis for more detailed information regarding air quality impacts. Primary NAAQS provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Therefore, any adverse direct impacts to human health and safety would be short-term and negligible to minor.

The engines are allowed to operate continuously 365 days per year. Since the engines are within a very rural private land parcel, any noise disturbance would be limited to the few area residents that may be in the area as well as oil and gas production workers. The nearest residence from the proposed site is approximately 8,300 feet or about 1.6 miles to the northeast of the proposed site. These buildings appear to be a residence located alongside the canal. Other industrial buildings may exist at other oil and gas well operations but these do not appear to be permanently occupied.

Secondary Impacts:

Operation of the proposed facility would be subject to OSHA standards. OSHA standards are designed to be protective of human health and safety. Further, operation of the proposed engines would emit regulated air pollutants. However, emissions from the proposed project would use BACT and thus would not be expected to cause or contribute to a violation of the human health-based Primary NAAQS. See permit analysis for more information regarding air quality impacts. Primary NAAQS provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Therefore, any adverse secondary impacts to human health and safety would be long-term and negligible to minor. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impacts to human health and safety are anticipated as a result of the proposed permitting action because the emissions as described in Section IV of the Permit Analysis would be considered small by industrial standards.

12. Industrial, Commercial, and Agricultural Activities and Production

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations.

Direct Impacts:

Construction of the proposed facility would displace land currently used for agricultural and grazing operations located near an existing industrial facility. Therefore, some adverse direct impacts to agricultural activities and production would occur. However, the proposed project is small by industrial standards (≤ 500 ft^2) and the area surrounding the affected site would remain suitable for ongoing agricultural and industrial activities and production. Therefore, any adverse direct impacts to agricultural activities and production would be short-term,

consistent with existing impacts, and negligible to minor. Operation of the proposed facility would displace current agricultural and grazing operations. Therefore, some adverse secondary impacts to agricultural activities and production would occur. However, the proposed project is small by industrial standards (≤500 ft^2) and the area surrounding the affected site would remain suitable for ongoing agricultural and industrial activities and production.

Further, industrial activities and production in the affected area would increase due to construction of the affected site. However, the scope of the proposed operation is relatively small by industrial standards. Therefore, any direct impacts to industrial activities and production in the affected area would be short-term, minor and beneficial. No impacts to commercial activities or production are anticipated because of the proposed project.

Secondary Impacts:

Industrial activities and production in the affected area would increase because of the proposed project. Therefore, any secondary impacts to industrial activities and production would be long-term, minor, and beneficial. No adverse direct impacts would be expected because of the proposed project.

Cumulative Impacts:

Once the site is operational, it would be one of many oil and gas industrial sites in the area. Cumulatively, these operations provide an important industrial base to the area. These impacts would be long term and beneficial. Cumulative impacts on agricultural activities would be long term due to disturbance, but negligible to minor due to the small footprint (< 500 ft^2).

13. Quantity and Distribution of Employment

There are already existing staff and resources employed by Crusoe in the area, and these resources would be used to operate this facility as well.

Direct Impacts:

Crusoe would use existing staff or contracted services to construct the proposed facility. Therefore, any direct impacts to the quantity and distribution of employment in the affected area would be short-term, negligible, and beneficial. No adverse direct impacts would be expected because of the proposed project.

Secondary Impacts:

Crusoe would use existing staff to operate the proposed facility. Therefore, any secondary impacts to the quantity and distribution of employment in the affected area would be long-term, negligible, and beneficial. No adverse secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impact is expected on long-term employment from the proposed action because the new facility would not be expected to create any permanent new jobs.

14. Local and State Tax Base and Tax Revenues

The proposed project would be small by industrial standards and the amount of time and resources necessary to accommodate construction of the proposed facility would be relatively limited.

Direct Impacts:

Construction of the proposed facility may increase local sales of goods and services. However, because the proposed project would be small by industrial standards any direct impacts to the local and state tax base and tax revenues would be long-term, negligible to minor, and beneficial. No adverse direct impacts would be expected because of the proposed project.

Secondary Impacts:

Local, state and federal governments would be responsible for appraising the property, setting tax rates, collecting taxes, from the companies, employees, or landowners benefitting from the proposed operation. Further, Crusoe would be responsible for accommodation of any increased taxes associated with operation of the proposed facility. Therefore, any secondary impacts would be negligible to minor, consistent with existing impacts in the affected area, and beneficial. No adverse secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

Long-term beneficial negligible to minor impacts to local and state tax base and tax revenues are anticipated from this permitting action.

15. Demand for Government Services

Direct Impacts:

The air quality permit has been prepared by state government employees as part of their day-to-day, regular responsibilities. Therefore, any adverse direct impacts to demands for government services is consistent with existing impacts and negligible. No beneficial direct impacts would be expected because of the proposed project.

Secondary Impacts:

Following construction of the proposed facility, initial and ongoing compliance inspections of facility operations would be accomplished by state government employees as part of their typical, regular duties and required to ensure the facility is operating within the limits and conditions listed in the air quality permit. Therefore, any adverse secondary impacts to demands for government services would be consistent with existing impacts and negligible. No beneficial secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

Minor cumulative impacts are anticipated on government services with the proposed action and a minimal increase in impact would occur but regulators would likely combine visits to cover regulatory oversight needs.

16. Locally-Adopted Environmental Plans and Goals

DEQ has reviewed the Richland County website and found no locally adopted environmental plans and goals for the area.

Direct Impacts:

No locally adopted environmental plans and goals were identified. Therefore, no direct impacts would be expected because of the proposed project.

Secondary Impacts:

No locally adopted environmental plans and goals were identified.; therefore, no secondary impacts to locally adopted environmental plans and goals would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impacts to the locally adopted environmental plans and goals are anticipated since no direct impacts or secondary impacts were identified.

17. Access to and Quality of Recreational and Wilderness Activities

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. There are Bureau of Land Management parcels scattered across Eastern Montana. There is one such parcel located directly east of the proposed site but would likely be land-locked by private land and not accessible to the general public.

Direct Impacts:

No recreational or wilderness areas occur in the vicinity of the proposed project. Therefore, no direct impacts to access and quality of recreational and wilderness activities would be expected because of the construction phase of the proposed project.

Secondary Impacts:

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations. No recreational or wilderness areas occur in the immediate area; therefore, no secondary impacts to access and quality of recreational and wilderness activities would be expected because of proposed facility operations.

Cumulative Impacts:

No cumulative impacts to access and quality of recreational and wilderness activities are anticipated as a result of the proposed permitting action as there are no public recreational or wilderness activity sites with 10 miles of the proposed project.

18. Density and Distribution of Population and Housing

The affected area consists primarily of agricultural and grazing lands with nearby, dispersed oil and gas operations.

Direct Impacts:

Crusoe would employ existing staff and/or contracted services to construct the facility and the proposed project would not be expected to otherwise result in an increase or decrease in the local population. Therefore, no direct impacts to density and distribution of population and housing would be expected because of the proposed project.

Secondary Impacts:

Crusoe would employ existing staff to operate the facility and the proposed project would not be expected to otherwise result in an increase or decrease in the local population. Therefore, no secondary impacts to density and distribution of population and housing would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impacts to density and distribution of population and housing are anticipated as a result of the proposed permitting. There are no impacts on the density and distribution of population and housing.

19. Social Structures and Mores

DEQ is not aware of any Native American cultural concerns that would be affected by the proposed activity. Based on the information provided by the Applicant, it is not anticipated that this project would disrupt traditional lifestyles or communities. Two SHPO cultural inventories were noted in Section 7 of the EA.

The existing nature of the area affected by the proposed project is both agricultural and industrial based on the large number of oil and gas wells in Richland County.

Direct Impacts:

Construction and operation of the facility would not be expected to affect the existing customs and values of the affected population. Therefore, no direct impacts to the existing social structures and mores of the affected population would be expected because of the proposed project.

Secondary Impacts:

The existing nature of the area affected by the proposed project is agricultural and industrial (oil and gas); therefore, operation of the facility would not be expected to affect the existing customs and values of the affected population. Therefore, no secondary impacts to the existing social structures and mores of the affected population would be expected because of the proposed project.

Cumulative Impacts:

The addition of engines at a site with agricultural and industrial activities would have negligible to minor cumulative impacts on the existing social structures because this site would be just one of many sites already operating in the area.

20. Cultural Uniqueness and Diversity

The existing nature of the area affected by the proposed project is agricultural and industrial (oil and gas). It is not anticipated that this project would cause a shift in some unique quality of the area.

Direct Impacts:

Crusoe would employ existing staff and/or contracted services to construct the facility and thus the proposed project would not be expected to otherwise result in an increase or decrease in the local population. Therefore, no direct impacts to the existing cultural uniqueness and diversity of the affected population would be expected because of the proposed project.

Secondary Impacts:

The existing nature of the area affected by the proposed project is agricultural and industrial (oil and gas). Further, Crusoe would employ existing staff to operate the facility and thus the proposed project would not be expected to result in an increase or decrease in the local population. Therefore, no secondary impacts to the existing cultural uniqueness and diversity of the affected population are anticipated as a result of the proposed action.

Cumulative Impacts:

No cumulative impacts to cultural uniqueness and diversity are anticipated because the skills required by this project would be similar to other existing sites in the area and this project would be considered small by industrial standards.

21. Private Property Impacts

The proposed project would take place on privately owned land. DEQ's approval of MAQP #5315-00 permit would not affect the applicant's real property. DEQ has determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements under the Montana Clean Air Act. Therefore, DEQ's approval of MAQP #5315-00 would not have private property-taking or damaging implications.

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

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

YES	NO	
	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)

22. Other Appropriate Social and Economic Circumstances

Direct Impacts:

DEQ is unaware of any other appropriate short-term social and economic circumstances in the affected area that may be directly impacted by the proposed project. Due to the nature of the proposed action, no further direct impacts would be expected because of the proposed project.

Secondary Impacts:

The proposed project would generate electricity to power a data center through the combustion of field gas gathered from multiple well pads that would otherwise be flared from an existing oil and gas facility, thereby eliminating or limiting emissions associated with uncontrolled field gas flaring activities. Further, the proposed operation would limit or eliminate economic expenditure necessary to operate the affected engines (i.e., fuel purchases). Any impacts to air quality from eliminating or limiting the flaring of field gas would be long-term, minor, and beneficial. Any impacts from limiting or eliminating economic expenditures to accommodate engine operations would be long-term, minor to moderate, and beneficial.

DEQ is unaware of any other appropriate long-term social and economic circumstances in the affected area that may be impacted by the proposed project. No further secondary impacts would be expected because of the proposed project.

Cumulative Impacts:

No cumulative impacts to any other appropriate social and economic circumstances are anticipated because no direct and secondary impacts were identified.

23. Greenhouse Gas Assessment

Issuance of this permit would authorize use of up to four natural gas fired engines for the direct purpose of producing electricity which would be used to operate data centers. Each natural gas fired engine associated with the proposed project is included in the Greenhouse Gas Assessment.

The analysis area for this resource is limited to the activities regulated by the issuance of MAQP #5315-00 which is for the construction and operation of up to four natural gas-fired generator engines. The amount of field gas utilized at this site may be impacted by a number of factors including seasonal weather impediments, equipment malfunctions and the availability of field gas from the oil and gas wells. However, DEQ has calculated the maximum fuel usage based on continuous operation of all four engines, 365 days per year.

For the purpose of this analysis, DEQ has defined greenhouse gas emissions as the following gas species: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and many species of fluorinated compounds. The range of fluorinated compounds includes numerous chemicals which are used in many household and industrial products. Other pollutants can have some properties that also are similar to those mentioned above, but the EPA has clearly identified the species above as the primary GHGs. Water vapor is also technically a greenhouse gas, but its properties are controlled by the temperature and pressure within the atmosphere, and it is not considered an anthropogenic species.

Direct Impacts

The combustion of field gas and diesel fuel at the site would release GHGs, primarily CO_2, N_2O and much smaller concentrations of uncombusted fuel components including methane (CH_4) and other volatile organic compounds (VOCs).

DEQ has calculated GHG emissions using the EPA Simplified GHG Calculator version May 2023, for the purpose of totaling GHG emissions. This tool totals carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) and reports the total as CO_2 equivalent (CO_2e) in metric tons CO_2e. The calculations in this tool are widely accepted to represent reliable calculation approaches for developing a GHG inventory. DEQ has determined EPA's Scope 1 GHG impacts as defined in the Inventory Guidance for Greenhouse Gas Emissions are appropriate under MEPA for this Proposed Action. Scope 1 emissions are defined as direct GHG emissions that occur from sources that are controlled or owned by the organization (EPA Center for Corporate Climate Leadership). DEQ's review of Scope 1 emissions is consistent with the agency not evaluating downstream effects of other types of impacts.

Construction related GHGs were estimated to be 5.5 metric tons of CO_2e per year based on an estimate of diesel fuel combustion for construction-related vehicles. Operational annual GHG emissions were estimated to be 24,872 metric tons of CO_2e using the GHG calculator tool with natural gas selected to represent the field gas. The proposed project would use field gas; however, natural gas is the closest fuel choice available for use with the GHG calculator tool.

This review does not include an assessment of GHG impacts in quantitative economic terms, otherwise known as evaluating the social cost of carbon. DEQ instead calculates potential GHG emissions and provides a narrative description of GHG impacts. This approach is consistent with Montana Supreme Court caselaw and the agency's discussion of other impacts in this draft EA. See Belk v. Mont. DEQ, 2022 MT 38, ¶ 29.

Secondary Impacts

GHG emissions contribute to changes in atmospheric radiative forcing, resulting in climate change impacts. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component (BLM 2021).

Per EPA's website "Climate Change Indicators", the lifetime of carbon dioxide cannot be represented with a single value because the gas is not destroyed over time. The gas instead moves between air, ocean, and land mediums with atmospheric carbon dioxide remaining in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments. Methane remains in the atmosphere for approximately 12 years. Nitrous oxide has the potential to remain in the atmosphere for about 109 years (EPA, Climate Change Indictors). The impacts of climate change throughout the specified region of the state of Montana include changes in flooding and drought, rising temperatures, and the spread of invasive species (BLM 2021).

Cumulative Impacts

Montana recently used the EPA State Inventory Tool (SIT) to develop a greenhouse gas inventory in conjunction with preparation of a possible grant application for the Community Planning Reduction Grant (CPRG) program. This tool was developed by EPA to help states develop their own greenhouse gas emission inventories and relies upon data already collected by the federal government through various agencies. The inventory specifically deals with carbon dioxide, methane, and nitrous oxide and reports the total as CO_2e. The SIT consists of eleven Microsoft Excel based modules with pre-populated data that can be used with default settings or in some cases, allows states to input their own data when the state believes their own data provides a higher level of quality and accuracy. Once each of the eleven modules is filled out, the data from each module is exported into a final "synthesis" module which summarizes all the data into a single file. Within the synthesis file, several worksheets display the output data in a number of formats such as GHG emissions by sector and GHG emissions by type of greenhouse gas.

DEQ has determined the use of the default data provides a reasonable representation of the greenhouse gas inventory for the various sectors of the state, and the estimated total annual greenhouse gas inventory by year. The SIT data from EPA is currently only updated through the year 2021, as it takes several years to validate and make new data available within revised modules. DEQ maintains a copy of the output results of the SIT.

DEQ has determined that the use of the default data provides a reasonable representation of the GHG inventory for all the state sectors, and an estimated total annual GHG inventory by year. At present, annually, Montana accounts for 47.77 million metric tons of CO_2e based on the EPA SIT for the year 2021. This project may contribute up to 24,872 metric tons per year of CO_2e. The estimated emission of 24,877 metric tons of CO_2e from this project would contribute 0.052% of Montana's total annual CO_2e emissions. Construction related GHG emissions would be limited to approximately 5 metric tons of CO_2e with the rest being annual GHG emissions from combustion within the engines.

GHG emissions that would be emitted as a result of the proposed activities would add to GHG emissions from other sources. The No Action Alternative would contribute

approximately the same GHG emissions as the Proposed Action Alternative because the field gases would otherwise be combusted in an existing flare. The current land use of the area is mixed agricultural and oil and gas fields.

PROPOSED ACTION ALTERNATIVES

No Action Alternative: In addition to the proposed action, DEQ must also considered the "no action" alternative. The "no action" alternative would deny the approval of MAQP #5315-00. 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.
If the Applicant demonstrates compliance with all applicable rules and regulations required for approval, the “no action” alternative would not be appropriate.

Other Reasonable Alternative(s): No other alternatives were considered.

CONSULTATION

DEQ engaged in internal and external efforts to identify substantive issues and/or concerns related to the proposed project. Internal scoping consisted of internal review of the environmental assessment document by DEQ staff. External scoping efforts also included queries to the following websites/databases/personnel: www.richland.org.

A review of the Richland County website, and listed department information did not indicate any specific planning documents that would be relative to this permitting action.

MAQP #5315-00, MAQP #5315-00 Application, EPA State Inventory Tool, and the EPA GHG Calculator Tool.

PUBLIC INVOLVEMENT

The public comment period for this permit action will occur from 10/25/2024 through 11/12/2024. Public comments may be submitted to the DEQ through the DEQ website, email, written letter, or in person.

OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION

The proposed project would be located on privately owned land. All applicable state and federal rules must be adhered to, which, at some level, may also include other state, or federal agency jurisdiction.

NEED FOR FURTHER ANALYSIS AND SIGNIFICANCE OF POTENTIAL IMPACTS

When determining whether the preparation of an environmental impact statement is needed, DEQ is required to consider the seven significance criteria set forth in ARM 17.4.608, which are as follows:

- The severity, duration, geographic extent, and frequency of the occurrence of the impact;
- 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;

- Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts – identify the parameters of the proposed action;
- The quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources and values;
- The importance to the state and to society of each environmental resource or value that would be affected.
- Any precedent that would be set as a result of an impact of the proposed action that would commit the department to future actions with significant impacts or a decision in principle about such future actions; and
- Potential conflict with local, state, or federal laws, requirements, or formal plans.

CONCLUSIONS AND FINDINGS

The DEQ finds that this action results in negligible impacts to air quality and GHG emissions in Richland County, Montana.

No significant adverse impacts would be expected because of the proposed project. AS noted through the draft EA, the severity, duration, geographic extent and frequency of the occurrence of the impacts associated with the proposed air quality project would be limited. The proposed action would result in the construction and operation of up to four 2,500 horsepower engines. The Applicant is proposing to combust field gas that would otherwise be flared to generate electricity at the site as explained in MAQP #5315-00 to power data centers. The site would be permitted to operate the engines 8,760 hours per calendar year using BACT for the control of emissions from the proposed operations.

As discussed in this EA, DEQ has not identified any significant impacts associated with the proposed actions for any environmental resource. DEQ does not believe that the activities proposed by the Applicant would have any growth-inducing or growth-inhibiting aspects, or contribution to cumulative impacts. The proposed engine site does not appear to contain known unique or fragile resources.

There are no unique or known endangered fragile resources in the project area and no underground disturbance would be required for this project.

There would be negligible impacts to view-shed aesthetics as the engine operation would be visible to a very few residents. Employees at the operation and nearby oil and gas operations would see and hear the engine operations when in the immediate area of the site.

Demands on the environmental resources of land, water, air, or energy would not be significant. When the off-gas rates from the oil and gas wells decline, the engines would no longer be needed and they would likely be moved to other more productive wells.

Impacts to human health and safety would not be significant as access roads would be closed to the public and because the site is on private land.

As discussed in this EA, DEQ has not identified any significant impacts associated with the proposed activities on any environmental resource.

Issuance of a Montana Air Quality Permit #5315-00 to the Applicant does not set any precedent that commits DEQ to future actions with significant impacts or a decision in principle about such future actions. If the Applicant submits another modification or proposes to amend the permit, DEQ is not committed to issuing those revisions. DEQ would conduct an environmental review for any subsequent permit modifications sought by the Applicant pursuant to MEPA. DEQ would make permitting decisions based on the criteria set forth in the Clean Air Act of Montana.

Issuance of the Permit to the Applicant does not set a precedent for DEQ's review of other applications for Permits, including the level of environmental review. The level of environmental review decision is made based on case-specific consideration of the criteria set forth in ARM 17.4.608.

Finally, DEQ does not believe that the proposed air quality permitting action by the Applicant would have any growth-inducing or growth inhibiting impacts that would conflict 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, no significant adverse impacts to the affected human environment would be expected because of the proposed project. Therefore, preparation of an Environmental Impact Statement or EIS is not required, and the draft EA is deemed the appropriate level of environmental review pursuant to MEPA.

PREPARATION AND APPROVAL

EA and Significance Determination prepared by:

Craig Henrikson
Environmental Engineer, PE

Environmental Assessment Reviewed by: Craig Jones, MEPA Coordinator

Approved by: Eric Merchant, Supervisor, Air Quality Bureau

REFERENCES

- MAQP #5315-00 Application received from Crusoe Energy Systems, Inc. Dated August 30, 2024
- Previous Crusoe applications and permits issued for similar equipment.
- Revised BACT analysis received on September 26, 2024.
- EPA GHG Calculator Tool https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Version dated May 2023 in the Introduction Tab.
- EPA State Inventory Tool, https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool Version 2024.1.
- State Historic Preservation Office files received on 9/10/2024.
- Montana Natural Resource Information System (NRIS) Data downloaded from website on 9/09/2024. https://mtnhp.org/mapviewer/
- Results of State Inventory Tool model run for Version 2024.1. Model results run by AQB staff on March 7, 2024.
- 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends, https://www.blm.gov/