



Nevada Department of Conservation and Natural Resources • Division of Environmental Protection

Bureau of Air Pollution Control

901 SOUTH STEWART STREET SUITE 4001

CARSON CITY, NEVADA 89701-5249

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Facility ID No. A0921

Permit No. AP2869-3306

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: FULCRUM SIERRA BIOFUELS, LLC (hereinafter referred to as Permittee)

Mailing Address: 4900 HOPYARD ROAD, SUITE 220, PLEASANTON, CALIFORNIA 94588

Physical Address: 3600 PERU DRIVE, MCCARRAN, NEVADA 89434

General Facility Location: TAHOE-RENO INDUSTRIAL PARK, 3600 PERU DRIVE, MCCARRAN, NEVADA
SECTIONS 10 AND 11, T19N, R22E MDB&M (HA 83, STOREY COUNTY)
NORTH 4,377.90 KM, EAST 286.10 KM, UTM (NAD 83, ZONE 11)

Emission Unit List:

- A. System 1 – Feedstock Receipt and Debaling**
- S 2.001 MSW Feedstock Preparation Feed Hopper
 - S 2.002 Walking Floor Conveyor
 - S 2.003 Scalping Conveyor
 - S 2.004 Materials Conveyor
 - S 2.005 Shredder
- B. System 2 – Feedstock Handling and Conveying**
- S 2.006 Walking Floor Conveyor
 - S 2.007 Scalping Conveyor
 - S 2.008 Materials Conveyor
 - S 2.009 Materials Metering Bins
 - S 2.010 Airlock Screw Conveyors
- C. System 3 – Synthesis Gas (Syngas) Gasification Unit**
- S 2.011 Syngas Gasification Unit - consists of Steam Reformer with Fluidized Bed, Partial Oxidation (POx) Phase
- D1. System 4A – Hydrocracker Unit Heater**
- S 2.032 8.0 MMBtu/hr Natural Gas Fired Hydrocracker Unit Heater
- D2. System 4B – Fractionator Unit Heater**
- S 2.033 6.0 MMBtu/hr Natural Gas Fired Fractionator Unit Heater
- D3. System 4C – Product Stripper Unit Heater**
- S 2.034 2.0 MMBtu/hr Natural Gas Fired Product Stripper Unit Heater
- E. System 5 – Pulse Combustor Heaters and Boiler**
- S 2.013a 17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 1
 - S 2.013b 17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 2
 - S 2.013c 17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 3
 - S 2.013d 17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 4
 - S 2.014 53.1 MMBtu/hr Combined Natural Gas, Syngas, Purge Gas Fired Boiler (mfd 2014)
- F. System 6 – Ground Level Enclosed Flare**
- S 2.015 Ground Level Enclosed Flare with 0.11 MMBtu/hr Natural Gas Fired Pilot Light
- G. System 7 – Sulfur Removal System**
- S 2.016 Sulfur Removal Packed Absorption Unit
- H. System 8 – Fischer-Tropsch Liquids (FTL) Production Plant**
- PF 1.001 Fugitive Emissions from Valves, Pumps, Compressors, Sampling Connectors associated with the FTL Production Plant
 - S S2.017 CO₂/H₂S Absorption/Removal System
- I. System 9 – Synthetic Paraffinic Kerosene (SPK) Product Storage Tanks**
- S 2.021a 120,000 Gallon SPK Storage Tank 1
 - S 2.021b 120,000 Gallon SPK Storage Tank 2
 - S 2.021c 120,000 Gallon SPK Storage Tank 3
- J. System 10 – Off-Spec Synthetic Paraffinic Kerosene (SPK) Storage Tank**
- S 2.022 30,000 Gallon Off-Spec SPK Storage Tank
- K. System 11 – Removed June 2014**



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Emission Unit List (continued)

- L. System 12 – Amine Solvent Sump Drum**
 - S 2.025 39,000 Gallon Amine Solvent Sump Drum
- M. System 13 – Product Loading Area**
 - S 2.026 Product Loading to Tanker Trucks or Tanker Rail Cars
- N1. System 14A – Ash Silo**
 - S 2.027 Ash Silo Loading
 - S 2.028 Ash Silo Unloading
- N2. System 14B – Bed Media Silo**
 - S 2.035 Bed Media Silo Loading
 - S 2.036 Bed Media Silo Unloading
- N3. System 14C – Charcoal Hopper**
 - S 2.037 Charcoal Hopper Loading
 - S 2.038 Charcoal Hopper Unloading
- O. System 15 – 399 HP Firewater Pump Engine**
 - S 2.029 399 HP Diesel Firewater Pump Engine (mfd 2014)
- P. System 16 – 1,000 kW Emergency Generator**
 - S 2.030 1,000 kW Diesel Emergency Generator (mfd 2014)
- Q. System 17 – Cooling Tower**
 - S 2.031 Mechanical Draft Cooling Tower



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Section I. General Conditions

- A. **Severability** (Nevada Administrative Code (NAC 445B.315.3(c)))
Each of the conditions and requirements of this Operating Permit is severable and, if any are held invalid, the remaining conditions and requirements continue in effect.
- B. **Prohibited Acts** (Nevada Revised Statute (NRS 445B.470))
Permittee shall not knowingly:
1. Violate any applicable provision, the terms or conditions of any permit or any provision for the filing of information;
 2. Fail to pay any fee;
 3. Falsify any material statement, representation or certification in any notice or report; or
 4. Render inaccurate any monitoring device or method, required pursuant to the provisions of NRS 445B.100 to 445B.450, inclusive, or 445B.470 to 445B.640, inclusive, or any regulation adopted pursuant to those provisions.
- C. **Prohibited Conduct: Concealment of Emissions** (NAC 445B.225)
Permittee shall not install, construct, or use any device which conceals any emission without reducing the total release of regulated air pollutants to the atmosphere.
- D. **Compliance/Noncompliance** (NAC 445B.315.3(d))
Permittee shall comply with all conditions of this Operating Permit. Any noncompliance constitutes a violation and is grounds for:
1. An action for noncompliance;
 2. Revising, revoking, reopening and revising, or terminating the Operating Permit; or
 3. Denial of an application for a renewal of the Operating Permit.
- E. **NAC 445B.315.3(e)**
The need to halt or reduce activity to maintain compliance with the conditions of this Operating Permit is not a defense to noncompliance with any conditions of this Operating Permit.
- F. **NAC 445B.315.3(f)**
The director may revise, revoke and reissue, reopen and revise, or terminate the operating permit for cause.
- G. **NAC 445B.315.3(g)**
This Operating Permit does not convey any property rights or any exclusive privilege.
- H. **NAC 445B.315.3(h)**
Permittee shall provide the Bureau of Air Pollution Control, within a reasonable time, with any information that the Bureau of Air Pollution Control requests in writing to determine whether cause exists for revising, revoking and reissuing, reopening and revising or terminating this Operating Permit or to determine compliance with the conditions of this Operating Permit.
- I. **Fees** (NAC 445B.315.3(l))
Permittee shall pay fees to the Bureau of Air Pollution Control in accordance with the provisions set forth in NAC 445B.327 and 445B.331.
- J. **Right to Entry** (NAC 445B.315.3(j))
Permittee shall allow the Bureau of Air Pollution Control personnel, upon the presentation of credentials, to:
1. Enter upon the premises of Permittee where:
 - a. The stationary source is located;
 - b. Activity related to emissions is conducted; or
 - c. Records are kept pursuant to the conditions of this Operating Permit;
 2. Have access to and copy, during normal business hours, any records that are kept pursuant to the conditions of this Operating Permit;
 3. Inspect, at reasonable times, any facilities, practices, operations, or equipment, including any equipment for monitoring or controlling air pollution, that are regulated or required pursuant to this Operating Permit; and
 4. Sample or monitor, at reasonable times, substances or parameters to determine compliance with the conditions of this Operating Permit or applicable requirements.
- K. **Certification** (NAC 445B.315.3(k))
A responsible official of Permittee shall certify that, based on information and belief formed after reasonable inquiry, the statements made in any document required to be submitted by any condition of this Operating Permit are true, accurate and complete.



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Section I. General Conditions (continued)

L. Testing and Sampling (NAC 445B.252)

1. To determine compliance with NAC 445B.001 to 445B.3689, inclusive, before the approval or the continuance of an operating permit or similar class of permits, the director may either conduct or order the owner of any stationary source to conduct or have conducted such testing and sampling as the director determines necessary. Testing and sampling or either of them must be conducted and the results submitted to the director within 60 days after achieving the maximum rate of production at which the affected facility will be operated, but not later than 180 days after initial startup of the facility and at such times as may be required by the director.
2. Tests of performance must be conducted and data reduced in accordance with the methods and procedures of the test contained in each applicable subsection of this section unless the director:
 - a. Specifies or approves, in specific cases, the use of a method of reference with minor changes in methodology;
 - b. Approves the use of an equivalent method;
 - c. Approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific stationary source is in compliance; or
 - d. Waives the requirement for tests of performance because the owner or operator of a stationary source has demonstrated by other means to the director's satisfaction that the affected facility is in compliance with the standard.
3. Tests of performance must be conducted under such conditions as the director specifies to the operator of the plant based on representative performance of the affected facility. The owner or operator shall make available to the director such records as may be necessary to determine the conditions of the performance test. Operations during periods of startup, shutdown and malfunction must not constitute representative conditions of a performance test unless otherwise specified in the applicable standard. (NAC 445B.252.3)
4. Permittee shall give notice to the director 30 days before the test of performance to allow the director to have an observer present. A written testing procedure for the test of performance must be submitted to the director at least 30 days before the test of performance to allow the director to review the proposed testing procedures. (NAC 445B.252.4)
5. Each test of performance must consist of at least three separate runs using the applicable method for that test. Each run must be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the runs apply. In the event of forced shutdown, failure of an irreplaceable portion of the sampling train, extreme meteorological conditions or other circumstances with less than three valid samples being obtained, compliance may be determined using the arithmetic mean of the results of the other two runs upon the director's approval. (NAC 445B.252.5)
6. All testing and sampling will be performed in accordance with recognized methods and as specified by the director. (NAC 445B.252.6)
7. The cost of all testing and sampling and the cost of all sampling holes, scaffolding, electric power and other pertinent allied facilities as may be required and specified in writing by the director must be provided and paid for by the owner of the stationary source. (NAC 445B.252.7)
8. All information and analytical results of testing and sampling must be certified as to their truth and accuracy and as to their compliance with all provisions of NAC 445B.001 to 445B.3689, inclusive, and copies of these results must be provided to the director no later than 60 days after the testing or sampling, or both.

M. Maximum Opacity of Emissions (NAC 445B.22017)

1. Except as otherwise provided in NAC 445B.22017 to 445B.22023, Permittee may not cause or permit the discharge into the atmosphere from any emission unit opacity equal to or greater than 20 percent. Opacity must be determined by one of the following methods:
 - a. If opacity is determined by a visual measurement, it must be determined as set forth in Reference Method 9 in Appendix A of 40 C.F.R. Part 60.
 - b. If a source uses a continuous monitoring system for the measurement of opacity, the data must be reduced to 6-minute averages as set forth in 40 CFR § 60.13(h).
2. The provisions of NAC 445B.22017 to 445B.22023 do not apply to that part of the opacity that consists of uncombined water. The burden of proof to establish the application of this exemption is upon the person seeking to come within the exemption.

N. Exceptions for Stationary Sources (NAC 445B.2202)

NAC 445B.22017 to 445B.22023, inclusive, do not apply to:

1. Smoke from the open burning described in NAC 445B.22067;
2. Smoke discharged in the course of training air pollution control inspectors to observe visible emissions, if the facility has written approval of the commission;
3. Emissions from an incinerator as set forth in NAC 445B.2207;
4. Emission from a thermite batch process when charging which does not exceed 60 minutes and for no more than one charging in any 24 consecutive hours;
5. Emissions of stationary diesel-powered engines during warmup for not longer than 15 minutes to achieve operating temperatures; or
6. Emission from a steam generating unit fired by fossil fuel or wood for boiler lancing or soot blowing, not to exceed 180 minutes in any 24 consecutive hours.



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Section I. General Conditions (continued)

O. Odors (NAC 445B.22087)

Permittee may not discharge or cause to be discharged, from any stationary source, any material or regulated air pollutant which is or tends to be offensive to the senses, injurious or detrimental to health and safety, or which in any way interferes with or prevents comfortable enjoyment of life or property.

P. Assertion of Emergency as Affirmative Defense to Action for Noncompliance (NAC 445B.326.1)

Permittee may assert an affirmative defense to an action brought for noncompliance with a technology-based emission limitation contained in the Operating Permit if the holder of the Operating Permit demonstrates through signed, contemporaneous operating logs or other relevant evidence that:

1. An emergency (as defined in NAC 445B.056) occurred and the holder of the Operating Permit can identify the cause of the emergency;
2. The facility was being properly operated at the time of the emergency;
3. During the emergency, the holder of the Operating Permit took all reasonable steps to minimize excess emissions; and
4. Permittee submitted notice of the emergency to the director within 2 working days after the emergency. The notice must contain a description of the emergency, any steps taken to mitigate emissions, and any corrective actions taken to restore the normal operation of the facility.
5. In any action for noncompliance, Permittee, by asserting the affirmative defense of any emergency, has the burden of proof.

Q. Revocation and Relissuance (NAC 445B.3265)

1. This Operating Permit may be revoked if the control equipment is not operating. (NAC 445B.3265.1)
2. This Operating Permit may be revoked by the director upon determination that there has been a violation of NAC 445B.001 to 445B.3689, inclusive, or the provisions of 40 CFR § 52.21, or 40 C.F.R. Part 60 or 61, Prevention of Significant Deterioration, New Source Performance Standards, and National Emission Standards for Hazardous Air Pollutants adopted by reference in NAC 445B.221. (NAC 445B.3265.2)
3. The revocation is effective 10 days after the service of a written notice, unless a hearing is requested. (NAC 445B.3265.3)

*******End of General Conditions*******



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Section II. General Construction Conditions

A. Notification (NAC 445B.250.4, NAC 445B.346.2)

The Bureau of Air Pollution Control will be notified in writing of any physical or operational change to an existing facility which may increase the emission rate of any regulated air pollutant to which a standard applies, unless that change is specifically exempted under an applicable section or in NAC 445B.239 or 445B.242 and the exemption is not denied under those sections. The notice must be postmarked 60 days or as soon as practicable before the change is commenced and must include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The director may request additional relevant information subsequent to this notice.

B. Construction (NAC 445.3457)

1. If construction will occur in one phase, a Class II operating permit or the revision of a Class II operating permit for a new or modified stationary source expires if construction is not commenced within 18 months after the date of issuance thereof or construction of the facility is delayed for 18 months or more after the construction begins. The Director may extend the date on which the construction may be commenced upon a showing that the extension is justified (NAC 445B.3457.9).
2. If construction will occur in more than one phase, the projected date of commencement of construction of each phase must be approved by the Director. A Class II operating permit or the revision of a Class II operating permit for a new or modified stationary source expires if the initial phase of construction is not commenced within 18 months after the projected date of the commencement of construction approved by the Director. The Director may extend only the date on which the initial phase of construction may be commenced upon a showing that the extension is justified (NAC 445B.3457.10).

*******End of General Construction Conditions*******



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Section IIA. Specific Construction Requirements

A. Emission Units S2.001 through S2.005 Location North 4,377.82 km, East 286.20 km, UTM (Zone 11, NAD 83)

System 1 – Feedstock Receipt and Debaling		
S	2.001	MSW Feedstock Preparation Feed Hopper
S	2.002	Walking Floor Conveyor
S	2.003	Scalping Conveyor
S	2.004	Materials Conveyor
S	2.005	Shredder

1. Test Methods and Procedures (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)

Within 60 days after achieving the maximum production rate at which **S2.001 through S2.005** will be operated, but no later than 180 days after initial startup of the facility, Permittee shall determine initial compliance with the opacity standards and emission limits established in Section V.A.2 of this operating permit for **S2.001 through S2.005** by conducting performance tests on the exhaust stack of the baghouse as follows:

- a. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The sample volume for each test run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250°F)) in order to prevent water condensation on the filter.
- b. A Method 201A test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM₁₀.
- c. The Method 201A test required in this section may be replaced by a Method 5 test. All particulate captured in the Method 5 tests performed under this provision shall be considered PM₁₀ emissions for determination of compliance with the emission limitations established in Section V.A.2 of this operating permit for **S2.001 through S2.005**.
- d. For the purposes of demonstrating initial compliance with the opacity standards established in Section V.A.2 of this operating permit for the baghouse that controls **S2.001 through S2.005**, opacity observations shall be conducted concurrently with the initial performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals). The observer shall read opacity only when emissions are clearly emanating solely from the affected facility being observed. (40 CFR Part 60.8, 60.11).
- e. Performance tests required under this section shall use the methods specified and be conducted for a minimum of 60 minutes for each test run, unless otherwise approved by the Director.
- f. Performance tests required under this section that are conducted below the maximum allowable throughput, as established in Section V.A.3 of this operating permit for **S2.001 through S2.005**, shall be subject to the director's review to determine if the throughputs during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- g. Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.

2. Notification (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of **S2.001 through S2.005** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial start-up of **S2.001 through S2.005**, postmarked not more than 60 days and not less than 30 days before such date.
- c. A notification of the actual date of initial startup of **S2.001 through S2.005**, postmarked within 15 days after such date.



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Section IIA. Specific Construction Requirements (continued)

B. Emission Units S2.006 through S2.010 Location North 4,377.87 km, East 286.15 km, UTM (Zone 11, NAD 83)

System 2 – Feedstock Handling and Conveying

S	2.006	Walking Floor Conveyor
S	2.007	Scalping Conveyor
S	2.008	Materials Conveyor
S	2.009	Materials Metering Bins
S	2.010	Airlock Screw Conveyors

1. Test Methods and Procedures (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)

Within 60 days after achieving the maximum production rate at which **S2.006 through S2.010** will be operated, but no later than 180 days after initial startup of the facility, Permittee shall determine initial compliance with the opacity standards and emission limits established in Section V.B.2 of this operating permit for **S2.006 through S2.010** by conducting performance tests on the exhaust stack of the baghouse as follows:

- a. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The sample volume for each test run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250°F)) in order to prevent water condensation on the filter.
- b. A Method 201A test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM₁₀.
- c. The Method 201A test required in this section may be replaced by a Method 5 test. All particulate captured in the Method 5 tests performed under this provision shall be considered PM₁₀ emissions for determination of compliance with the emission limitations established in Section V.B.2 of this operating permit for **S2.006 through S2.010**.
- d. For the purposes of demonstrating initial compliance with the opacity standards established in Section V.B.2 of this operating permit for the baghouse that controls **S2.006 through S2.010**, opacity observations shall be conducted concurrently with the initial performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals). The observer shall read opacity only when emissions are clearly emanating solely from the affected facility being observed. (40 CFR Part 60.8, 60.11).
- e. Performance tests required under this section shall use the methods specified and be conducted for a minimum of 60 minutes for each test run, unless otherwise approved by the Director.
- f. Performance tests required under this section that are conducted below the maximum allowable throughput, as established in Section V.B.3 of this operating permit for **S2.006 through S2.010**, shall be subject to the director's review to determine if the throughputs during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- g. Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.

2. Notification (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of **S2.006 through S2.010** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial start-up of **S2.006 through S2.010**, postmarked not more than 60 days and not less than 30 days before such date.
- c. A notification of the actual date of initial startup of **S2.006 through S2.010**, postmarked within 15 days after such date.



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Section IIA. Specific Construction Requirements (continued)

C. Emission Unit S2.011 Location North 4,378.02 km, East 285.97 km, UTM (Zone 11, NAD 83)

System 3 – Synthesis Gas (Syngas) Gasification Unit

S 2.011 Syngas Gasification Unit - Consists of Steam Reformer with Fluidized Bed, Partial Oxidation Phase

1. Notification (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of **S2.011** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial start-up of **S2.011**, postmarked not more than 60 days and not less than 30 days before such date.
- c. A notification of the actual date of initial startup of **S2.011**, postmarked within 15 days after such date.



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Section IIA. Specific Construction Requirements (continued)

D1. Emission Unit S2.032 Location North 4,377.98 km, East 286.08 km, UTM (Zone 11, NAD 83)

System 4A – Hydrocracker Unit Heater

S 2.032 8.0 MMBtu/hr Natural Gas Fired Hydrocracker Unit Heater

D2. Emission Unit S2.033 Location North 4,377.96 km, East 286.07 km, UTM (Zone 11, NAD 83)

System 4B – Fractionator Unit Heater

S 2.033 6.0 MMBtu/hr Natural Gas Fired Fractionator Unit Heater

1. Test Methods and Procedures (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)

Within 60 days after achieving the maximum production rate at which **S2.032** and **S2.033** will be operated, but no later than 180 days after initial startup of the facility, Permittee shall determine initial compliance with the opacity standards and emission limits established in Section V.D1.2 of this operating permit for **S2.032** and in Section V.D2.2 of this operating permit for **S2.033** by conducting performance tests on the exhaust stack of **S2.032** and the exhaust stack of **S2.033**:

- a. Conduct and record a Method 7E performance test for nitrogen oxide emissions (or equivalent EPA reference method as approved by the director) on the exhaust stack of **S2.032** and **S2.033** consisting of three (3) valid runs. The Method 7E emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A.
- b. Conduct and record a Method 10 performance test for carbon monoxide emissions (or equivalent EPA reference method as approved by the director) on the exhaust stacks of **S2.032** and **S2.033** consisting of three (3) valid runs. The Method 10 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A.
- c. For the purposes of demonstrating initial compliance with the opacity standard established in Section V.D1.2 of this operating permit for **S2.032** and in Section V.D2.2 of this operating permit for **S2.033**, opacity observations shall be conducted on the exhaust stacks in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- d. Permittee shall provide notification of the anticipated date for conducting the performance tests and opacity observations required in D1.1 and D2.1 of this Section. The notification shall be postmarked not less than 30 days prior to such date.
- e. Within 60 days after completing the performance tests and opacity observations contained in D1.1 and D2.1 of this Section, Permittee shall furnish the director a written report of the results of the performance tests and opacity observations required in D1.1 and D2.1 of this Section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive.
- f. Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.

2. Notification (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of **S2.032** and **S2.033** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial start-up of **S2.032** and **S2.033**, postmarked not more than 60 days and not less than 30 days before such date.
- c. A notification of the actual date of initial startup of **S2.032** and **S2.033**, postmarked within 15 days after such date.



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Section IIA. Specific Construction Requirements (continued)

D3. Emission Unit S2.034 Location North 4,377.97 km, East 286.13 km, UTM (Zone 11, NAD 83)

System 4C – Product Stripper Unit Heater

S 2.034 2.0 MMBtu/hr Natural Gas Fired Product Stripper Unit Heater

1. **Test Methods and Procedures** (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)
 - a. For the purposes of demonstrating initial compliance with the emissions limitations established in Section V.D3.2 of this operating permit for **S2.034**, opacity observations shall be conducted in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. Opacity observations shall be conducted within 60 days after achieving the maximum production rate at which **S2.034** will be operated, but no later than 180 days after initial startup of the facility. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals). The observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed. (40 CFR Part 60.11(b), 60.11(e)(1))
 - b. Permittee shall provide notification of the anticipated date for conducting the opacity observations required in D3.1.a of this section. The notification shall be postmarked not less than 30 days prior to such date. (40 CFR Part 60.7(a)(6))
 - c. Within 60 days after completing the opacity observations contained in D3.1.a of this section, Permittee shall furnish the director a written report of the results of the opacity observations required in D3.1.a of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive. (NAC 445B.252.8)
2. **Notification** (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

 - a. A notification of the date construction of **S2.034** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
 - b. The anticipated date of initial start-up of **S2.034**, postmarked not more than 60 days and not less than 30 days before such date.
 - c. A notification of the actual date of initial startup of **S2.034**, postmarked within 15 days after such date.



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Permit No. AP2869-3306

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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section IIA. Specific Construction Requirements (continued)

E. Emission Units S2.013a-b-c-d and S2.014 Location North 4,377.90 km, East 286.17 km, UTM (Zone 11, NAD 83)

System 5 – Pulse Combustor Heaters and Boiler

S	2.013a	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 1
S	2.013b	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 2
S	2.013c	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 3
S	2.013d	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 4
S	2.014	53.1 MMBtu/hr Combined Natural Gas, Syngas, Purge Gas Fired Boiler (mfd 2014)

1. Test Methods and Procedures (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)

Within 60 days after achieving the maximum production rate at which **S2.013a-b-c-d** and **S2.014** will be operated, but no later than 180 days after initial startup of the facility, Permittee shall determine initial compliance with the opacity standards and emission limits established in Section V.E.2 of this operating permit for **S2.013a-b-c-d** and **S2.014** by conducting performance tests on the common exhaust stack as follows:

- a. Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The Method 5 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 5, and include the back-half catch. The sample time for each test run shall be at least 120 minutes. The sample volume for each test run shall be at least 1.70 dscm (60.0 dscf). The temperature of the sample gas in the probe and filter holder shall be monitored and maintained at 160 ± 14 °C (320 ± 25 °F).
- b. A Method 201A and 202 test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM_{10} .
- c. The Method 201A and 202 test required in this section may be replaced by a Method 5 test that includes the back-half catch. All particulate captured in the Method 5 tests with back-half catch performed under this provision shall be considered PM_{10} emissions for determination of compliance with the emission limitations established in Section V.E.2 of this operating permit.
- d. Conduct and record a Method 6 performance test for SO_2 on the common exhaust stack of **S2.013a-b-c-d** and **S2.014**. The Method 6 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 6.
- e. Conduct and record a Method 7 performance test for NO_x on the common exhaust stack of **S2.013a-b-c-d** and **S2.014**. The Method 7 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 7.
- f. Conduct and record a Method 10 performance test for CO on the common exhaust stack of **S2.013a-b-c-d** and **S2.014**. The Method 10 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 10.
- g. Conduct and record a Method 25 performance test for VOC on the common exhaust stack of **S2.013a-b-c-d** and **S2.014**. The Method 25 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 25.
- h. For the purposes of demonstrating compliance with the opacity standard established in Section V.E.2 of this operating permit for **S2.013a-b-c-d** and **S2.014**, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- i. The NO_x CEMS required in Section V.E.4.a of this operating permit shall be operating concurrently with the performance tests required in this section. Results of the NO_x CEMS monitoring during the individual performance tests conducted in E.1 of this Section shall be submitted with the report as required in Section I.L.8 of this operating permit.
- j. The performance tests required under this section that are conducted below the maximum allowable heat input rates, as established in Section V.E.3 of this operating permit for **S2.013a-b-c-d** and **S2.014**, shall be subject to the director's review to determine if the heat input rates during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- k. Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.

2. Notification and Recordkeeping (40 CFR Part 60.7; 40 CFR Part 60.48c; NAC 445B.250; NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of **S2.013a-b-c-d** and **S2.014** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form. (40 CFR Part 60.7(a)(1))
- b. A notification of the anticipated date of initial startup of **S2.013a-b-c-d** and **S2.014**, postmarked not more than 60 days nor less than 30 days prior to such date. (40 CFR Part 60.7(a)(2))
- c. A notification of the actual date of initial startup of **S2.013a-b-c-d** and **S2.014**, postmarked within 15 days after such date. (40 CFR Part 60.7(a)(3))



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section IIA. Specific Construction Requirements (continued)

F. **Emission Unit S2.015** Location North 4,378.02 km, East 285.97 km, UTM (Zone 11, NAD 83)

System 6 -- Ground Level Enclosed Flare

S 2.015 Ground Level Enclosed Flare with 0.11 MMBtu/hr Natural Gas Fired Pilot Light

1. **Test Methods and Procedures** (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)

Within 60 days after achieving the maximum production rate at which S2.015 will be operated, but no later than 180 days after initial startup of the facility, Permittee shall determine compliance with the emission limits established in Section V.F.2 of this operating permit by conducting initial observations on the exhaust stack of S2.015 as follows:

- a. For the purpose of demonstrating initial compliance with the visible emissions standard established in Section V.F.2 of this operating permit for S2.015 during normal operations, Permittee shall conduct and record a visible emissions test on the Flare Stack of S2.015 in accordance with Reference Method 22 in Appendix A of 40 CFR Part 60 during that event for a period of no less than 2 hours. The results of the visible emissions tests and any corrective action taken will be recorded in a contemporaneous log.
- b. For the purpose of demonstrating initial compliance with the opacity standards established in Section V.F.2 of this operating permit for S2.015, during one startup event, one event that represents normal operations (pilot light only), and one shutdown event (planned shutdown event or emergency shutdown event), Permittee shall conduct and record a visible emissions test on the Flare Stack of S2.015 in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60 during that event for a period of 6 minutes. Each Method 9 opacity observation must be conducted by a certified opacity reader in accordance with 40 CFR Part 60, Appendix A. The results of the opacity observation and any corrective action taken will be recorded in a contemporaneous log.
- c. Permittee shall provide notification of the anticipated date for conducting the visible emissions tests and opacity observations required in F.1.a and F.1.b of this section. The notification shall be postmarked not less than 30 days prior to such date.
- d. Within 60 days after completing the visible emissions tests and opacity observations contained in F.1.a and F.1.b of this section, Permittee shall furnish the director a written report of the results of the visible emissions tests and opacity observations required in F.1.a and F.1.b of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive.

2. **Notification** (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of S2.015 is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial start-up of S2.015, postmarked not more than 60 days and not less than 30 days before such date.
- c. A notification of the actual date of initial startup of S2.015, postmarked within 15 days after such date.



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Section IIA. Specific Construction Requirements (continued)

G. Emission Unit S2.016 Location North 4,377.95 km, East 286.04 km, UTM (Zone 11, NAD 83)

System 7 – Sulfur Removal System

S 2.016 Sulfur Removal Packed Absorption Unit

1. **Test Methods and Procedures** (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)
Within 60 days after achieving the maximum production rate at which **S2.016** will be operated, but no later than 180 days after initial startup of the facility, Permittee shall determine compliance with the emission limits established in Section V.G.2 of this operating permit by conducting initial opacity observations on the exhaust stack of **S2.016** as follows:
 - a. Conduct and record a Method 15 performance test for reduced sulfur species (or equivalent reference method, such as ASTM D5504 – Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence, as approved by the director) on the exhaust stack of **S2.016** consisting of three (3) valid runs. The Method 15 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A. The concentration and emission rate of H₂S in each of the tests will be obtained, calculated, and recorded.
 - b. Conduct a Method 3A performance test for carbon dioxide (CO₂) emissions on the exhaust stack for **S2.016** consisting of three valid test runs. The performance test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 3A or another test method approved by the director. The CO₂ CEMS required in Section V.G.4.b of this operating permit shall be operated concurrently with the performance test required in G.1 of this Section, and the concurrent data reported as required in G.1.e of this Section.
 - c. For the purposes of demonstrating compliance with the opacity standard established in Section V.G.2 of this operating permit for **S2.016**, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
 - d. Permittee shall provide notification of the anticipated date for conducting the performance tests and opacity observations required in G.1.a through G.1.c of this section. The notification shall be postmarked not less than 30 days prior to such date.
 - e. Within 60 days after completing the performance tests, the CO₂ CEMS data, and opacity observations contained in G.1.a through G.1.c of this section, Permittee shall furnish the director a written report of the results of the performance tests and opacity observations required in G.1.a through G.1.c of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive.
 - f. Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.
2. **Notification** (NAC 445B.250, NAC 445B.346.2)
Permittee shall provide the director the following:
 - a. A notification of the date construction of **S2.016** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
 - b. The anticipated date of initial start-up of **S2.016**, postmarked not more than 60 days and not less than 30 days before such date.
 - c. A notification of the actual date of initial startup of **S2.016**, postmarked within 15 days after such date.



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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section IIA. Specific Construction Requirements (continued)

H. Emission Units PF1.001 and S2.017 Location North 4,377.91 km, East 285.96 km, UTM (Zone 11, NAD 83)

System 8 – Fischer-Tropsch Liquids (FTL) Production Plant

PF 1.001 Fugitive Emissions from Valves, Pumps, Compressors, Sampling Connectors associated with the FTL Production Plant
S S2.017 CO₂/H₂S Absorption/Removal System

I. Emission Units S2.021a-b-c Location North 4,377.99 km, East 285.99 km, UTM (Zone 11, NAD 83)

System 9 – SPK Product Storage Tanks

S 2.021a 120,000 Gallon SPK Product Storage Tank 1
S 2.021b 120,000 Gallon SPK Product Storage Tank 2
S 2.021c 120,000 Gallon SPK Product Storage Tank 3

J. Emission Unit S2.022 Location North 4,377.98 km, East 285.98 km, UTM (Zone 11, NAD 83)

System 10 – Off-Spec SPK Storage Tank

S 2.022 30,000 Gallon Off-Spec SPK Storage Tank

L. Emission Unit S2.025 Location North 4,377.98 km, East 285.98 km, UTM (Zone 11, NAD 83)

System 12 – Amine Solvent Storage Tank

S 2.025 39,000 Gallon Amine Solvent Sump Drum

M. Emission Unit S2.026 Location North 4,378.01 km, East 285.90 km, UTM (Zone 11, NAD 83)

System 13 – Product Loading Area

S 2.026 Product Loading to Tanker Trucks or Tanker Rail Cars

1. Notification and Recordkeeping (NAC 445B.250; NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of PF1.001, S2.017, S2.021a, S2.021b, S2.021c, S2.022, S2.025, and S2.026 is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form. (40 CFR Part 60.7(a)(1))
- b. A notification of the anticipated date of initial startup of PF1.001, S2.017, S2.021a, S2.021b, S2.021c, S2.022, S2.025, and S2.026, postmarked not more than 60 days nor less than 30 days prior to such date.
- c. A notification of the actual date of initial startup of PF1.001, S2.017, S2.021a, S2.021b, S2.021c, S2.022, S2.025, and S2.026, postmarked within 15 days after such date. (40 CFR Part 60.7(a)(3))



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Section IIA. Specific Construction Requirements (continued)

N1. Emission Units S2.027 and S2.028 Location North 4,377.86 km, East 286.17 km, UTM (Zone 11, NAD 83)

System 14A – Ash Silo

S	2.027	Ash Silo Loading
S	2.028	Ash Silo Unloading

N2. Emission Units S2.035 and S2.036 Location North 4,377.88 km, East 286.20 km, UTM (Zone 11, NAD 83)

System 14B – Bed Media Silo

S	2.035	Bed Media Silo Loading
S	2.036	Bed Media Silo Unloading

N3. Emission Units S2.037 and S2.038 Location North 4,377.88 km, East 286.20 km, UTM (Zone 11, NAD 83)

System 14C – Charcoal Hopper

S	2.037	Charcoal Hopper Loading
S	2.038	Charcoal Hopper Unloading

1. Test Methods and Procedures (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)

- a. For the purposes of demonstrating initial compliance with the emissions limitations established in Section V.N1.2 of this operating permit for the **S2.027 and S2.028** baghouse, in Section V.N2.2 of this operating permit for the **S2.035 and S2.036** baghouse, and in Section V.N3.2 of this operating permit for the **S2.037 and S2.038** baghouse, opacity observations shall be conducted in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. Opacity observations shall be conducted within 60 days after achieving the maximum production rate at which **S2.027 – S2.028, S2.035 – S2.036, and S2.037 – S2.038** will be operated, but no later than 180 days after initial startup of the facility. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals). The observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed. (40 CFR Part 60.11(b), 60.11(e)(1))
- b. Permittee shall provide notification of the anticipated date for conducting the opacity observations required in N1.1.a, N2.1a, and N3.1a of this section. The notification shall be postmarked not less than 30 days prior to such date. (40 CFR Part 60.7(a)(6))
- c. Within 60 days after completing the opacity observations contained in N1.1.a, N2.1a, and N3.1a of this section, Permittee shall furnish the director a written report of the results of the opacity observations required in N1.1.a, N2.1a, and N3.1a of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive. (NAC 445B.252.8)

2. Notification (NAC 445B.250, NAC 445B.346.2)

Permittee shall provide the director the following:

- a. A notification of the date construction of **S2.027 – S2.028, S2.035 – S2.036, and S2.037 – S2.038** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
- b. The anticipated date of initial start-up of **S2.027 – S2.028, S2.035 – S2.036, and S2.037 – S2.038**, postmarked not more than 60 days and not less than 30 days before such date.
- c. A notification of the actual date of initial startup of **S2.027 – S2.028, S2.035 – S2.036, and S2.037 – S2.038**, postmarked within 15 days after such date.



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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section IIA. Specific Construction Requirements (continued)

O. Emission Unit S2.029 Location North 4,377.88 km, East 286.29 km, UTM (Zone 11, NAD 83)

System 15 – 399 HP Firewater Pump Engine

S 2.029 399 HP Diesel Firewater Pump Engine (mfd 2014)

P. Emission Unit S2.030 Location North 4,377.87 km, East 286.14 km, UTM (Zone 11, NAD 83)

System 16 – 1000 kW Emergency Generator

S 2.030 1000 kW Emergency Diesel Generator (mfd 2014)

1. **Test Methods and Procedures** (NAC 445B.252, NAC 445B.22017, NAC 445B.346.2)
 - a. For the purposes of demonstrating initial compliance with the emissions limitations established in Sections V.O.2 and V.P.2 of this operating permit for **S2.029** and **S2.030**, opacity observations shall be conducted in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. Opacity observations shall be conducted within 60 days after achieving the maximum production rate at which **S2.029** and **S2.030** will be operated, but no later than 180 days after initial startup of the facility. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals). The observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed. (40 CFR Part 60.11(b), 60.11(e)(1))
 - b. Permittee shall provide notification of the anticipated date for conducting the opacity observations required in O.1.a and P.1.a of this section. The notification shall be postmarked not less than 30 days prior to such date. (40 CFR Part 60.7(a)(6))
 - c. Within 60 days after completing the opacity observations contained in O.1.a and P.1.a of this section, Permittee shall furnish the director a written report of the results of the opacity observations required in O.1.a and P.1.a of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive. (NAC 445B.252.8)
2. **Notification** (40 CFR Part 60.7; NAC 445B.250; NAC 445B.346.2)

Permittee shall provide the director the following:

 - a. A notification of the date construction of **S2.029** and **S2.030** is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form. (40 CFR Part 60.7(a)(1))
 - b. A notification of the anticipated date of initial startup of **S2.029** and **S2.030**, postmarked not more than 60 days nor less than 30 days prior to such date. (40 CFR Part 60.7(a)(2))
 - c. A notification of the actual date of initial startup of **S2.029** and **S2.030**, postmarked within 15 days after such date. (40 CFR Part 60.7(a)(3))



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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section IIA. Specific Construction Requirements (continued)

Q. Emission Unit S2.031 Location North 4,377.94 km, East 286.18 km, UTM (Zone 11, NAD 83)

System 17 – Cooling Tower

S 2.031 Mechanical Draft Cooling Tower

1. **Test Methods and Procedures** (NAC 445B.346.2)
For the purposes of demonstrating initial compliance with the Total Dissolved Solids (TDS) value established in Section V.Q.3 of this operating permit for S2.031, Permittee shall sample and analyze the circulating water for TDS upon startup of S2.031.
2. **Notification** (NAC 445B.250, NAC 445B.346.2)
Permittee shall provide the director the following:
 - a. A notification of the date construction of S2.031 is commenced postmarked no later than 30 days after such date. This requirement shall not apply to mass-produced facilities which are purchased in completed form.
 - b. The anticipated date of initial start-up of S2.031, postmarked not more than 60 days and not less than 30 days before such date.
 - c. A notification of the actual date of initial startup of S2.03, postmarked within 15 days after such date.

*******End of Specific Construction Requirements*******



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Facility ID No. A0921

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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section III. General Operating Conditions

A. Facilities Operation (NAC 445B.227)

Permittee may not:

1. Operate a stationary source of air pollution unless the control equipment for air pollution which is required by applicable requirements or conditions of this Operating Permit is installed and operating.
2. Disconnect, alter, modify or remove any of the control equipment for air pollution or modify any procedure required by an applicable requirement or condition of this Operating Permit.

B. Excess Emissions (NAC 445B.232; NAC 445B.346.2)

1. Scheduled maintenance or testing or scheduled repairs which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive, must be approved by the director and performed during a time designated by the director as being favorable for atmospheric ventilation.
2. The director must be notified in writing of the time and expected duration at least 24 hours in advance of any scheduled maintenance which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive.
3. The director must be notified in writing or by telephone of the time and expected duration at least 24 hours in advance of any scheduled repairs which may result in excess emissions of regulated air pollutants prohibited by NAC 445B.001 to 445B.3689, inclusive.
4. The director must be notified of any excess emissions within 24 hours after any malfunction or upset of the process equipment or equipment for controlling pollution or during startup or shutdown of such equipment. The telephone number for the notification is (775) 687-4670.
5. Permittee, as the owner or operator of an affected facility, shall provide the director, within 15 days after any malfunction, upset, startup, shutdown, or human error which results in excess emissions, sufficient information to enable the director to determine the seriousness of the excess emissions. The information must include at least the following:
 - a. The identity of the stack or other point of emission, or both, where the excess emissions occurred.
 - b. The estimated magnitude of the excess emissions expressed in opacity or in units of the applicable limitation on emission and the operating data and methods used in estimating the magnitude of the excess emissions.
 - c. The time and duration of the excess emissions.
 - d. The identity of the equipment causing the excess emissions.
 - e. If the excess emissions were the result of a malfunction, the steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of the malfunction.
 - f. The steps taken to limit the excess emissions.
 - g. Documentation that the equipment for controlling air pollution, process equipment, or processes were at all times maintained and operated, to a maximum extent practicable, in a manner consistent with good practice for minimizing emissions.

C. Permit Revision (NAC 445B.287.1.b)

A revision of this operating permit is required pursuant to the requirements of NAC 445B.3465 before the stationary source may be modified.

*******End of General Operating Conditions*******



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section IV. General Monitoring and Recordkeeping

- A. **Records Retention** (NAC 445B.315.3(b))
Permittee shall retain records of all required monitoring data and supporting information for 5 years from the date of the sample collection, measurement, report or analysis. Supporting information includes, but is not limited to, all records regarding calibration and maintenance of the monitoring equipment and all original strip-chart recordings for continuous monitoring instrumentation.
- B. **Reporting** (NAC 445B.346.3)
Permittee will promptly report to the director any deviations from the requirements of this Operating Permit. The report to the director will include the probable cause of all deviations and any action taken to correct the deviations. For this Operating Permit, prompt is defined as submittal of a report within 15 days of the deviation. This definition does not alter any reporting requirements as established for reporting of excess emissions as required under NAC 445B.232 and under condition III.B of this permit.
- C. **Yearly Reports** (NAC 445B.315.3(h), NAC 445B.346.2)
Permittee will submit yearly reports including, but not limited to, throughput, production, fuel consumption, hours of operation, and emissions. These reports will be submitted on the form provided by the Bureau of Air Pollution Control for all emission units/systems specified on the form. The completed form must be submitted to the Bureau of Air Pollution Control no later than March 1 annually for the preceding calendar year.

*******End of General Monitoring and Recordkeeping Conditions*******



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CLASS II AIR QUALITY OPERATING PERMIT

Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section V. Specific Operating Conditions

A. Emission Units S2.001 through S2.005 Location North 4,377.82 km, East 286.20 km, UTM (Zone 11, NAD 83)

System 1 – Feedstock Receipt and Debaling

S	2.001	MSW Feedstock Preparation Feed Hopper
S	2.002	Walking Floor Conveyor
S	2.003	Scalping Conveyor
S	2.004	Materials Conveyor
S	2.005	Shredder

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)

- a. **System 1** is located partially within a building that handles feedstock and conveys feedstock to the synthesis gasification unit (**System 3**). Particulate emissions from **S2.001 through S2.005** shall be ducted to a control system consisting of a baghouse with 100% capture and a maximum volume flow rate of 10,926 dry standard cubic feet per minute (dscfm).
- b. **Descriptive Stack Parameters for Feedstock Handling Baghouse**
Stack Height – 56 feet
Stack Diameter – 2.5 feet
Exhaust Temperature – Ambient

2. Emission Limits (NAC 445B.305; NAC 445B.346.1)

On and after the date of startup of **S2.001 through S2.005**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack of the baghouse that controls **S2.001 through S2.005** the following pollutants in excess of the following specified limits:

- a. The discharge of PM (particulate matter) to the atmosphere will not exceed 0.47 pound per hour, nor more than 2.05 tons per year.
- b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed 0.47 pound per hour, nor more than 2.05 tons per year.
- c. The opacity from the exhaust stack of the baghouse that controls **S2.001 through S2.005** will not equal or exceed 20 percent in accordance with NAC 445B.22017.

3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)

- a. The maximum allowable throughput rate for **S2.001 through S2.005**, each, will not exceed 600.0 tons of non-hazardous waste materials and/or biomass per any 24-hour period, nor more than 219,000.0 tons per any 12-month rolling period.
- b. Feedstock may include household wastes, as defined by NRS 459.432; other waste materials that are not covered under the definition of "hazardous waste", as defined in NRS 459.430; and biomass.
- c. **System 1** will not process low-level radioactive wastes.
- d. **System 1** will not process hazardous waste prohibited pursuant to Resource Conservation and Recovery Act (RCRA).
- e. **S2.001 through S2.005**, each, may operate 24 hours per day and 8,760 hours per calendar year.

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)

a. Monitoring and Recordkeeping

Permittee, upon the issuance date of this permit, will:

- (1) Monitor the throughput rate of non-hazardous waste materials and/or biomass for **S2.001 through S2.005**, each, on a daily basis.
- (2) Monitor the hours of operation for **S2.001 through S2.005**, each, on a daily basis.
- (3) The required monitoring established in (1) and (2) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily throughput rate of non-hazardous waste materials and/or biomass in tons, for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The monthly throughput rate in tons per calendar month, and the corresponding annual throughput rate in tons per 12-month rolling period. The monthly throughput rate will be determined at the end of each calendar month as the sum of each total daily throughput rate as determined in (b) above for each day of the calendar month. The annual throughput rate will be determined at the end of each calendar month as the sum of the monthly throughput rates for the 12 immediately preceding calendar months.



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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section V. Specific Operating Conditions (continued)

A. Emission Units S2.001 through S2.005 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

b. Performance/Compliance Testing (NAC 445B.252.1)

At least 90 days prior to the date of expiration of this permit, but no earlier than 365 days from the date of expiration of this permit, Permittee will conduct and record the following performance tests on the exhaust stack of the baghouse that controls **S2.001 through S2.005**:

- (1) Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The sample volume for each test run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250°F)) in order to prevent water condensation on the filter.
- (2) A Method 201A test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM₁₀.
- (3) The Method 201A test required in this section may be replaced by a Method 5 test. All particulate captured in the Method 5 tests performed under this provision shall be considered PM₁₀ emissions for determination of compliance with the emission limitations established in A.2 of this section for **S2.001 through S2.005**.
- (4) For the purposes of demonstrating compliance with the opacity standard established in A.2.c of this section, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- (5) Performance tests required under this section shall use the methods specified and be conducted for a minimum of 60 minutes for each test run, unless otherwise approved by the Director.
- (6) Performance tests required under this section that are conducted below the maximum allowable throughput, as established in A.3.a of this section, shall be subject to the director's review to determine if the throughputs during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- (7) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.



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Section V. Specific Operating Conditions (continued)

B. Emission Units S2.006 through S2.010 Location North 4,377.87 km, East 286.15 km, UTM (Zone 11, NAD 83)

System 2 – Feedstock Handling and Conveying

S	2.006	Walking Floor Conveyor
S	2.007	Scalping Conveyor
S	2.008	Materials Conveyor
S	2.009	Materials Metering Bins
S	2.010	Airlock Screw Conveyors

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)

- a. **System 2** is located within the feedstock storage building. Particulate emissions within the feedstock storage building from **S2.006 through S2.010** shall be ducted to a control system consisting of a baghouse with 100% capture and a maximum volume flow rate of 9,105 dry standard cubic feet per minute (dscfm).
- b. **Descriptive Stack Parameters for Feedstock Handling Baghouse**
Stack Height – 10 feet
Stack Diameter – 1.5 feet
Exhaust Temperature – Ambient

2. Emission Limits (NAC 445B.305; NAC 445B.346.1)

On and after the date of startup of **S2.006 through S2.010**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack of the baghouse that controls **S2.006 through S2.010** the following pollutants in excess of the following specified limits:

- a. The discharge of PM (particulate matter) to the atmosphere will not exceed 0.39 pound per hour, nor more than 1.71 tons per year.
- b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed 0.39 pound per hour, nor more than 1.71 tons per year.
- c. The opacity from the exhaust stack of the baghouse that controls **S2.006 through S2.010** will not equal or exceed 20 percent in accordance with NAC 445B.22017.

3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)

- a. The maximum allowable throughput rate for **S2.006 through S2.010**, each, will not exceed 600.0 tons of non-hazardous waste materials and/or biomass per any 24-hour period, nor more than 219,000.0 tons per any 12-month rolling period.
- b. Feedstock may include household wastes, as defined by NRS 459.432; other waste materials that are not covered under the definition of "hazardous waste", as defined in NRS 459.430; and biomass.
- c. **System 2** will not process low-level radioactive wastes.
- d. **System 2** will not process hazardous waste prohibited pursuant to Resource Conservation and Recovery Act (RCRA).
- e. **S2.006 through S2.010**, each, may operate 24 hours per day and 8,760 hours per calendar year.

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)

a. Monitoring and Recordkeeping

Permittee, upon the issuance date of this permit, will:

- (1) Monitor the throughput rate of non-hazardous waste materials and/or biomass for **S2.006 through S2.010**, each, on a daily basis.
- (2) Monitor the hours of operation for **S2.006 through S2.010**, each, on a daily basis.
- (3) The required monitoring established in (1) and (2) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily throughput rate of non-hazardous waste materials and/or biomass in tons, for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The monthly throughput rate in tons per calendar month, and the corresponding annual throughput rate in tons per 12-month rolling period. The monthly throughput rate will be determined at the end of each calendar month as the sum of each total daily throughput rate as determined in (b) above for each day of the calendar month. The annual throughput rate will be determined at the end of each calendar month as the sum of the monthly throughput rates for the 12 immediately preceding calendar months.



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Section V. Specific Operating Conditions (continued)

B. Emission Units S2.006 through S2.010 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) - continued

b. Performance/Compliance Testing (NAC 445B.252.1)

At least 90 days prior to the date of expiration of this permit, but no earlier than 365 days from the date of expiration of this permit, Permittee will conduct and record the following performance tests on the exhaust stack of the baghouse that controls **S2.006 through S2.010**:

- (1) Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The sample volume for each test run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250°F)) in order to prevent water condensation on the filter.
- (2) A Method 201A test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM₁₀.
- (3) The Method 201A test required in this section may be replaced by a Method 5 test. All particulate captured in the Method 5 tests performed under this provision shall be considered PM₁₀ emissions for determination of compliance with the emission limitations established in B.2 of this section for **S2.006 through S2.010**.
- (4) For the purposes of demonstrating compliance with the opacity standard established in B.2.c of this section, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- (5) Performance tests required under this section shall use the methods specified and be conducted for a minimum of 60 minutes for each test run, unless otherwise approved by the Director.
- (6) Performance tests required under this section that are conducted below the maximum allowable throughput, as established in B.3.a of this section, shall be subject to the director's review to determine if the throughputs during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- (7) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.



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Section V. Specific Operating Conditions

C. **Emission Unit S2.011** Location North 4,378.02 km, East 285.97 km, UTM (Zone 11, NAD 83)

System 3 – Synthesis Gas (Syngas) Gasification Unit

S 2.011 Syngas Gasification Unit - consists of Steam Reformer with Fluidized Bed, Partial Oxidation Phase

1. **Air Pollution Control Equipment** (NAC 445B.308.7, NAC 445B.346.1)
Emissions from S2.011 shall be controlled by the Syngas Gasification Unit being totally enclosed. The primary emission output from S2.011 is cleaned synthesis gas (syngas). The syngas cleaning system includes a venturi scrubber, amine system, activated carbon guard beds, water-gas shift reactor, and hydrogen recovery. During normal operations the cleaned syngas from S2.011 is ducted to and used as a feedstock for the Fischer-Tropsch Liquids Production Plant (System 8) and/or ducted to and used as a fuel for the Boiler (System 5). During plant startup operations, plant shutdown operations, and emergency operations the syngas is ducted to the Ground Level Enclosed Flare (System 6).
2. **Emission Limits** (NAC 445B.305, NAC 445B.346.1)
System 3 is totally enclosed and engineered for 100% containment of emissions. Syngas is ducted to System 5, System 6, or System 8.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable feedstock for S2.011 will not exceed 600.0 tons of non-hazardous waste materials and/or biomass per any 24-hour period, nor more than 219,000.0 tons of non-hazardous waste materials and/or biomass per 12-month rolling period.
 - b. Feedstock may include household wastes, as defined by NRS 459.432; the organic component of municipal solid waste (MSW) derived from the residual materials remaining after recycling operations are performed; construction and demolition waste; other waste materials that are not covered under the definition of "hazardous waste", as defined in NRS 459.430; and biomass.
 - c. S2.011 will not process low-level radioactive wastes.
 - d. S2.011 will not process hazardous waste prohibited pursuant to Resource Conservation and Recovery Act (RCRA).
 - e. A minimum temperature of 750° Celsius will be maintained in the Gasifier Chamber of S2.011 when feedstock materials are being fed into the unit.
 - f. A venturi scrubber will remove particulates from the syngas stream and will have a minimum scrubwater flow of 250 gpm. The pH of the scrubwater for the packed column wet scrubber will range from 7.0 to 10.5.
 - g. Carbon guard beds will be used to remove mercury compounds from the syngas stream.
 - h. S2.011 may operate 24 hours per day and 8,760 hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping** (NAC 445B.308.7, NAC 445B.346.2)
Permittee, upon the issuance date of this permit, will:
 - (1) Monitor the type of feedstock materials processed in S2.011.
 - (2) Monitor the throughput rate of feedstock materials for S2.011 on a daily basis.
 - (3) Monitor the hours of operation for S2.011 on a daily basis.
 - (4) Monitor the temperature of the Gasifier Chamber during normal operating conditions.
 - (5) Monitor the syngas cleaning system (syngas flow rate, venturi scrubber flow (water circulation) rate and pH, and carbon guard beds) during normal operating conditions.
 - (6) The syngas stream will be sampled on a monthly basis for the first year of operation for mercury between the carbon guard beds utilizing a mercury vapor analyzer or sampling apparatus. At the end of the first year of operation, Permittee will submit an analysis threshold concentration that establishes a "breakthrough determination" for mercury between the beds and will propose a sampling frequency and bed replacement strategy that ensures control of mercury by the activated carbon beds.
 - (7) The required monitoring established in (1) through (5) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The type of feedstock material being processed.
 - (c) The total daily throughput rate of feedstock materials in tons, for the corresponding date.
 - (d) The total daily hours of operation for the corresponding date.
 - (e) The temperature of the Gasifier Process Chamber during normal operating conditions.
 - (f) The syngas cleaning system (syngas flow rate, venturi scrubber flow rate and pH, and carbon guard beds) during normal operating conditions.
 - (g) The results of syngas stream sampling.
 - (h) The monthly throughput rate in tons per calendar month, and the corresponding annual throughput rate in tons per 12-month rolling period. The monthly throughput rate will be determined at the end of each calendar month as the sum of each total daily throughput rate as determined in (c) above for each day of the calendar month. The annual throughput rate will be determined at the end of each calendar month as the sum of the monthly throughput rates for the 12 immediately preceding calendar months.



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Section V. Specific Operating Conditions (continued)

D1. Emission Unit S2.032 Location North 4,377.98 km, East 286.08 km, UTM (Zone 11, NAD 83)

System 4A – Hydrocracker Unit Heater

S 2.032 8.0 MMBtu/hr Natural Gas Fired Hydrocracker Unit Heater

1. **Air Pollution Control Equipment** (NAC 445B.308.7, NAC 445B.346.1)
 - a. **S2.032** has no add-on controls; venting to the atmosphere through an individual stack.
 - b. **Descriptive Stack Parameters**
Stack Height – 19 feet
Stack Diameter – 0.84 feet
Exhaust Temperature – 500 °F
Exhaust Flow Rate – 1,189 dscfm
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.032**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack for **S2.032** the following pollutants in excess of the following specified limits:

 - a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.061** pound per hour, nor more than **0.27** ton per year.
 - b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.061** pound per hour, nor more than **0.27** ton per year.
 - c. The discharge of sulfur dioxide to the atmosphere will not exceed **0.0048** pound per hour, nor more than **0.021** ton per year.
 - d. The discharge of nitrogen oxides to the atmosphere will not exceed **0.80** pound per hour, nor more than **3.51** tons per year.
 - e. The discharge of carbon monoxide to the atmosphere will not exceed **0.67** pound per hour, nor more than **2.95** tons per year.
 - f. The discharge of volatile organic compounds to the atmosphere will not exceed **0.044** pound per hour, nor more than **0.19** ton per year.
 - g. The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in **Section VI.A Emissions Cap** of this operating permit.
 - h. The opacity from the stack discharge of **S2.032** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable heat input rate for **S2.032** will not exceed **8.0 MMBtu** per any one-hour period, combusting a maximum of **8,013.0** cubic feet per hour of natural gas.
 - b. **S2.032** may operate **24** hours per day and **8,760** hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping** (NAC 445B.308.7, NAC 445B.346.2)

Permittee, upon the issuance date of this permit, will:

 - (1) Monitor and record the natural gas consumption rate in cubic feet for **S2.032** on a daily basis.
 - (2) Monitor and record the hours of operation for **S2.032** on a daily basis.
 - (3) Monitor and record the carbon dioxide equivalents (CO₂e) in tons for **S2.032** on a monthly basis.
 - (4) The required monitoring established in (1) through (3) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily natural gas consumption in cubic feet for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The corresponding average hourly natural gas consumption in cubic feet per hour. The average hourly natural gas consumption rate will be determined from the total daily consumption rate and the total daily hours of operation recorded in (b) and (c) above.
 - (e) The monthly natural gas consumption rate in cubic feet per calendar month, and the corresponding annual natural gas consumption rate in cubic feet per 12-month rolling period. The monthly natural gas consumption rate will be determined at the end of each calendar month as the sum of each total daily natural gas consumption rate as determined in (d) above for each day of the calendar month. The annual natural gas consumption rate will be determined at the end of each calendar month as the sum of the monthly natural gas consumption rates for the 12 immediately preceding calendar months.
 - (f) The monthly total CO₂e shall be calculated based on the natural gas consumption rate developed from data collected in (e) above, a standard heat content value for natural gas (Btu/scf), and using emission factors for natural gas combustion provided in 40 CFR 98 Subpart A. Both monthly and total 12-month rolling CO₂e emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.



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Section V. Specific Operating Conditions (continued)

D1. Emission Unit S2.032 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

b. Performance/Compliance Testing (NAC 445B.252.1)

At least 90 days prior to the date of expiration of this permit, but no earlier than 365 days from the date of expiration of this permit, Permittee shall determine compliance with the emission limits established in V.D1.2 of this section by conducting performance tests on the exhaust stack of **S2.032** as follows:

- (1) Conduct and record a Method 7E performance test for nitrogen oxide emissions (or equivalent EPA reference method as approved by the director) on the exhaust stack of **S2.032** consisting of three (3) valid runs. The Method 7E emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A.
- (2) Conduct and record a Method 10 performance test for carbon monoxide emissions (or equivalent EPA reference method as approved by the director) on the exhaust stack of **S2.032** consisting of three (3) valid runs. The Method 10 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A.
- (3) For the purposes of demonstrating compliance with the opacity standard established in D1.2.h of this section for **S2.032**, opacity observations shall be conducted on the exhaust stack in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- (4) Permittee shall provide notification of the anticipated date for conducting the performance tests and opacity observations required in D1.4.b of this section. The notification shall be postmarked not less than 30 days prior to such date.
- (5) Within 60 days after completing the performance tests and opacity observations contained in D1.4.b of this section, Permittee shall furnish the director a written report of the results of the performance tests and opacity observations required in D1.4.b of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive.
- (6) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.



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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section V. Specific Operating Conditions (continued)

D2. Emission Unit S2.033 Location North 4,377.96 km, East 286.07 km, UTM (Zone 11, NAD 83)

System 4B – Fractionator Unit Heater

S 2.033 6.0 MMBtu/hr Natural Gas Fired Fractionator Unit Heater

1. **Air Pollution Control Equipment** (NAC 445B.308.7, NAC 445B.346.1)
 - a. **S2.033** has no add-on controls; venting to the atmosphere through an individual stack.
 - b. **Descriptive Stack Parameters**
Stack Height – 19.5 feet
Stack Diameter – 0.66 feet
Exhaust Temperature – 500 °F
Exhaust Flow Rate – 891 dscfm
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.033**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack for **S2.033** the following pollutants in excess of the following specified limits::

 - a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.046** pound per hour, nor more than **0.20** ton per year.
 - b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.046** pound per hour, nor more than **0.20** ton per year.
 - c. The discharge of sulfur dioxide to the atmosphere will not exceed **0.0036** pound per hour, nor more than **0.016** ton per year.
 - d. The discharge of nitrogen oxides to the atmosphere will not exceed **0.60** pound per hour, nor more than **2.63** tons per year.
 - e. The discharge of carbon monoxide to the atmosphere will not exceed **0.50** pound per hour, nor more than **2.21** tons per year.
 - f. The discharge of volatile organic compounds to the atmosphere will not exceed **0.033** pound per hour, nor more than **0.14** ton per year.
 - g. The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in **Section VI.A Emissions Cap** of this operating permit.
 - h. The opacity from the stack discharge of **S2.033** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable heat input rate for **S2.033** will not exceed **6.0 MMBtu** per any one-hour period, combusting a maximum of **6,005.0** cubic feet per hour of natural gas.
 - b. **S2.033** may operate **24** hours per day and **8,760** hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping** (NAC 445B.308.7, NAC 445B.346.2)

Permittee, upon the issuance date of this permit, will:

 - (1) Monitor and record the natural gas consumption rate in cubic feet for **S2.033** on a daily basis.
 - (2) Monitor and record the hours of operation for **S2.033** on a daily basis.
 - (3) Monitor and record the carbon dioxide equivalents (CO₂e) in tons for **S2.033** on a monthly basis.
 - (4) The required monitoring established in (1) through (3) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily natural gas consumption in cubic feet for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The corresponding average hourly natural gas consumption in cubic feet per hour. The average hourly natural gas consumption rate will be determined from the total daily consumption rate and the total daily hours of operation recorded in (b) and (c) above.
 - (e) The monthly natural gas consumption rate in cubic feet per calendar month, and the corresponding annual natural gas consumption rate in cubic feet per 12-month rolling period. The monthly natural gas consumption rate will be determined at the end of each calendar month as the sum of each total daily natural gas consumption rate as determined in (d) above for each day of the calendar month. The annual natural gas consumption rate will be determined at the end of each calendar month as the sum of the monthly natural gas consumption rates for the 12 immediately preceding calendar months.
 - (f) The monthly total CO₂e shall be calculated based on the natural gas consumption rate developed from data collected in (e) above, a standard heat content value for natural gas (Btu/scf), and using emission factors for natural gas combustion provided in 40 CFR 98 Subpart A. Both monthly and total 12-month rolling CO₂e emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.



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Section V. Specific Operating Conditions (continued)

D2. Emission Unit S2.033 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

b. Performance/Compliance Testing (NAC 445B.252.1)

At least 90 days prior to the date of expiration of this permit, but no earlier than 365 days from the date of expiration of this permit, Permittee shall determine compliance with the emission limits established in V.D2.2 of this section by conducting performance tests on the exhaust stack of **S2.033** as follows:

- (1) Conduct and record a Method 7E performance test for nitrogen oxide emissions (or equivalent EPA reference method as approved by the director) on the exhaust stack of **S2.033** consisting of three (3) valid runs. The Method 7E emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A.
- (2) Conduct and record a Method 10 performance test for carbon monoxide emissions (or equivalent EPA reference method as approved by the director) on the exhaust stack of **S2.033** consisting of three (3) valid runs. The Method 10 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A.
- (3) For the purposes of demonstrating compliance with the opacity standard established in D2.2.h of this section for **S2.033**, opacity observations shall be conducted on the exhaust stack in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- (4) Permittee shall provide notification of the anticipated date for conducting the performance tests and opacity observations required in D2.4.b of this section. The notification shall be postmarked not less than 30 days prior to such date.
- (5) Within 60 days after completing the performance tests and opacity observations contained in D2.4.b of this section, Permittee shall furnish the director a written report of the results of the performance tests and opacity observations required in D2.4.b of this section. All information and analytical results of testing and sampling must be certified as to the truth and accuracy and as to their compliance with NAC 445B.001 to 445B.3689, inclusive.
- (6) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.



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Section V. Specific Operating Conditions (continued)

D3. Emission Unit S2.034 Location North 4,377.97 km, East 286.13 km, UTM (Zone 11, NAD 83)

System 4C – Product Stripper Unit Heater

S 2.034 2.0 MMBtu/hr Natural Gas Fired Product Stripper Unit Heater

1. Air Pollution Control Equipment NAC 445B.308.7, NAC 445B.346.1)

- a. **S2.034** has no add-on controls; venting to the atmosphere through an individual stack.
- b. Descriptive Stack Parameters
Stack Height – 16.5 feet
Stack Diameter – 0.33 feet
Exhaust Temperature – 500 °F
Exhaust Flow Rate – 297 dscfm

2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.034**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack for **S2.034** the following pollutants in excess of the following specified limits::

- a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.015** pound per hour, nor more than **0.066** ton per year.
- b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.015** pound per hour, nor more than **0.066** ton per year.
- c. The discharge of sulfur dioxide to the atmosphere will not exceed **0.0012** pound per hour, nor more than **0.0053** ton per year.
- d. The discharge of nitrogen oxides to the atmosphere will not exceed **0.20** pound per hour, nor more than **0.88** ton per year.
- e. The discharge of carbon monoxide to the atmosphere will not exceed **0.17** pound per hour, nor more than **0.74** ton per year.
- f. The discharge of volatile organic compounds to the atmosphere will not exceed **0.011** pound per hour, nor more than **0.048** ton per year.
- g. The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in **Section VI.A Emissions Cap** of this operating permit.
- h. The opacity from the stack discharge of **S2.034** will not equal or exceed **20** percent in accordance with NAC 445B.22017.

3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)

- a. The maximum allowable heat input rate for **S2.034** will not exceed **2.0 MMBtu** per any one-hour period, combusting a maximum of **1,999.0** cubic feet per hour of natural gas.
- b. **S2.034** may operate **24** hours per day and **8,760** hours per calendar year.

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)

a. Monitoring and Recordkeeping (NAC 445B.308.7, NAC 445B.346.2)

Permittee, upon the issuance date of this permit, will:

- (1) Monitor and record the natural gas consumption rate in cubic feet for **S2.034** on a daily basis.
- (2) Monitor and record the hours of operation for **S2.034** on a daily basis.
- (3) Monitor and record the carbon dioxide equivalents (CO₂e) in tons for **S2.034** on a monthly basis.
- (4) The required monitoring established in (1) through (3) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily natural gas consumption in cubic feet for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The corresponding average hourly natural gas consumption in cubic feet per hour. The average hourly natural gas consumption rate will be determined from the total daily consumption rate and the total daily hours of operation recorded in (b) and (c) above.
 - (e) The monthly natural gas consumption rate in cubic feet per calendar month, and the corresponding annual natural gas consumption rate in cubic feet per 12-month rolling period. The monthly natural gas consumption rate will be determined at the end of each calendar month as the sum of each total daily natural gas consumption rate as determined in (d) above for each day of the calendar month. The annual natural gas consumption rate will be determined at the end of each calendar month as the sum of the monthly natural gas consumption rates for the 12 immediately preceding calendar months.
 - (f) The monthly total CO₂e shall be calculated based on the natural gas consumption rate developed from data collected in (e) above, a standard heat content value for natural gas (Btu/scf), and using emission factors for natural gas combustion provided in 40 CFR 98 Subpart A. Both monthly and total 12-month rolling CO₂e emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.



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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.013a-b-c-d and S2.014 Location North 4,377.90 km, East 286.17 km, UTM (Zone 11, NAD 83)

System 5 – Pulse Combustor Heaters and Boiler

S	2.013a	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 1
S	2.013b	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 2
S	2.013c	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 3
S	2.013d	17.0 MMBtu/hr Natural Gas Fired Pulse Combustor 4
S	2.014	53.1 MMBtu/hr Combined Natural Gas, Syngas, Purge Gas Fired Boiler (mfd 2014)

1. Air Pollution Control Equipment (NAC 445B.308.7, NAC 445B.346.1)

- a. **S2.013a-b-c-d** have no add-on controls; ducting through the heat recovery system and included in the emissions from **S2.014**. **S2.014** has installed flue gas recirculation and low-NOx burners. Emissions from the common exhaust stack of **S2.013a-b-c-d** and **S2.014** exhaust to the atmosphere.
- b. **Descriptive Stack Parameters for S2.013a-b-c-d and S2.014**
Stack Height – 65 feet
Stack Diameter – 4.0 feet
Exhaust Temperature – 320 °F
Exhaust Flow Rate – 17,500 dscfm

2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.013a-b-c-d** and **S2.014**, Permittee will not discharge or cause the discharge from the common stack into the atmosphere the following pollutants from **S2.013a-b-c-d** and **S2.014** in excess of the following specified limits:

- a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.56** pound per hour, nor more than **2.47** tons per year, combined.
- b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.56** pound per hour, nor more than **2.47** tons per year, combined.
- c. The discharge of sulfur dioxide to the atmosphere will not exceed **0.07** pound per hour, nor more than **0.31** ton per year, combined.
- d. The discharge of nitrogen oxides to the atmosphere will not exceed **6.97** pounds per hour, nor more than **30.54** tons per year, combined.
- e. The discharge of carbon monoxide to the atmosphere will not exceed **4.15** pounds per hour, nor more than **18.17** tons per year, combined.
- f. The discharge of volatile organic compounds to the atmosphere will not exceed **0.41** pound per hour, nor more than **1.81** tons per year, combined.
- g. The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in **Section VI.A Emissions Cap** of this operating permit.
- h. The opacity from the common stack discharge of **S2.013a-b-c-d** and **S2.014** will not equal or exceed **20** percent in accordance with NAC 445B.22017.

3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)

- a. The maximum allowable heat input rate for **S2.013a-b-c-d** each, will not exceed **17.0** MMBtu per any one-hour period, combusting a maximum of **17,017.0** cubic feet per hour of natural gas.
- b. The maximum allowable heat input rate for **S2.014** will not exceed **53.1** MMBtu per any one-hour period, combusting a combined maximum of **23,100.0** cubic feet per hour of natural gas, **43,600.0** cubic feet per hour of purge gas, and **47,500.0** cubic feet per hour of syngas.
- c. **S2.013a-b-c-d** and **S2.014**, each, may operate **24** hours per day and **8,760** hours per calendar year.



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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.013a-b-c-d and S2.014 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)

- a. **NOx (Nitrogen Oxides) Continuous Emissions Monitoring** (NAC 445B.252, NAC 445B.256 through NAC 445B.265)
Permittee will install, calibrate, maintain, and operate in accordance with NAC 445B.257 through NAC 445B.265 a continuous emissions monitoring system (CEMS) (consisting of a NOx pollutant concentration monitor and a CO₂ diluent gas analyzer) with a continuous data collection system (CDCS) for measuring and recording NO_x concentration on a dry basis (in ppm) and CO₂ concentration (in ppm) on a dry basis, and a continuous exhaust flow meter for determination of the mass emissions of NO_x and CO₂ (in pounds/hour) from the common exhaust stack for **S2.013a-b-c-d** and **S2.014**. The in-stack NO_x and CO₂ pollutant concentration monitor and flow sampling devices will be installed at appropriate locations in the common exhaust stack for **S2.013a-b-c-d** and **S2.014** to accurately and continuously measure the NO_x concentrations and volumetric flow rate on a dry basis. The NO_x CEMS and CDCS shall be installed and calibrated prior to operation of **S2.013a-b-c-d** and **S2.014**. Verification of the operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device.
- (1) The continuous monitoring system required above shall be operated and data recorded during all periods of operation, including startup, shutdown, malfunction or emergency conditions of **S2.013a-b-c-d** and **S2.014** except for continuous monitoring system maintenance, breakdowns, repairs, calibration checks and zero and span adjustments. Data is recorded during calibration checks, and zero and span adjustments. The CEMS and CDCS will follow Performance Specifications 2 and 3 pursuant to 40 CFR Part 60, Appendix B (or any other appropriate EPA performance specifications contained in 40 CFR Part 60, Appendix B) and the Quality Assurance Procedures pursuant to 40 CFR Part 60, Appendix F.
 - (2) The CEMS will be installed in the common exhaust stack for **S2.013a-b-c-d** and **S2.014** such that the representative measurements of emissions from **S2.013a-b-c-d** and **S2.014** are obtained utilizing the procedure for location of the CEMS contained in Performance Specifications 2 and 3 pursuant to 40 CFR Part 60 Appendix B (or any other appropriate EPA performance specifications contained in 40 CFR Part 60, Appendices A and B). (NAC 445B.257.1)
 - (3) The exhaust flow monitoring device will be installed in the common exhaust stack for **S2.013a-b-c-d** and **S2.014** such that the representative measurements of exhaust flow from **S2.013a-b-c-d** and **S2.014** are obtained and calculated to dry standard cubic feet per hour (dscfh). The performance of the exhaust flow sampling device and the accuracy of the exhaust flow calculation (in dscfh) will be demonstrated during the performance tests as required in Sections IIA.E.2 and V.E.4.d of this operating permit. The demonstration shall be comprised of a series of twelve 21-minute test runs.
 - (4) The CEMS and CDCS will complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. Hourly averages shall be computed using at least one data point in each 15-minute quadrant of an hour. Hourly averages shall be computed from four or more equally spaced data points within the hour. (NAC 445B.263, NAC 445B.264).
 - (5) In accordance with NAC 445B.261, check the zero (or low level value between zero and 20 percent of the span value) and span (50 to 100 percent of the span value) calibration drifts at least once daily. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour span drift exceeds two times the limits of the applicable performance specifications as identified in 40 CFR Part 60, Appendix B. The system must allow the amount of excess zero and span drift measurements at the 24-hour interval checks to be recorded and quantified, whenever specified.
 - (6) For extractive continuous monitoring systems measuring gases, minimum procedures must include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Institute of Standards and Technology reference gases must be used whenever these reference gases are available. The span and zero gas mixtures must be the same composition as specified in Appendix B of 40 CFR Part 60. Every 6 months after the date of manufacture, span and zero gases must be reanalyzed by conducting triplicate analyses with Reference Method 7 for NO_x, and Reference Method 3 for CO₂ respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer. (NAC 445B.262.1(a)).
 - (7) Based on the measured NO_x and CO₂ concentration (ppm, based on a dry basis) and hourly exhaust gas flow rate (dscfh), calculate the hourly NO_x and CO₂ emission rates, respectively, in pounds per hour, utilizing the CEMS, CDCS, and exhaust flow meter data collected. The emission rate will determine compliance with the NO_x emission limits established in E.2.d of this section.
 - (8) Permittee shall conduct quarterly audits and report as required by 40 CFR Part 60, Appendix F, Procedure 1, section 5 and 7.
 - (9) Permittee shall conduct and record the Relative Accuracy Test Audits (RATAs) required to certify the performance of the CEMS described in E.4.a of this section. The initial RATAs will be conducted during the performance tests required in Section IIA.E.2 of this operating permit. Annual RATAs must be conducted once every four consecutive operating quarters after the initial RATAs are performed. In the case where the affected facility is off-line (does not operate) in the fourth calendar quarter since the quarter of the previous RATA, the RATA shall be performed in the quarter in which the unit recommences operation (40 CFR Part 60 Appendix F 5.1.4). The RATAs must be done as prescribed in 40 CFR Part 60, Appendix F, and in accordance with the notification, protocol approval, and reporting requirements of NAC 445B.252 Testing and Sampling, and NAC 445B.259 Monitoring systems: Performance evaluations.
 - (10) Permittee shall submit a Quality Assurance (QA) Plan for NO_x in accordance with the requirements set forth in 40 CFR Part 60 Appendix F, NAC 445B.252-267, and this operating permit. The Permittee shall submit the QA Plan to the Director 90 days prior to startup. Any revisions to the QA Plan must be notified to the Director before becoming effective.



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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.013a-b-c-d and S2.014 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

b. Fossil-Based and Bio-Based CO₂ (Carbon Dioxide) Emissions Monitoring (NAC 445B.252.1)

In addition to monitoring the total combined CO₂ emissions from S2.013a-b-c-d and S2.014, as required in E.4.a of this section, Permittee shall conduct monitoring of the ratio of fossil-based and bio-based CO₂ emitted from the stack for S2.013a-b-c-d and S2.014. Monitoring shall be conducted on a monthly basis, using a continuously drawn sample from the combined stack using ASTM Method D7459 for sample collection and ASTM Method D6886 for sample analysis. The ratio of the biogenic and non-biogenic (fossil-based) carbon shall be used to calculate the monthly bio-based and fossil-based CO₂ that is emitted from the combined stack for S2.013a-b-c-d and S2.014. The sample shall be drawn continuously during operating conditions, in accord with the options described in 40 CFR 98 Subpart C § 98.34(d). Permittee will calculate and record the ratio of fossil-based-to-total CO₂ emissions from S2.013a-b-c-d and S2.014.

c. Visible Emissions Testing (NAC 445B.252.1)

Permittee shall conduct and record a visible emissions test on the exhaust stack for S2.013a-b-c-d and S2.014 in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60 on a monthly basis. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals). Each Method 9 visible emissions test must be conducted by a certified visible emissions reader in accordance with 40 CFR Part 60, Appendix A, and while the emission unit is operating and has the potential to create visible emissions. It will be noted in a contemporaneous log if a Method 9 visible emissions test could not be conducted due to the emissions unit not operating or due to poor weather conditions. The results of the visible emissions tests and any corrective action taken will be recorded in a contemporaneous log.

d. Periodic Performance/Compliance Testing (NAC 445B.252.1)

(1) Permittee will conduct and record the following periodic compliance tests on the exhaust stack for S2.013a-b-c-d and S2.014. The periodic compliance tests will be conducted on an annual basis with no more than one year and 90 days between compliance tests. The first round of periodic compliance tests will be conducted within 90 days of the one-year anniversary of the completion of the initial performance testing required under Section IIA.E.2 of this operating permit.

- (a) Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The Method 5 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 5, and include the back-half catch. The sample time for each test run shall be at least 120 minutes. The sample volume for each test run shall be at least 1.70 dscm (60.0 dscf). The temperature of the sample gas in the probe and filter holder shall be monitored and maintained at 160±14 °C (320±25 °F).
- (b) A Method 201A and 202 test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM₁₀.
- (c) The Method 201A and 202 test required in this section may be replaced by a Method 5 test that includes the back-half catch. All particulate captured in the Method 5 tests with back-half catch performed under this provision shall be considered PM₁₀ emissions for determination of compliance with the emission limitations established in E.2 of this section.
- (d) Conduct and record a Method 7 performance test for NOx on the exhaust stack of S2.013a-b-c-d and S2.014. The Method 7 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 7.
- (e) Conduct and record a Method 10 performance test for CO on the exhaust stack of S2.013a-b-c-d and S2.014. The Method 10 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 10.
- (f) For the purposes of demonstrating compliance with the opacity standard established in E.2 of this section for S2.013a-b-c-d and S2.014, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- (g) The NOx CEMS required in E.4.a of this section shall be operating concurrently with the performance tests required in this section. Results of the NOx CEMS monitoring during the individual performance tests conducted in E.4.d.(1) of this section shall be submitted with the report as required in Section I.L.8 of this operating permit.
- (h) The performance tests required under this section that are conducted below the maximum allowable heat input rates, as established in E.3 of this section for S2.013a-b-c-d and S2.014, shall be subject to the director's review to determine if the heat input rates during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- (i) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.
- (j) After at least three valid compliance tests, the Director may authorize in writing a less frequent compliance testing schedule than the annual testing schedule required under E.4.d.(1) of this section. The authorization will be based on a pollutant-by-pollutant review of the emission rates measured during each compliance test. The review will include an evaluation of the variability in the measured emission rates and the percentage amount that the measured emission rates are below the emission limit. The review will also include an evaluation of the operating heat input rates recorded during each compliance test, and any other information requested by the Director. The compliance testing frequency will not be less than one test every five years.



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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.013a-b-c-d and S2.014 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

d. Periodic Performance/Compliance Testing (NAC 445B.252.1)

- (2) At least 90 days prior to the date of expiration of this permit, but no earlier than 365 days from the date of expiration of this permit, Permittee will conduct and record the following performance tests on the exhaust stack of **S2.013a-b-c-d and S2.014**:
 - (a) Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine the particulate matter concentration. The Method 5 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 5, and include the back-half catch. The sample time for each test run shall be at least 120 minutes. The sample volume for each test run shall be at least 1.70 dscm (60.0 dscf). The temperature of the sample gas in the probe and filter holder shall be monitored and maintained at 160±14 °C (320±25 °F).
 - (b) A Method 201A and 202 test in accordance with 40 CFR Part 51, Appendix M (or an alternative EPA reference method approved by the director) for PM₁₀.
 - (c) The Method 201A and 202 test required in this section may be replaced by a Method 5 test that includes the back-half catch. All particulate captured in the Method 5 tests with back-half catch performed under this provision shall be considered PM₁₀ emissions for determination of compliance with the emission limitations established in E.2 of this section.
 - (d) Conduct and record a Method 6 performance test for SO₂ on the exhaust stack of **S2.013a-b-c-d and S2.014**. The Method 6 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 6.
 - (e) Conduct and record a Method 7 performance test for NO_x on the exhaust stack of **S2.013a-b-c-d and S2.014**. The Method 7 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 7.
 - (f) Conduct and record a Method 10 performance test for CO on the exhaust stack of **S2.013a-b-c-d and S2.014**. The Method 10 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 10.
 - (g) Conduct and record a Method 25 performance test for VOC on the exhaust stack of **S2.013a-b-c-d and S2.014**. The Method 25 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 25.
 - (h) For the purposes of demonstrating compliance with the opacity standard established in E.2.g of this section for **S2.013a-b-c-d and S2.014**, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
 - (i) The NO_x CEMS required in E.4.a of this section shall be operating concurrently with the performance tests required in this section. Results of the NO_x CEMS monitoring during the individual performance tests conducted in E.4.d.(2) of this section shall be submitted with the report as required in Section I.L.8 of this operating permit.
 - (j) The performance tests required under this section that are conducted below the maximum allowable heat input rates, as established in E.3 of this section for **S2.013a-b-c-d and S2.014**, shall be subject to the director's review to determine if the heat input rates during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
 - (k) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.



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Section V. Specific Operating Conditions (continued)

E. Emission Units S2.013a-b-c-d and S2.014 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

e. Monitoring and Recordkeeping (NAC 445B.308.7, NAC 445B.346.2)

Permittee, upon the issuance date of this permit, will:

- (1) Monitor and record the combined syngas consumption rate in cubic feet for **S2.013a-b-c-d** on a daily basis.
- (2) Monitor and record the natural gas, syngas, and purge gas heat input rates in MMBTU for **S2.014** on a daily basis.
- (3) Monitor and record the natural gas, syngas, and purge gas consumption rate for **S2.014** in standard cubic feet on a daily basis.
- (4) Monitor and record the hours of operation for **S2.013a-b-c-d** and **S2.014**, each, on a daily basis.
- (5) Monitor and record the hourly average mass emissions of NO_x in ppm (dry basis) for **S2.013a-b-c-d** and **S2.014** using the data collected from the CEMS system required under E.4.a of this section.
- (6) Monitor and record the hourly average CO₂ concentration in ppm (dry basis) for **S2.013a-b-c-d** and **S2.014** using data collected from the CEMS system required under E.4.a of this section.
- (7) Monitor and record the hourly average exhaust gas flow rate in dscfh.
- (8) Monitor and record any modifications made to the NO_x CEMS which could affect the ability of the CEMS systems to comply with the appropriate performance specification in 40 CFR Part 60 Appendix B.
- (9) Monitor and record the combined carbon dioxide equivalents (CO₂e) in tons for **S2.013a-b-c-d** and **S2.014** on a monthly basis.
- (10) Monitor and record the observations from the Reference Method 22 and 9 testing as required in E.4.b of this section.
- (11) The required monitoring established in (1) through (10) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily natural gas consumption in cubic feet for **S2.013a-b-c-d** for the corresponding date.
 - (c) The total daily natural gas, syngas, and purge gas heat input rate in MMBtu for **S2.014** for the corresponding date and the total fuel heat input rate.
 - (d) The total daily natural gas, syngas, and purge gas consumption rate in standard cubic feet for **S2.014** for the corresponding date.
 - (e) The total daily hours of operation of **S2.013a-b-c-d** and **S2.014** for the corresponding date.
 - (f) The corresponding average hourly combined natural gas consumption in cubic feet per hour for **S2.013a-b-c-d**. The average hourly combined natural gas consumption rate will be determined from the total daily consumption rate and the total daily hours of operation recorded in (b) and (e) above.
 - (g) The corresponding average hourly natural gas, syngas, and purge gas consumption in MMBtu per hour for **S2.014**. The average hourly natural gas, syngas, and purge gas consumption rate will be determined from the total daily consumption rates and the total daily hours of operation recorded in (c) and (e) above.
 - (h) The corresponding average hourly natural gas, syngas, and purge gas consumption in cubic feet per hour for **S2.014**. The average hourly natural gas, syngas, and purge gas consumption rate will be determined from the total daily consumption rates and the total daily hours of operation recorded in (d) and (e) above.
 - (i) The hourly average exhaust gas flow rate in dscfh.
 - (j) The hourly average NO_x concentration (in ppm dry basis) measured in E.4.a of this section.
 - (k) The hourly average CO₂ concentration (in percent) measured in E.4.a of this section.
 - (l) The hourly average mass emissions of NO_x, in terms of pounds per hour, as NO₂, using the data collected from the continuous monitoring systems required under E.4.a of this section. At the end of each calendar month, calculate and record the total monthly NO_x emissions and the total NO_x emissions for the previous 12 months. The first hourly average will be calculated by taking the average of the first three hours of data. Subsequent averages will drop off the oldest hour of data and add the newest hour's data to maintain a continuous hourly average based on the most recent three hours of data. Excess emissions for NO_x shall be defined as any 3-hour period during which the average emissions of NO_x as measured by the CEMS devices or a compliance test, exceed the maximum emission limits set forth in E.2.d of this section.
 - (m) The hourly average mass emissions of CO₂ in lbs/hour using data collected in the CEMS using the data collected from the continuous monitoring systems required under E.4.a of this section. At the end of each calendar month, calculate and record the total monthly CO₂ emissions and the total CO₂ emissions for the previous 12 months. Both the monthly and total 12-month rolling CO₂ emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.
 - (n) The monthly total CO₂e shall be calculated based on the natural gas, syngas, and purge gas consumption rates developed from data collected in (b) above and using emission factors for natural gas combustion provided in 40 CFR 98 Subpart A. Both monthly and total 12-month rolling CO₂e emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.
 - (o) The dates and times for any CEMS malfunctions and any actions taken.
 - (p) A description of any modifications made to the CEMS.
 - (q) Maintain files of all measurements related to the CEMS, including calibration checks, quarterly CEMS audits, RATAs, and other quality assurance measurements.
 - (r) The dates, times, and observations for the visual emissions test (and Method 9, if required) testing and any corrective action taken.



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Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section V. Specific Operating Conditions (continued)

E. Emission Units S2.013a-b-c-d and S2.014 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

f. Monitoring and Recordkeeping (NAC 445B.308.7, NAC 445B.346.2)

New Source Performance Standards (NSPS) – Notification and Recordkeeping 40 CFR Part 60, Section 60.7(b); 40 CFR Part 60.48c (Subpart Dc, "Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units"). Upon issuance date of this permit Permittee shall:

- (1) Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.**
- (2) Pursuant to 40 CFR Part 60, Subpart Dc, Section 60.48c(g) and 60.48c(i), facility shall record and maintain readily accessible records of the amounts of natural gas, syngas, and purge gas combusted during each day of operation for **S2.013a-b-c-d and S2.014**. The records shall be kept for a period of 2 years following the date of such record.**
- (3) Pursuant to 40 CFR Part 60, Subpart Dc, Section 60.48c(j), facility shall report the results in E.4.f.(2) of this section every 6 months. The reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.**



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Section V. Specific Operating Conditions (continued)

F. Emission Unit S2.015 Location North 4,378.02 km, East 285.97 km, UTM (Zone 11, NAD 83)

System 6 – Ground Level Enclosed Flare

S 2.015 Ground Level Enclosed Flare with 0.11 MMBtu/hr Natural Gas Fired Pilot Light

1. Air Pollution Control Equipment (NAC 445B.308.7, NAC 445B.346.1)

a. **S2.015** has no add-on controls; ducting through the flare stack and venting to the outside atmosphere. **S2.015** will be used to combust syngas produced in **System 3** during startup operations, shut down operations, or emergency operations. **S2.015** will be used to combust VOCs and syngas produced in **System 8** during emergency shutdown operations.

b. **Descriptive Flare Parameters**

Height – 160.0 feet

Diameter – 0.19 feet

Temperature during Idling – 140 °F

Temperature during Syngas Combustion – 1400° to 1830 °F

2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.015**, Permittee will not discharge or cause the discharge from the flare stack into the atmosphere the following pollutants in excess of the following specified limits:

- a. The discharge of PM (particulate matter) to the atmosphere will not exceed **15.29** pounds per hour, nor more than **0.35** ton per year.
- b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **15.29** pounds per hour, nor more than **0.35** ton per year.
- c. The discharge of sulfur dioxide to the atmosphere will not exceed **4.44** pounds per hour, nor more than **0.10** ton per year.
- d. The discharge of nitrogen oxides to the atmosphere will not exceed **25.64** pounds per hour, nor more than **0.60** ton per year.
- e. The discharge of carbon monoxide to the atmosphere will not exceed **139.58** pounds per hour, nor more than **3.24** tons per year.
- f. The discharge of volatile organic compounds to the atmosphere will not exceed **52.81** pounds per hour, nor more than **1.23** tons per year.
- g. The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in **Section VI.A Emissions Cap** of this operating permit.
- h. The opacity from the flare stack discharge of **S2.015** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
- i. **New Source Performance Standards (NSPS) – 40 CFR Part 60.18, Subpart A, General Control Device Requirements**
Pursuant to 40 CFR Part 60.18(c)(1), **S2.015** shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR Part 60.18(f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Method 22 of Appendix A shall be used to determine the compliance of **S2.015** with the visible emissions (40 CFR Part 60.18(f)(1)).

3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)

- a. The maximum allowable heat input rate for **S2.015** during pilot (idling) operations will not exceed **0.11** MMBtu per any one-hour period, combusting a maximum of **114.9** cubic feet per hour of natural gas.
- b. The maximum allowable heat input rate for **S2.015** during startup operations will not exceed **377.7** MMBtu per any one-hour period, nor more than **15,085.0** MMBtu per 12-month rolling period of syngas with a specific heat content of 240 BTU/scf to 490 BTU/scf.
- c. The maximum allowable heat input rate for **S2.015** during shutdown (syngas depletion from **System 3**, high or lowpressure letdown of equipment containing syngas) operations will not exceed **73.7** MMBtu per any one-hour period, nor more than **1,423.0** MMBtu per 12-month rolling period of syngas with a specific heat content of 240 BTU/scf to 490 BTU/scf.
- d. Pilot (idling) conditions are defined as the period when only the natural gas fired pilot light is operating.
- e. Startup conditions are defined as the period when syngas produced in **System 3** is being ducted to the flare.
- f. Shutdown (planned or emergency) conditions are defined as the period when syngas is ducted to the flare as a result of **System 3** depletion of syngas and/or high or low pressure letdown of equipment containing syngas.
- g. **S2.015** may operate 24 hours per day and 8,760 hours per calendar year.

4. New Source Performance Standards (NSPS) – 40 CFR Part 60.18, Subpart A, General Control Device Requirements

- a. Permittee, upon issuance date of this permit, will demonstrate compliance with:
 - (1) Pursuant to 40 CFR Part 60.18(c)(1), **S2.015** shall be designed for and operated with no visible emissions as determined by the methods specified in 40 CFR Part 60.18(f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Method 22 of Appendix A shall be used to determine the compliance of **S2.015** with the visible emissions (40 CFR Part 60.18(f)(1)).
 - (2) Pursuant to 40 CFR 60.18(c)(2), **S2.015** shall be operated with a flame present at all times, as determined by the methods specified in Section 60.18(f).
 - (3) Pursuant to 40 CFR Part 60.18(c)(3), **S2.015** has the choice of adhering to either the heat content specifications specified in Section 40 CFR 60.18(c)(3)(ii) and the maximum tip velocity specifications in 40 CFR Part 60.18(c)(4), or adhering to the requirements in 40 CFR Part 60.18(c)(3)(i).
 - (4) Pursuant to 40 CFR Part 60.18(c)(4)(i), **S2.015** shall be designed for and operated with an exit velocity, as determined by the methods specified in 40 CFR Part 60.18(f)(4), less than 60 feet/sec.
 - (5) Pursuant to 40 CFR Part 60.18(d), **S2.015** shall be monitored to ensure **S2.015** is operated and maintained in conformance with the design of **S2.015**.
 - (6) Pursuant to 40 CFR Part 60.18(e), **S2.015** shall be operated at all times when emissions may be vented to **S2.015**.
 - (7) Pursuant to 40 CFR Part 60.18(f)(2), the presence of a pilot flame for **S2.015** shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.



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Section V. Specific Operating Conditions (continued)

F. Emission Unit S2.015 (continued)

5. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

a. Monitoring and Recordkeeping (NAC 445B.308.7, NAC 445B.346.2, 40 CFR Part 60.18)

Permittee, upon the issuance date of this permit, will:

- (1) Monitor and record the operating scenario for **System 6** (idling, startup, shutdown, or emergency).
- (2) Monitor and record the natural gas consumption rate in cubic feet for **S2.015** on a daily basis.
- (3) Monitor and record the heat input rate in MMBtu (syngas or combined syngas and Fischer-Tropsch Liquids Production Plant vent gases) for **S2.015** on a daily basis for each operating scenario (startup or shutdown).
- (4) Monitor and record the hours of operation for **S2.015** for each operating scenario (idling, startup, shutdown, or emergency) on a daily basis.
- (5) Monitor the thermocouple or any other equivalent device to detect the presence of a flame during any flaring event.
- (6) Monitor and record the total monthly CO₂e and the total 12-month rolling fossil fuel based CO₂e from **S2.015** using:
 - (a) The natural gas data in F.5.a(2) of this Section and the Global Warming Potential factors in 40 CFR 98 Subpart A, Table A-1 for CO₂, CH₄, and N₂O and the emission factors in 40 CFR 98 Subpart C, Tables C-1 and C-2 for natural gas fuel combustion;
 - (b) The total fuel feed rate for flared syngas data in F.5.a(3) of this Section and the carbon mole fraction of the syngas stream, sampled from E.4.b (System 5) of this Section.
 - (c) Using the applicable monthly fraction of biogenic based and fossil based carbon in the feedstock as developed in E.4.b (System 5) of this Section to determine the biogenic based CO₂ emissions and fossil fuel based CO₂ emissions from the flared streams.
 - (d) The emissions from CH₄ and N₂O in the syngas stream using the heat content of the stream (MMBtu/scf) and the Global Warming Potential factors in 40 CFR 98 Subpart A, Table A-1 for CO₂, CH₄, and N₂O and the emission factors in 40 CFR 98 Subpart C, Tables C-1 and C-2 for biogas combustion.
 - (e) The total CO₂e is based on the sum of the data in F.5.a(6). Maintain a record of the total monthly and 12-month rolling total fossil fuel based and biogenic based CO₂e emissions.
- (8) The required monitoring established in (1) through (6) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The operating scenario(s).
 - (c) The total daily natural gas consumption in cubic feet for the corresponding date.
 - (d) The total daily syngas and Fischer-Tropsch Liquids Production Plant vent gases heat input rate in MMBtu for the corresponding date for each operating scenario (startup or shutdown).
 - (e) The total daily hours of operation for each operating scenario (idling, startup, shutdown, or emergency) for the corresponding date.
 - (f) The corresponding average hourly natural gas consumption in cubic feet per hour. The average hourly natural gas consumption rate will be determined from the total daily consumption rate and the total daily hours of operation recorded in (c) and (e) above.
 - (g) The corresponding average hourly syngas heat input rate in MMBtu per hour for each operating scenario (startup or shutdown). The average hourly syngas heat input rate will be determined from the total daily heat input rate and the total daily hours of operation recorded in (d) and (e) above.
 - (h) The monthly syngas heat input rate in MMBtu per calendar month for each operating scenario (startup, emergency, or shutdown), and the corresponding annual syngas heat input rate in MMBtu per 12-month rolling period for each operating scenario (idling, startup, or shutdown). The monthly syngas heat input rate for each operating scenario (idling, startup, or shutdown) will be determined at the end of each calendar month as the sum of each total daily syngas heat input rate for each operating scenario (idling, startup, or shutdown) as determined in (d) above for each day of the calendar month. The annual syngas heat input rate for each operating scenario (idling, startup, or shutdown) will be determined at the end of each calendar month as the sum of the monthly syngas heat input rates for each operating scenario (idling, startup, or shutdown) for the 12 immediately preceding calendar months. The annual syngas heat input rates will be used insure compliance with F.3.b through F.3.d of this section.
 - (i) The thermocouple or any other equivalent device to detect the presence of a flame during any flaring event shall be noted as detecting the pilot flame is on or off.
 - (j) The total monthly and 12-month rolling total biogenic and fossil-based CO₂e emissions calculated in F.5.a(6) of this Section. Both the monthly and total 12-month rolling CO₂e emissions shall be recorded and included in the plant wide emissions cap in Section VI.A of this Operating Permit.



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Section V. Specific Operating Conditions (continued)

G. Emission Unit S2.016 Location North 4,377.95 km, East 286.04 km, UTM (Zone 11, NAD 83)

System 7 – Sulfur Removal System

S 2.016 Sulfur Removal Packed Absorption Unit

1. Air Pollution Control Equipment (NAC 445B.308.7, NAC 445B.346.1)
 - a. **S2.016** has no add-on controls.
 - b. CO₂ and H₂S are removed from the syngas in the syngas cleaning system (**System 3**) with a venturi scrubber. The scrubber solution is regenerated by flashing off the CO₂ and H₂S. CO₂ and H₂S are also removed by the CO₂/H₂S absorption/removal system (**System 8**). The CO₂ and H₂S from **System 3** and **System 8** are ducted to the sulfur removal packed absorption unit where H₂S is converted to elemental sulfur by an iron redox process and CO₂ is either reintroduced into the process or vented to atmosphere. The elemental sulfur is filtered and removed. The reduced ferrous iron solution is collected and oxidized to ferric iron with a regeneration unit (oxidizer vessel) and re-used in the iron redox process. The regeneration unit is listed as a non-permitted emission unit (**IA1.003**).
 - c. Descriptive Stack Parameters
Stack Height: 80 feet
Stack Diameter: 2.2 feet
Stack Exhaust Temperature: 141 °F
Stack Exit Flow Rate: 7,246 dscfm
2. Emission Limits (NAC 445B.305, NAC 445B.346.1)

On and after the date of startup of **S2.016**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack the following pollutants from **S2.016** in excess of the following specified limits:

 - a. The discharge of hydrogen sulfide to the atmosphere will not exceed 0.32 pound per hour, nor more than 1.41 tons per year.
 - b. The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in **Section VI.A Emissions Cap** of this operating permit.
 - c. The opacity from the stack discharge from **S2.016** will not equal or exceed 20 percent in accordance with NAC 445B.22017.
3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)
 - a. **S2.016** shall be operated in accord with the vendor specifications and operating conditions, which will be provided to the Director prior to the start of construction of **S2.016**.
 - b. **S2.016** may operate 24 hours per day and 8,760 hours per calendar year.



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Section V. Specific Operating Conditions (continued)

G. Emission Unit S2.016 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

a. CO₂ (Carbon Dioxide) Continuous Emissions Monitoring (NAC 445B.252, NAC 445B.256 through NAC 445B.265)

Permittee will install, calibrate, maintain, and operate in accordance with NAC 445B.257 through NAC 445B.265 a continuous emission monitoring system (CEMS) consisting of a CO₂ (diluent gas) analyzer with a continuous data collection system (CDCS) for measuring and recording the CO₂ concentration (ppm) on a dry basis, and a continuous exhaust flow meter for determination of the mass emissions of CO₂ (in pounds/hour) from S2.016. The CO₂ diluent gas analyzer, and exhaust flow meter will be installed at an appropriate location in the exhaust stack for S2.016 to accurately and continuously measure the CO₂ concentrations on a dry basis. The CO₂ CEMS and CDCS shall be installed and calibrated prior to operation of S2.016. Verification of the operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation operation, and calibration of the device.

- (1) The continuous monitoring system required above shall be operated and data recorded during all periods of operation, including startup, shutdown, malfunction, or emergency conditions of S2.016 except for continuous monitoring system maintenance, breakdowns, repairs, calibration checks and zero and span adjustments. Data are recorded during calibration checks, and zero and span adjustments. The CEMS and CDCS will follow Performance Specifications 2 and 3 pursuant to 40 CFR Part 60, Appendix B (or any other appropriate EPA performance specifications contained in 40 CFR Part 60 Appendix B) and Quality Assurance Procedures pursuant to 40 CFR Part 60, Appendix F.
- (2) The CEMS will be installed such that the representative measurements of emissions from S2.016 are obtained utilizing the procedure for location of the CEMS contained in Performance Specifications 2 and 3 pursuant to 40 CFR Part 60 Appendix B (or any other appropriate EPA performance specifications contained in 40 CFR Part 60 Appendices A and B). (NAC 445B.257.1)
- (3) The exhaust flow monitoring device will be installed such that the representative measurements of exhaust flow from S2.016 are obtained and calculated to dry standard cubic feet per hour (dscfh). The performance of the exhaust flow sampling device and the accuracy of the exhaust flow calculation (in dscfh) will be demonstrated during the performance tests as required in Sections II.A.G.2, V.G.4.d of this operating permit. The demonstration shall be comprised of a series of twelve 21-minute test runs.
- (3) The CEMS and CDCS will complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. Hourly averages shall be computed using at least one data point in each 15-minute quadrant of an hour. Hourly averages shall be computed from four or more equally spaced data points within the hour. (NAC 445B.263, NAC 445B.264).
- (4) In accordance with NAC 445B.261, check the zero (or low level value between zero and 20 percent of the span value) and span (50 to 100 percent of the span value) calibration drifts at least once daily. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour span drift exceeds two times the limits of the applicable performance specifications as identified in 40 CFR Part 60, Appendix B. The system must allow the amount of excess zero and span drift measurements at the 24-hour interval checks to be recorded and quantified, whenever specified.
- (5) For extractive continuous monitoring systems measuring gases, minimum procedures must include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Institute of Standards and Technology reference gases must be used whenever these reference gases are available. The span and zero gas mixtures must be the same composition as specified in Appendix B of 40 CFR Part 60. Every 6 months after the date of manufacture, span and zero gases must be reanalyzed by conducting triplicate analyses with Reference Method 3 for CO₂. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer. (NAC 445B.262.1(a)).
- (6) Based on the measured CO₂ concentration (ppm based on a dry basis) and hourly exhaust gas flow rate (DSCFH), calculate the hourly CO₂ emission rate, in pounds per hour.
- (7) Permittee shall conduct quarterly audits and report as required by 40 CFR Part 60, Appendix F, Procedure 1, section 5 and 7.
- (8) Permittee shall conduct and record the Relative Accuracy Test Audits (RATAs) required to certify the performance of the CEMS described in G.4.a of this section. The Initial RATAs will be conducted during the performance tests required in Section II.A.G.2 of this operating permit. Annual RATAs must be conducted once every four-consecutive operating quarters after the initial RATAs are performed. In the case where the affected facility is off-line (does not operate) in the fourth calendar quarter since the quarter of the previous RATA, the RATA shall be performed in the quarter in which the unit recommences operation (40 CFR Part 60 Appendix F 5.1.4). The RATAs must be done as prescribed in 40 CFR Part 60, Appendix F, and in accordance with the notification, protocol approval, and reporting requirements of NAC 445B.252 Testing and Sampling, and NAC 445B.259 Monitoring systems: Performance evaluations.
- (9) Permittee shall submit a Quality Assurance (QA) Plan for CO₂ in accordance with the requirements set forth in 40 CFR Part 60 Appendix F, NAC 445B.252-267, and this operating permit. The Permittee shall submit the QA Plan to the Director 90 days prior to startup. Any revisions to the QA Plan must be notified to the Director before becoming effective.



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Section V. Specific Operating Conditions (continued)

G. Emission Unit S2.016 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

b. H₂S (Hydrogen Sulfide) Periodic Performance/Compliance Testing (NAC 445B.252.1)

Permittee will conduct and record the following periodic compliance tests on the exhaust stack for **S2.016**. The periodic compliance tests will be conducted on an annual basis with no more than one year and 90 days between compliance tests. The first round of periodic compliance tests will be conducted within 90 days of the one-year anniversary of the completion of the initial performance testing required under Section II.A.G.2 of this operating permit.

- (1) Conduct and record a Method 15 performance test for reduced sulfur species (or equivalent reference method, such as ASTM D5504 – Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence, as approved by the director) on the exhaust stack of **S2.016** consisting of three (3) valid runs. The Method 15 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A. The concentration and emission rate of H₂S in each of the tests will be obtained, calculated, and recorded. Alternate test methods must be conducted in accordance with the appropriate test method procedure.
- (2) The performance tests required under this section that are conducted below the maximum allowable exhaust gas stream flow volume for **S2.016** shall be subject to the director's review to determine if the exhaust gas stream flow volume during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- (3) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.

c. Performance/Compliance Testing (NAC 445B.252.1)

At least 90 days prior to the date of expiration of this permit, but no earlier than 365 days from the date of expiration of this permit, Permittee will conduct and record the following performance tests on the exhaust stack of **S2.016**:

- (1) Conduct and record a Method 15 performance test for reduced sulfur species (or equivalent reference method, such as ASTM D5504 – Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence, as approved by the director) on the exhaust stack of **S2.016** consisting of three (3) valid runs. The Method 15 emissions test must be conducted in accordance with 40 CFR Part 60, Appendix A. The concentration and emission rate of H₂S in each of the tests will be obtained, calculated, and recorded. Alternate test methods must be conducted in accordance with the appropriate test method procedure.
- (2) Permittee will conduct a Method 3A performance test for carbon dioxide (CO₂) emissions on the exhaust stack for **S2.016** consisting of three valid test runs. The performance test must be conducted in accordance with 40 CFR Part 60, Appendix A, Method 3A or another test method approved by the director. The CO₂ CEMS required in G.4.a of this Section shall be operated concurrently with the performance test required in this section, and the concurrent data reported as required in G.4.d of this Section.
- (3) For the purposes of demonstrating compliance with the opacity standard established in G.2.d of this section for **S2.016**, opacity observations shall be conducted concurrently with the performance test and in accordance with Reference Method 9 in Appendix A of 40 CFR Part 60. The minimum total time of observations shall be six minutes (24 consecutive observations recorded at 15-second intervals).
- (4) The performance tests required under this section that are conducted below the maximum allowable exhaust gas stream flow volume for **S2.016** shall be subject to the director's review to determine if the exhaust gas stream flow volume during the performance tests were sufficient to provide adequate compliance demonstration. Should the director determine that the performance tests do not provide adequate compliance demonstration, the director may require additional performance testing.
- (5) Permittee shall comply with the requirements of Section I.L.3 through I.L.8 for all performance testing.



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Section V. Specific Operating Conditions (continued)

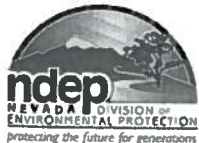
G. Emission Unit S2.016 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2) (continued)

d. Recordkeeping (NAC 445B.308.7; NAC 445B.346.2)

Permittee, upon the issuance date of this permit, will:

- (1) Monitor the hours of operation for **S2.016** on a daily basis.
- (2) Monitor and record the hourly average CO₂ concentration in ppm (dry basis) for **S2.016** using data collected from the CEMS system required under G.4.a of this section.
- (3) Monitor and record the hourly average exhaust gas flow rate in dscfh.
- (4) Monitor and record any modifications made to the CO₂ CEMS which could affect the ability of the CEMS systems to comply with the appropriate performance specification in 40 CFR Part 60 Appendix B.
- (5) Monitor and record the carbon dioxide equivalents (CO₂e) in tons for **S2.016** on a monthly basis.
- (6) The required monitoring established in (1) through (5) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily hours of operation of **S2.016** for the corresponding date.
 - (c) The hourly average exhaust gas flow rate in dscfh.
 - (d) The hourly average CO₂ concentration (in percent) measured in G.4.a of this section.
 - (e) The hourly average mass emissions of CO₂ in lbs/hour using data collected in the **CEMS** using the data collected from the continuous monitoring systems required under G.4.a of this section. At the end of each calendar month, calculate and record the total monthly CO₂ emissions and the total CO₂ emissions for the previous 12 months. Both the monthly and total 12-month rolling CO₂ emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.
 - (f) Monthly and total 12-month rolling CO₂e emissions shall be recorded and included in the plant wide emissions cap in **Section VI.A** of this Operating Permit.
 - (g) The dates and times for any CEMS malfunctions and any actions taken.
 - (h) A description of any modifications made to the CEMS.
 - (i) Maintain files of all measurements related to the CEMS, including calibration checks, quarterly CEMS audits, RATAs, and other quality assurance measurements.



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Section V. Specific Operating Conditions (continued)

H. Emission Units PF1.001 and S2.017 through S2.020 Location North 4,377.91 km, East 285.96 km, UTM (Zone 11, NAD 83)

System 8 – Fischer-Tropsch Liquids (FTL) Production Plant

PF	1.001	Fugitive Emissions from Valves, Pumps, Compressors, Sampling Connectors associated with the FTL Production Plant
S	S2.017	CO ₂ /H ₂ S Absorption/Removal System

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)
 - a. PF1.001 has no add-on controls.
 - b. During normal operations, emissions from S2.017 shall be ducted to and controlled by the sulfur removal system (System 7). During emergency shutdown operations, emissions from S2.017 shall be ducted to and controlled by the ground level enclosed flare (System 6).
2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)
 - a. On and after the date of startup of PF1.001, Permittee will not discharge or cause the discharge into the atmosphere from PF1.001 fugitive volatile organic compounds in excess of 33.09 tons per year.
 - b. On and after the date of startup of S2.017, Permittee will not discharge or cause the discharge into the atmosphere vent gases from S2.017 except through the sulfur removal system (System 7).
 - c. The opacity for PF1.001 and S2.017 each, will not equal or exceed 20 percent in accordance with NAC 445B.22017.
3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable throughput of the FTL products that are produced in System 8 shall not exceed 12,300,000.0 gallons per 12 month rolling period.
 - b. System 8 may operate 24 hours per day and 8,760 hours per calendar year.
4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)
 - a. Monitoring and Recordkeeping
Permittee, upon the issuance date of this permit will:
 - (1) Monitor the throughput rate of the FTL products on a daily basis.
 - (2) The required monitoring established in (1) above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily hours of operation for the corresponding date.
 - (c) The total daily throughput of the FTL products in gallons for the corresponding date.
 - (d) The monthly throughput of the FTL products in gallons for the corresponding month. The monthly throughput rate will be determined at the end of each calendar month as the sum of the daily throughput rates for the corresponding month recorded in (c) above.
 - (e) The annual throughput rate in gallons per 12-month rolling period. The annual throughput rate will be determined at the end of each calendar month as the sum of the monthly throughput rates for the 12 immediately preceding calendar months as recorded in (d) above.



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Section V. Specific Operating Conditions (continued)

I. **Emission Units S2.021a-b-c** Location North 4,377.99 km, East 285.99 km, UTM (Zone 11, NAD 83)

System 9 – Synthetic Paraffinic Kerosene (SPK) Product Storage Tanks

S	2.021a	120,000 Gallon SPK Product Storage Tank 1
S	2.021b	120,000 Gallon SPK Product Storage Tank 2
S	2.021c	120,000 Gallon SPK Product Storage Tank 3

1. **Air Pollution Control Equipment** (NAC 445B.308.7; NAC 445B.346.1; NAC445B.22093)
 - a. Emissions from S2.021a, S2.021b, and S2.021c shall be controlled by submerged fill and a tank vent carbon bed.
 - b. **Descriptive Tank Parameters**
Tank Shell Diameter : 45 feet
Tank Shell Height : 32 feet
Tank Capacity : 120,000 gallons
True Vapor Pressure : 0.4 psia @ 100 °F
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)
On and after the date of startup of S2.021a, S2.021b, and S2.021c, Permittee will not discharge or cause the discharge into the atmosphere from S2.021a, S2.021b, and S2.021c the following pollutants in excess of the following specified limits:
 - a. The discharge of volatile organic compounds to the atmosphere will not exceed 0.013 ton per year, each.
 - b. The opacity from S2.021a, S2.021b, and S2.021c, each, will not equal or exceed 20 percent in accordance with NAC 445B.22017.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable throughput for S2.021a, S2.021b, and S2.021c, combined, of SPK shall not exceed 12,300,000.0 gallons per 12 month rolling period.
 - b. S2.021a, S2.021b, and S2.021c, each, will only be used to store SPK with an average true vapor pressure of 0.4 pounds per square inch (psia), or less, at 100 °F.
 - c. S2.021a, S2.021b, and S2.021c, each, may operate 24 hours per day and 8,760 hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping**
Permittee, upon the issuance date of this permit will:
 - (1) Monitor the combined throughput rate of SPK on a monthly basis.
 - (2) The required monitoring established in (1) above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total combined monthly throughput of SPK in gallons for the corresponding month.
 - (c) The combined annual throughput rate in gallons per 12-month rolling period. The combined annual throughput rate will be determined at the end of each calendar month as the sum of the combined monthly throughput rates for the 12 immediately preceding calendar months.



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Section V. Specific Operating Conditions (continued)

J. Emission Unit S2.022 Location North 4,377.98 km, East 285.98 km, UTM (Zone 11, NAD 83)

System 10 – Off-Spec SPK Storage Tank

S 2.022 30,000 Gallon Off-Spec SPK Storage Tank

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)
 - a. Emissions from **S2.022** shall be controlled by submerged fill and a tank vent carbon bed.
 - b. Descriptive Tank Parameters
Tank Shell Diameter : 25 feet
Tank Shell Height : 32 feet
Tank Capacity : 30,000 gallons
True Vapor Pressure : 0.4 psia @ 100 °F
2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.022**, Permittee will not discharge or cause the discharge into the atmosphere from **S2.022** the following pollutants in excess of the following specified limits:

 - a. The discharge of volatile organic compounds to the atmosphere will not exceed **0.0034** ton per year.
 - b. The opacity from **S2.022** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable throughput for **S2.022** of off-spec SPK products shall not exceed **100,000.0** gallons per 12 month rolling period.
 - b. **S2.022** will only be used to store off-spec SPK products with an average true vapor pressure of **0.4** pounds per square inch (psia), or less, at 100 °F.
 - c. **S2.022** may operate **24** hours per day and **8,760** hours per calendar year.
4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)
 - a. Monitoring and Recordkeeping

Permittee, upon the issuance date of this permit will:

 - (1) Monitor the throughput rate of off-spec SPK products on a monthly basis.
 - (2) The required monitoring established in (1) above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total monthly throughput of off-spec SPK products in gallons for the corresponding month.
 - (c) The annual throughput rate in gallons per 12-month rolling period. The annual throughput rate will be determined at the end of each calendar month as the sum of the monthly throughput rates for the 12 immediately preceding calendar months.



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Section V. Specific Operating Conditions (continued)

L. Emission Unit S2.025 Location North 4,377.98 km, East 285.98 km, UTM (Zone 11, NAD 83)

System 12 – Amine Solvent Storage Tank

S 2.025 39,000 Gallon Amine Solvent Sump Drum

1. **Air Pollution Control Equipment** (NAC 445B.308.7; NAC 445B.346.1)
 - a. Emissions from **S2.025** shall be controlled by submerged fill and fixed roof.
 - b. **Descriptive Tank Parameters**
Tank Shell Diameter : 15 feet
Tank Shell Height : 32 feet
Tank Capacity : 39,000 gallons
True Vapor Pressure : 0.02 psia @ 100 °F
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.025**, Permittee will not discharge or cause the discharge into the atmosphere from **S2.025** the following pollutants in excess of the following specified limits:

 - a. The discharge of volatile organic compounds to the atmosphere will not exceed **0.0008** ton per year.
 - b. The opacity from **S2.025** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable throughput for **S2.025** of amine solvent shall not exceed **39,000.0** gallons per 12 month rolling period.
 - b. **S2.025** will only be used to store amine solvent with an average true vapor pressure of **0.02** pounds per square inch (psia), or less, at 100 °F.
 - c. **S2.025** may operate **24** hours per day and **8,760** hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping**

Permittee, upon the issuance date of this permit will:

 - (1) Monitor the throughput rate of amine solvent on a monthly basis.
 - (2) The required monitoring established in (1) above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total monthly throughput of amine solvent in gallons for the corresponding month.
 - (c) The annual throughput rate in gallons per 12-month rolling period. The annual throughput rate will be determined at the end of each calendar month as the sum of the monthly throughput rates for the 12 immediately preceding calendar months.



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Section V. Specific Operating Conditions (continued)

M. Emission Unit S2.026 Location North 4,378.01 km, East 285.90 km, UTM (Zone 11, NAD 83)

System 13 – Product Loading Area

S 2.026 Product Loading to Tanker Trucks or Tanker Rail Cars

1. **Air Pollution Control Equipment** (NAC 445B.308.7; NAC 445B.346.1)
Emissions from **S2.026** shall be controlled by a tank vent carbon bed.
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)
On and after the date of startup of **S2.026**, Permittee will not discharge or cause the discharge into the atmosphere from **S2.026** the following pollutants in excess of the following specified limits:
 - a. The discharge of volatile organic compounds to the atmosphere will not exceed **0.20** ton per year.
 - b. The opacity from the carbon bed exhaust stack for **S2.026** will not equal or exceed **20 percent** in accordance with NAC 445B.22017.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable loading rate for **S2.026** of liquid SPK products shall not exceed **12,300,000.0** gallons per 12 month rolling period.
 - b. **S2.026** may operate **24** hours per day but no more than **684** hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping**
Permittee, upon the issuance date of this permit will:
 - (1) Monitor and record the hours of operation for **S2.026** on a daily basis.
 - (2) Monitor the loading rate of liquid SPK products on a daily basis.
 - (3) The required monitoring established in (1) and (2) above will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily hours of operation for the corresponding date.
 - (c) The total daily loading rate of liquid SPK products in gallons for the corresponding date.
 - (d) The monthly loading rate and the annual loading rate in gallons per 12-month rolling period. The monthly loading rate will be determined at the end of each calendar month as the sum of the daily loading rates recorded in (c) above. The annual loading rate will be determined at the end of each calendar month as the sum of the monthly loading rates for the 12 immediately preceding calendar months.



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Section V. Specific Operating Conditions (continued)

N1. Emission Units S2.027 and S2.028 Location North 4,377.86 km, East 286.18 km, UTM (Zone 11, NAD 83)

System 14A – Ash Silo

S	2.027	Ash Silo Loading
S	2.028	Ash Silo Unloading

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)
Emissions from **S2.027** and **S2.028** shall be ducted to a control system consisting of a baghouse with 100% capture and a maximum volume flow rate of 1,276 dry standard cubic feet per minute (dscfm).
2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)
On and after the date of startup of **S2.027** and **S2.028**, Permittee will not discharge or cause the discharge into the atmosphere the following pollutants in excess of the following specified limits:
 - a. The discharge of PM (particulate matter) to the atmosphere will not exceed 0.055 pound per hour, nor more than 0.24 ton per year, combined.
 - b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed 0.055 pound per hour, nor more than 0.24 ton per year, combined.
 - c. The opacity from the baghouse stack that controls **S2.027** and **S2.028** will not equal or exceed 20 percent in accordance with NAC 445B.22017.
3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable loading rate for **S2.027** will not exceed 0.23 tons of ash (waste particulate matter) per any one-hour period.
 - b. The maximum allowable discharge rate for **S2.028** will not exceed 11.25 tons of ash (waste particulate matter) per any one-hour period.
 - c. **S2.027** and **S2.028**, each, may operate 24 hours per day and 8,760 hours per calendar year.
4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)
 - a. Monitoring and Recordkeeping
Permittee, upon the issuance date of this permit, will:
 - (1) Monitor the loading rate of ash for **S2.027** on a daily basis.
 - (2) Monitor the discharge rate of ash for **S2.028** on a daily basis.
 - (3) Monitor the hours of operation for **S2.027** and **S2.028**, each, on a daily basis.
 - (4) The required monitoring established in (1) through (3) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily loading rate of ash in tons, for the corresponding date.
 - (c) The total daily discharge rate of ash in tons, for the corresponding date.
 - (d) The total daily loading hours of operation for the corresponding date.
 - (e) The total daily discharge hours of operation for the corresponding date.
 - (f) The corresponding average hourly loading rate in tons per hour. The average hourly loading rate will be determined from the total daily loading rate and the total daily hours of operation recorded in (b) and (d) above.
 - (g) The corresponding average hourly discharge rate in tons per hour. The average hourly discharge rate will be determined from the total daily discharge rate and the total daily hours of operation recorded in (c) and (e) above.



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Section V. Specific Operating Conditions (continued)

N2. Emission Units S2.035 and S2.036 Location North 4,377.88 km, East 286.20 km, UTM (Zone 11, NAD 83)

System 14B – Bed Media Silo

S	2.035	Bed Media Silo Loading
S	2.036	Bed Media Silo Unloading

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)
Emissions from **S2.035** and **S2.036** shall be ducted to a control system consisting of a baghouse with 100% capture and a maximum volume flow rate of 1,276 dry standard cubic feet per minute (dscfm).
2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)
On and after the date of startup of **S2.035** and **S2.036**, Permittee will not discharge or cause the discharge into the atmosphere the following pollutants in excess of the following specified limits:
 - a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.055** pound per hour, nor more than **0.24** ton per year, combined.
 - b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.055** pound per hour, nor more than **0.24** ton per year, combined.
 - c. The opacity from the baghouse stack that controls **S2.035** and **S2.036** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable loading rate for **S2.035** will not exceed **20.0** tons of bed media (alumina) per any one-hour period.
 - b. The maximum allowable discharge rate for **S2.036** will not exceed **20.0** tons of bed media (alumina) per any one-hour period.
 - c. **S2.035** and **S2.036**, each, may operate 24 hours per day and 8,760 hours per calendar year.
4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)
 - a. Monitoring and Recordkeeping
Permittee, upon the issuance date of this permit, will:
 - (1) Monitor the loading rate of bed media for **S2.035** on a daily basis.
 - (2) Monitor the discharge rate of bed media for **S2.036** on a daily basis.
 - (3) Monitor the hours of operation for **S2.035** and **S2.036**, each, on a daily basis.
 - (4) The required monitoring established in (1) through (3) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily loading rate of bed media in tons, for the corresponding date.
 - (c) The total daily discharge rate of bed media in tons, for the corresponding date.
 - (d) The total daily loading hours of operation for the corresponding date.
 - (e) The total daily discharge hours of operation for the corresponding date.
 - (f) The corresponding average hourly loading rate in tons per hour. The average hourly loading rate will be determined from the total daily loading rate and the total daily hours of operation recorded in (b) and (d) above.
 - (g) The corresponding average hourly discharge rate in tons per hour. The average hourly discharge rate will be determined from the total daily discharge rate and the total daily hours of operation recorded in (c) and (e) above.



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Section V. Specific Operating Conditions (continued)

N3. Emission Units S2.037 and S2.038 Location North 4,377.88 km, East 286.20 km, UTM (Zone 11, NAD 83)

System 14C – Charcoal Hopper	
S 2.037	Charcoal Hopper Loading
S 2.038	Charcoal Hopper Unloading

1. **Air Pollution Control Equipment** (NAC 445B.308.7; NAC 445B.346.1)
Emissions from **S2.037** and **S2.038** shall be ducted to a control system consisting of a baghouse with 100% capture and a maximum volume flow rate of 1,276 dry standard cubic feet per minute (dscfm).
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)
On and after the date of startup of **S2.037** and **S2.038**, Permittee will not discharge or cause the discharge into the atmosphere the following pollutants in excess of the following specified limits:
 - a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.055** pound per hour, nor more than **0.24** ton per year, combined.
 - b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.055** pound per hour, nor more than **0.24** ton per year, combined.
 - c. The opacity from the baghouse stack that controls **S2.037** and **S2.038** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable loading rate for **S2.037** will not exceed **2.0** tons of charcoal per any one-hour period.
 - b. The maximum allowable discharge rate for **S2.038** will not exceed **0.5** tons of charcoal per any one-hour period.
 - c. **S2.037** and **S2.038**, each, may operate **24** hours per day and **8,760** hours per calendar year.
4. **Monitoring, Testing and Reporting** (NAC 445B.308.7; NAC 445B.346.2)
 - a. **Monitoring and Recordkeeping**
Permittee, upon the issuance date of this permit, will:
 - (1) Monitor the loading rate of charcoal for **S2.037** on a daily basis.
 - (2) Monitor the discharge rate of charcoal for **S2.038** on a daily basis.
 - (3) Monitor the hours of operation for **S2.037** and **S2.038**, each, on a daily basis.
 - (4) The required monitoring established in (1) through (3) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily loading rate of charcoal in tons, for the corresponding date.
 - (c) The total daily discharge rate of charcoal in tons, for the corresponding date.
 - (d) The total daily loading hours of operation for the corresponding date.
 - (e) The total daily discharge hours of operation for the corresponding date.
 - (f) The corresponding average hourly loading rate in tons per hour. The average hourly loading rate will be determined from the total daily loading rate and the total daily hours of operation recorded in (b) and (d) above.
 - (g) The corresponding average hourly discharge rate in tons per hour. The average hourly discharge rate will be determined from the total daily discharge rate and the total daily hours of operation recorded in (c) and (e) above.



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Section V. Specific Operating Conditions (continued)

O. Emission Unit S2.029 Location North 4,377.88 km, East 286.29 km, UTM (Zone 11, NAD 83)

System 15 – 399 HP Firewater Pump Engine

S 2.029 399 HP Diesel Firewater Pump Engine (mfd 2014)

1. **Air Pollution Control Equipment** (NAC 445B.308.7; NAC 445B.346.1)
S2.029 has no add-on controls.
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)
 - a. On and after the date of startup of S2.029, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack of S2.029 the following pollutants in excess of the following specified limits:
 - (1) The discharge of PM (particulate matter) to the atmosphere will not exceed 0.87 pound per hour, nor more than 0.043 ton per year.
 - (2) The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed 0.87 pound per hour, nor more than 0.043 ton per year.
 - (3) The discharge of sulfur dioxide to the atmosphere will not exceed 0.0042 pound per hour, nor more than 0.0002 ton per year.
 - (4) The discharge of nitrogen oxides to the atmosphere will not exceed 12.32 pounds per hour, nor more than 0.62 ton per year.
 - (5) The discharge of carbon monoxide to the atmosphere will not exceed 2.65 pounds per hour, nor more than 0.13 ton per year.
 - (6) The discharge of volatile organic compounds to the atmosphere will not exceed 0.92 pound per hour, nor more than 0.046 ton per year.
 - (7) The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in Section VI.A Emissions Cap of this operating permit.
 - (8) The opacity from S2.029 will not equal or exceed 20 percent in accordance with NAC 445B.22017.
 - b. **New Source Performance Standards – Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60.4205)**
Owners and operators of 2009 model year and later stationary fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in 40 CFR Part 60 Subpart IIII (40 CFR Part 60.4205(c). For 2009 model year and later stationary fire pump engines with engine ratings between 225 kW (300 HP) and less than 450 kW (600 HP):
 - (1) Particulate Matter (PM) shall not exceed 0.20 grams/kW-hr (0.15 grams/HP-hr).
 - (2) Nonmethane Hydrocarbons plus Nitrogen Oxides (NMHC+NO_x) shall not exceed 4.0 grams/kW-hr (3.0 grams/HP-hr).
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable #2 diesel fuel combustion rate for S2.029 will not exceed 15.3 gallons per any one-hour period.
 - b. The sulfur content of the #2 diesel combusted in S2.029 will not exceed 0.0015% by weight.
 - c. S2.029 may operate 24 hours per day, but no more than 100 hours per calendar year.
 - d. **New Source Performance Standards – Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60.4207)**
Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel:
 - (1) Sulfur content – 15 ppm (0.0015 wt%) maximum for non-road diesel fuel.
 - (2) Cetane index or aromatic content – minimum cetane index of 40 or maximum aromatic content of 35 volume percent.
 - e. **40 CFR Part 63.6590 – Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)(40 CFR Part 63.6590 (c))**
 - (1) An affected source that is a new or reconstructed stationary RICE located at an area source, must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines. No further requirements apply for such engines under this part.



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Permit No. AP2869-3306

CLASS II AIR QUALITY OPERATING PERMIT

Issued to: FULCRUM SIERRA BIOFUELS, LLC

Section V. Specific Operating Conditions (continued)

O. Emission Unit S2.029 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)

a. Monitoring and Recordkeeping

Permittee, upon the issuance date of this permit, will:

- (1) Monitor the fuel combustion rate for **S2.029** on a daily basis.
- (2) Monitor the hours of operation for **S2.029** on a daily basis.
- (3) Monitor the sulfur content of the #2 diesel combusted in **S2.029**.
- (4) Calculate the total monthly and 12-month rolling CO_{2e} emission rate for **S2.029** using the daily natural gas consumption data in O.4.a(1) of this Section, calculated using the Global Warming Potential factors in 40 CFR 98 Subpart A, Table A-1 for CO₂, CH₄, and N₂O and the emission factors in 40 CFR 98 Subpart C, Tables C-1 and C-2 for natural gas fuel combustion. Maintain a record of the total CO_{2e} emissions.
- (5) The required monitoring established in (1) through (4) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily fuel combustion rate in gallons, for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The monthly hours of operation, and the corresponding hours of operation for the calendar year. The monthly hours of operation will be determined at the end of each calendar month as the daily hours of operation for each day of the calendar month. The monthly hours of operation shall be added beginning in January of each year to insure compliance with O.3.c of this section.
 - (e) The corresponding average hourly #2 diesel fuel combustion rate in gallons per hour. The average hourly #2 diesel fuel combustion rate will be determined from the total daily #2 diesel fuel combustion rate and the total daily hours of operation recorded in (b) and (c) above.
 - (f) Fuel supplier certification consisting of the name of the oil supplier, and a statement from the oil supplier that the oil complies with the sulfur limit as specified in O.3.b and O.3.d of this section for each #2 diesel delivery.
 - (g) The monthly and 12-month rolling CO_{2e} emissions from **S2.029**. The total CO_{2e} emissions from **S2.029** shall be included in the plant wide emission cap in **Section VI.A** of this Operating Permit.

b. New Source Performance Standards – Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

- (1) Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in 40 CFR Part 60.4204(b) according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine 40 CFR Part 60.4206.
- (2) Owners and operators of 2007 model year and later stationary CI ICE that must comply with the emission standards specified in 40 CFR Part 60.4204(b) shall demonstrate compliance by purchasing an engine certified to the emission standards in 40 CFR Part 60.4204(b), as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications (40 CFR Part 60.4211(c)).



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Section V. Specific Operating Conditions

P. Emission Unit S2.030 Location North 4,377.87 km, East 286.14 km, UTM (Zone 11, NAD 83)

System 16 – 1000 kW Emergency Generator

S 2.030 1000 kW Emergency Diesel Generator (mfd 2014)

1. **Air Pollution Control Equipment** (NAC 445B.308.7; NAC 445B.346.1)
S2.030 has no add-on controls.
2. **Emission Limits** (NAC 445B.308.7; NAC 445B.346.1)
 - a. On and after the date of startup of **S2.030**, Permittee will not discharge or cause the discharge into the atmosphere from the exhaust stack of **S2.030** the following pollutants in excess of the following specified limits:
 - (1) The discharge of PM (particulate matter) to the atmosphere will not exceed **0.44** pound per hour each, nor more than **0.022** ton per year.
 - (2) The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.44** pound per hour each, nor more than **0.022** ton per year.
 - (3) The discharge of sulfur dioxide to the atmosphere will not exceed **0.014** pound per hour each, nor more than **0.0007** ton per year.
 - (4) The discharge of nitrogen oxides to the atmosphere will not exceed **14.19** pounds per hour each, nor more than **0.71** ton per year.
 - (5) The discharge of carbon monoxide to the atmosphere will not exceed **7.69** pounds per hour each, nor more than **0.38** ton per year.
 - (6) The discharge of volatile organic compounds to the atmosphere will not exceed **0.84** pound per hour each, nor more than **0.042** ton per year.
 - (7) The discharge of carbon dioxide equivalents (CO₂e) will not exceed the combined limits specified in Section VI.A Emissions Cap of this operating permit.
 - (8) The opacity from **S2.030** will not equal or exceed **20 percent** in accordance with NAC 445B.22017.
 - b. **New Source Performance Standards – Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60.4205)**
Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the following emission standards for new CI engines in 40 CFR Part 60 Subpart IIII (40 CFR Part 60.4205(b); 40 CFR Part 60.4202(a)(2); 40 CFR Part 89.112). For 2007 model year and later emergency stationary CI ICE with engine ratings greater than 560 kW:
 - (1) Particulate Matter (PM) shall not exceed 0.20 grams/kW-hr (0.15 g/HP-hr).
 - (2) Nonmethane Hydrocarbons plus Nitrogen Oxides (NMHC+NO_x) shall not exceed 6.4 grams/kW-hr (4.8 g/HP-hr).
 - (3) Carbon Monoxide (CO) shall not exceed 3.5 grams/kW-hr (2.6 g/HP-hr).
3. **Operating Parameters** (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum allowable #2 diesel fuel combustion rate for **S2.030** will not exceed **68.5** gallons per any one-hour period.
 - b. The sulfur content of the #2 diesel combusted in **S2.030** will not exceed **0.0015%** by weight.
 - c. **S2.030** may operate 24 hours per day, but no more than 100 hours per calendar year.
 - d. **New Source Performance Standards – Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60.4207)**
Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel:
 - (1) Sulfur content – 15 ppm (0.0015 wt%) maximum for non-road diesel fuel.
 - (2) Cetane index or aromatic content – minimum cetane index of 40 or maximum aromatic content of 35 volume percent.
 - e. **40 CFR Part 63.6590 – Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)(40 CFR Part 63.6590 (c))**
 - (1) An affected source that is a new or reconstructed stationary RICE located at an area source, must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines. No further requirements apply for such engines under this part.



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Section V. Specific Operating Conditions (continued)

P. Emission Unit S2.030 (continued)

4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)

a. Monitoring and Recordkeeping

Permittee, upon the issuance date of this permit, will:

- (1) Monitor the #2 diesel fuel combustion rate for **S2.030** on a daily basis.
- (2) Monitor the hours of operation for **S2.030** on a daily basis.
- (3) Monitor the sulfur content of the #2 diesel combusted in **S2.030**.
- (4) Calculate the total monthly and 12-month rolling CO₂e emission rate for **S2.030** using the daily natural gas consumption data in P.4.a(1) of this Section, calculated using the Global Warming Potential factors in 40 CFR 98 Subpart A, Table A-1 for CO₂, CH₄, and N₂O and the emission factors in 40 CFR 98 Subpart C, Tables C-1 and C-2 for natural gas fuel combustion. Maintain a record of the total CO₂e emissions.
- (5) The required monitoring established in (1) through (4) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily #2 diesel fuel combustion rate in gallons, for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The monthly hours of operation, and the corresponding hours of operation for the calendar year. The monthly hours of operation will be determined at the end of each calendar month as the daily hours of operation for each day of the calendar month. The monthly hours of operation shall be added beginning in January of each year to insure compliance with P.3.c of this section.
 - (e) The corresponding average hourly #2 diesel fuel combustion rate in gallons per hour. The average hourly #2 diesel fuel combustion rate will be determined from the total daily #2 diesel fuel combustion rate and the total daily hours of operation recorded in (b) and (c) above.
 - (f) Fuel supplier certification consisting of the name of the oil supplier, and a statement from the oil supplier that the #2 diesel complies with the sulfur limit as specified in P.3.b and P.3.d of this section for each #2 diesel delivery.
 - (g) The monthly and 12-month rolling CO₂e emissions from **S2.030**. The total CO₂e emissions from **S2.030** shall be included in the plant wide emission cap in **Section VI.A** of this Operating Permit.

b. New Source Performance Standards – Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

- (1) Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in 40 CFR Part 60.4205(b) according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine 40 CFR Part 60.4206.
- (2) Owners and operators of 2007 model year and later stationary CI ICE that must comply with the emission standards specified in 40 CFR Part 60.4204(b) shall demonstrate compliance by purchasing an engine certified to the emission standards in 40 CFR Part 60.4204(b), as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications (40 CFR Part 60.4211(c)).



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Section V. Specific Operating Conditions (continued)

Q. Emission Unit S2.031 Location North 4,377.94 km, East 286.18 km, UTM (Zone 11, NAD 83)

System 17 – Cooling Tower

S 2.031 Mechanical Draft Cooling Tower

1. Air Pollution Control Equipment (NAC 445B.308.7; NAC 445B.346.1)
 - a. Emissions from **S2.031** shall be controlled by drift eliminators.
 - b. Descriptive Stack Parameters
Heights: 65 ft
Diameters: 25 ft
Velocities: 32 ft/sec
Temperatures: 80 °F
2. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)

On and after the date of startup of **S2.031**, Permittee will not discharge or cause the discharge into the atmosphere from the cooling tower stacks of **S2.031** the following pollutants in excess of the following specified limits:

 - a. The discharge of PM (particulate matter) to the atmosphere will not exceed **0.012** pound per hour, nor more than **0.054** ton per year.
 - b. The discharge of PM₁₀ (particulate matter less than 10 microns in diameter) to the atmosphere will not exceed **0.012** pound per hour, nor more than **0.054** ton per year.
 - c. The opacity from the cooling tower stack discharge of **S2.031** will not equal or exceed **20** percent in accordance with NAC 445B.22017.
3. Operating Parameters (NAC 445B.308.7; NAC 445B.346.1)
 - a. The maximum circulating water flow rate for **S2.031** will not exceed **3,100.0** gallons per minute.
 - b. The maximum total dissolved solids (TDS) content for **S2.031** will not exceed **790.0** milligrams per liter (790 ppm).
 - c. The use of chromium-based water treatment chemicals is prohibited.
 - d. **S2.031** may operate **24** hours per day and **8,760** hours per calendar year.
4. Monitoring, Testing and Reporting (NAC 445B.308.7; NAC 445B.346.2)
 - a. Monitoring and Recordkeeping

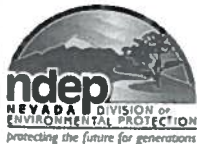
Permittee, upon the issuance date of this permit will:

 - (1) Calculate and record the circulation water flow rate in gallons for **S2.031** on a daily basis.
 - (2) Monitor and record the hours of operation for **S2.031** on a daily basis.
 - (3) The required monitoring established in (1) and (2) above, will be maintained in a contemporaneous log containing, at a minimum, the following recordkeeping:
 - (a) The calendar date of any required monitoring.
 - (b) The total daily circulating water flow rate in gallons, for the corresponding date.
 - (c) The total daily hours of operation for the corresponding date.
 - (d) The average volume flow rate, in gallons per minute, of the circulating water on a daily basis. The flow rate is calculated using the pump rate and operating hours.
 - b. Performance/Compliance Testing (NAC 445B.252.1)

Permittee will:

 - (1) Sample and analyze the circulating water for Total Dissolved Solids (TDS) at six-month intervals, beginning with the initial TDS analysis conducted in Section IIA.Q.2 of this operating permit.
 - (2) Record the TDS value from the sampling in (1) above.

*****End of Specific Operating Conditions*****



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Section VI. Emission Caps

A. Cap for Emission Units S2.032 (System 4A, Hydrocracker Heater), S2.033 (System 4B, Fractionator Heater), S2.034 (System 4C, Product Stripper Heater), S2.013a-b-c-d and S2.014 (System 5, Pulse Combustors Heaters and Boiler), S2.015 (System 6, Flare), S2.016 (System 7, Sulfur Removal), S2.029 (System 15, Fire Pump Engine), and S2.030 (System 16, Emergency Generator)

1. Emission Limits (NAC 445B.308.7; NAC 445B.346.1)

Permittee will not discharge or cause the discharge into the atmosphere from S2.013a-b-c-d, S2.014, S2.015, S2.016, S2.029, S2.030, S2.032, S2.033 and S2.034, combined, the following pollutants in excess of the following specified limits:

- The combined discharge of fossil fuels based carbon dioxide equivalents (CO₂e) to the atmosphere from S2.013a-b-c-d, S2.014, S2.015, S2.016, S2.029, S2.030, S2.032, S2.033 and S2.034 shall not exceed 97,003 tons per year (based on a 12-month rolling period).
- The combined discharge of biogenic based CO₂e to the atmosphere from S2.014, S2.015 and S2.016, shall not exceed 163,373 tons per year (based on a 12-month rolling period).
- The combined discharge of all CO₂e to the atmosphere from S2.013a-b-c-d, S2.014, S2.015, S2.016, S2.029, S2.030, S2.032, S2.033 and S2.034 shall not exceed 260,375 tons per year (based on a 12-month rolling period).

2. Reporting and Recordkeeping (NAC 445B.308.7; NAC 445B.346.2)

- Permittee shall calculate the monthly combined total CO₂e emitted, along with the monthly combined total biogenic based and fossil fuels based CO₂e emitted from emission units S2.013a-b-c-d, S2.014, S2.015, S2.016, S2.029, S2.030, S2.032, S2.033 and S2.034. The Permittee shall calculate and maintain a 12-month rolling total CO₂e emission rate for these data.
- Permittee shall use the protocol detailed in A.3 of this section to calculate the monthly total biogenic based and fossil fuels based CO₂e emitted from emission units S2.013a-b-c-d, S2.014, S2.015, S2.016, S2.029, S2.030, S2.032, S2.033, and S2.034.
- Permittee will maintain records of the total monthly emissions of the CO₂e components and will maintain records of the 12-month rolling total CO₂e emission rate, 12-month rolling biogenic based CO₂e emission rate, and the 12-month rolling fossil fuels based CO₂e emission rate.
- Permittee will submit yearly reports including annual biogenic based CO₂e emissions (in tons/year), annual fossil fuels based CO₂e emissions (in tons/year), and annual combined (biogenic based and fossil fuels based) CO₂e emissions (in tons/year). The reports will be submitted as an attachment to the form provided by the Bureau of Air Pollution Control for all emission units/systems, as required in Section IV.C of this operating permit. The completed form must be submitted to the Bureau of Air Pollution Control no later than March 1 annually for the preceding calendar year.

3. Greenhouse Gas Calculation Protocol (NAC 445B.346.2)

Permittee shall use the Greenhouse Gas Calculation Protocol, as presented in A.3 of this section, for calculation of monthly total biogenic based CO₂e, fossil fuels based CO₂e, and total combined CO₂e emitted from emission units S2.013a-b-c-d, S2.014, S2.015, S2.016, S2.029, S2.030, S2.032, S2.033 and S2.034.

a. Applicable Emission Factors and Global Warming Factors for Combusted Fuels

40 CFR 98 Table A-1	Use Global Warming Potential Factors in the following calculations of CO ₂ e	
	Global Warming Potential for Carbon Dioxide	1
	Global Warming Potential for Methane (currently 25)	W _M
	Global Warming Potential for Nitrous oxide (N ₂ O) (currently 298)	W _N
40 CFR 98 Table C-1	Use Default CO ₂ Emission factors for Various Fuels (lb/MMBtu)	
	Natural Gas (currently 116.6 lb/MMBtu)	C _N
	Diesel Fuel (currently 161 lb/MMBtu)	C _D
40 CFR 98 Table C-2	Use Default CH ₄ and N ₂ O emission factors for fuels	
	Natural Gas CH ₄ (currently 0.0022 lb/MMBtu)	E _{NM}
	Natural Gas N ₂ O (currently 0.00022 lb/MMBtu)	E _{NN}
	Syngas (Biogas) CH ₄ (currently 0.007 lb/MMBtu)	E _{SM}
	Syngas (Biogas) N ₂ O (currently 0.0014 lb/MMBtu)	E _{SN}
	Diesel Fuel CH ₄ (currently 6.6 lb/MMBtu)	E _{DM}
	Diesel Fuel N ₂ O (currently 1.32 lb/MMBtu)	E _{DN}



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Section VI. Emission Caps (continued)

A. Cap for Emission Units S2.032 (System 4A, Hydrocracker Heater), S2.033 (System 4B, Fractionator Heater), S2.034 (System 4C, Product Stripper Heater), S2.013a-b-c-d and S2.014 (System 5, Boiler and Pulse Combustors), S2.015 (System 6, Flare), S2.016 (System 7, Sulfur Removal), S2.029 (System 15, Fire Pump Engine), and S2.030 (System 16, Emergency Generator) (continued)

3. Greenhouse Gas Calculation Protocol (NAC 445B.346.2) (continued)

b. CO₂ Emissions for System 5 and Ratio of Biogenic CO₂ to Fossil Fuel CO₂ in Syngas/Purge Gas Stream

V.E.4.b	The ratio of fossil-based to total CO ₂ emissions from System 5 Emission Units S2.013a-b-c-d and S2.014 (unitless)	R
V.E.4.e.(11)(m)	The total monthly CO ₂ measured by the CEMS from the combined stack (tons), for System 5 Units (tons)	CO ₂ T
	Calculate the total Fossil based CO ₂ from Emission Units S2.013a-b-c-d and S2.014 (tons)	CO ₂ F = (CO ₂ T) * R
	Calculate the total Biogenic Based CO ₂ from Emission Units S2.014 (tons)	CO ₂ B = (CO ₂ T) * (1 - R)
V.E.4.e.(11)(c)	Calculate the monthly total natural gas heat rate input from the daily data recorded for S2.014 (MMBtu)	N _{S2.014}
	Calculate the total CO ₂ emissions from the natural gas combustion and the default emission factors for natural gas combustion (C _N) in 40 CFR 98 Table C-1 (tons)	CO ₂ N = N _{S2.014} * C _N /2000
	Calculate the total fossil-based CO ₂ emissions from syngas firing in Emission Unit S2.014 (tons)	CO ₂ F _s = CO ₂ F - CO ₂ N
	Calculate the ratio of biogenic-based CO ₂ emissions to total CO ₂ emissions from syngas firing only in Emission Unit S2.014 (unitless)	R _s = CO ₂ B / (CO ₂ T - CO ₂ N)

c. Fossil Fuel Based CO₂e Emissions for System 4A (Hydrocracker Unit Heater)

V.D1.4.a.(3) V.D1.4.a.(4)(f)	Calculate the CO ₂ e emitted per month for System 4A Unit S2.032	
V.D1.4.a.(4)(e)	Obtain the monthly natural gas consumption rate for S2.032 (cubic feet per month)	N(4A)
	Calculate the monthly heat content fired for S2.032, assume 999 Btu/scf (MMBtu)	H _{N4A} = N(4A) * 999/1,000,000
V.D1.4.a.(4)(f)	Calculate the monthly fossil-based CO ₂ e for System 4A (tons)	CO ₂ e(4AF) = H _{N4A} * C _N / 2000 + H _{N4A} * (E _{NM} * W _M + E _{NN} * W _N) / 2000

d. Fossil Fuel Based CO₂e Emissions for System 4B (Fractionator Unit Heater)

V.D2.4.a.(3) V.D2.4.a.(4)(f)	Calculate the CO ₂ e emitted per month for System 4B Unit S2.033	
V.D2.4.a.(4)(e)	Obtain the monthly natural gas consumption rate for S2.033 (cubic feet per month)	N(4B)
	Calculate the monthly heat content fired for S2.033, assume 999 Btu/scf (MMBtu)	H _{N4B} = N(4B) * 999/1,000,000
V.D2.4.a.(4)(f)	Calculate the monthly fossil-based CO ₂ e for System 4B (tons)	CO ₂ e(4BF) = H _{N4B} * C _N / 2000 + H _{N4B} * (E _{NM} * W _M + E _{NN} * W _N) / 2000

e. Fossil Fuel Based CO₂e Emissions for System 4C (Product Stripper Unit Heater)

V.D3.4.a.(3) V.D3.4.a.(4)(f)	Calculate the CO ₂ e emitted per month for System 4C Unit S2.034	
V.D3.4.a.(4)(e)	Obtain the monthly natural gas consumption rate for S2.034 (cubic feet per month)	N(4C)
	Calculate the monthly heat content fired for S2.034, assume 999 Btu/scf (MMBtu)	H _{N4C} = N(4C) * 999/1,000,000
V.D3.4.a.(4)(f)	Calculate the monthly fossil-based CO ₂ e for System 4C (tons)	CO ₂ e(4CF) = H _{N4C} * C _N / 2000 + H _{N4C} * (E _{NM} * W _M + E _{NN} * W _N) / 2000



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Section VI. Emission Caps (continued)

A. Cap for Emission Units S2.032 (System 4A, Hydrocracker Heater), S2.033 (System 4B, Fractionator Heater), S2.034 (System 4C, Product Stripper Heater), S2.013a-b-c-d and S2.014 (System 5, Boiler and Pulse Combustors), S2.015 (System 6, Flare), S2.016 (System 7, Sulfur Removal), S2.029 (System 15, Fire Pump Engine), and S2.030 (System 16, Emergency Generator) (continued)

3. Greenhouse Gas Calculation Protocol (NAC 445B.346.2) (continued)

f. Fossil Based and Biogenic Based CO₂e Emissions for System 5 (Boiler and Pulse Combustors)

V.E.4.e.(11)(c)	Obtain the total monthly natural gas heat content fired during the month for System 5 Units S2.013a-b-c-d and S2.014 (MMBtu)	H _{N5}
V.E.4.e.(11)(c)	Obtain the total monthly syngas plus purge gas heat content fired for System 5 Unit S2.014 (MMBtu)	H _{S5}
	Syngas: Develop CO ₂ factor from collected data (V.E.4.b of the permit) (lb CO ₂ /MMBtu)	$C_S = CO_2 B * 2000 / H_{S5}$
	Calculate fossil-based CO ₂ e for System 5 (tons)	$CO_2e(5F) = CO_2 F + H_{N5} * (E_{NM} * W_M + E_{NN} * W_N) / 2000 + H_{S5} * (1 - R_S) * (E_{SM} * W_M + E_{SN} * W_N) / 2000$
	Calculate biogenic-based CO ₂ e for System 5 (tons)	$CO_2e(5B) = CO_2 B + H_{S5} * R_S * (E_{SM} * W_M + E_{SN} * W_N) / 2000$

g. Fossil Based and Biogenic Based CO₂e Emissions for System 6 (Main Flare)

V.F.5.b.(7)	Monitor and record the Monthly total CO ₂ e from S2.015	
V.F.5.b.(2)	Natural gas total consumption rate for the month for System 6 Unit S2.015 (standard cubic feet)	N(6)
V.F.5.b.(3)	Total monthly heat input from syngas to the flare in MMBtu/month	H _{S6}
	Total monthly natural gas heat input for the flare pilot light (MMBtu)	$H_{N6} = N(6) * 999 / 1,000,000$
	Calculate monthly total fossil-based CO ₂ e from S2.015 (tons)	$CO_2e(6F) = H_{N6} * C_N / 2000 + H_{N6} * (E_{NM} * W_M + E_{NN} * W_N) / 2000 + H_{S6} * (1 - R_S) * C_S / 2000 + H_{S6} * (1 - R_S) * (E_{SM} * W_M + E_{SN} * W_N) / 2000$
	Calculate monthly total biogenic-based CO ₂ e from S2.015 (tons)	$CO_2e(6B) = H_{S6} * R_S * C_S / 2000 + H_{S6} * R_S * (E_{SM} * W_M + E_{SN} * W_N) / 2000$

h. Fossil Based and Biogenic Based CO₂e Emissions for System 7 (Sulfur Removal)

V.G.4.e.(7)(e)	Obtain the total monthly CO ₂ emissions from System 7 Unit S2.016 (tons)	CO ₂ (7)
	Calculate the monthly total fossil based CO ₂ and CO ₂ e (tons)	$CO_2e(7F) = CO_2(7) * (1 - R_S)$
	Calculate the monthly total biogenic based CO ₂ and CO ₂ e (tons)	$CO_2e(7B) = CO_2(7) * (R_S)$

i. Fossil Based CO₂e Emissions for System 15 (Fire Pump Engine)

V.O.4.a.(4)	Calculate monthly total CO ₂ e from System 15 Unit S2.029	
V.O.4.a.(5)(b)	Obtain the total monthly fuel combustion rate (gallons)	D(15)
	Calculate the monthly total heat content of the combusted fuel (MMBtu/month)	$H_{D15} = D(15) * 0.137$
	Calculate the monthly total fossil-based CO ₂ e for System 15 Unit S2.029 (tons)	$CO_2e(15F) = H_{D15} * C_D / 2000 + H_{D15} * (E_{DM} * W_M + E_{DN} * W_N) / 2000$



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Section VI. Emission Caps (continued)

- A. Cap for Emission Units S2.032 (System 4A, Hydrocracker Heater), S2.033 (System 4B, Fractionator Heater), S2.034 (System 4C, Product Stripper Heater), S2.013a-b-c-d and S2.014 (System 5, Boiler and Pulse Combustors), S2.015 (System 6, Flare), S2.016 (System 7, Sulfur Removal), S2.029 (System 15, Fire Pump Engine), and S2.030 (System 16, Emergency Generator) (continued)

3. Greenhouse Gas Calculation Protocol (NAC 445B.346.2) (continued)

j. Fossil Based CO₂e Emissions for System 16 (Emergency Generator)

V.P.4.a.(4)	Calculate monthly total CO ₂ e from System 16 Unit S2.030	
V.P.4.a.(5)(b)	Obtain the total monthly fuel combustion rate (gallons)	D(16)
	Calculate the monthly total heat content of the combusted fuel (MMBtu/month)	$H_{D16} = D(16) \cdot 0.137$
	Calculate the monthly total fossil-based CO ₂ e for System 16 Unit S2.030 (tons)	$CO_2e(16F) = H_{D16} \cdot C_D / 2000 + H_{D16} \cdot (E_{DM} \cdot W_M + E_{DN} \cdot W_N) / 2000$

k. Tabulation of Monthly Biogenic Based CO₂e, Fossil Based CO₂e, and Total CO₂e

Tabulate the monthly biogenic based CO₂e, fossil based CO₂e, and total CO₂e based on 3.a through 3.j of this section in a table format:

MONTH/YEAR			
System	Biogenic CO ₂ e (tons)	Fossil CO ₂ e (tons)	Total CO ₂ e (tons)
System 4A - Hydrocracker Heater		CO ₂ e(4AF)	CO ₂ e(4AF)
System 4B - Fractionator Heater		CO ₂ e(4BF)	CO ₂ e(4BF)
System 4C - Product Stripper Heater		CO ₂ e(4CF)	CO ₂ e(4CF)
System 5 - Boiler + Pulse Combustor	CO ₂ e(5B)	CO ₂ e(5F)	CO ₂ e(5F)+CO ₂ e(5B)
System 6 - Sulfur Removal Unit	CO ₂ e(6B)	CO ₂ e(6F)	CO ₂ e(6F)+CO ₂ e(6B)
System 7 - Ground Based Flare	CO ₂ e(7B)	CO ₂ e(7F)	CO ₂ e(7F)+CO ₂ e(7B)
System 15 - Firewater Pump Engine		CO ₂ e(15F)	CO ₂ e(15F)
System 16 - Emergency Generator		CO ₂ e(16F)	CO ₂ e(16F)
TOTAL CO ₂ e			

*****End of Emission Caps*****



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Section VII. Surface Area Disturbance Conditions

Surface area disturbance in excess of 20 acres – 22.8 acres for Fulcrum Sierra Biofuels, LLC facility.

A. Dust Control Plan (NRS 445B.230.6)

Permittee may not cause or permit the construction, repair, or demolition work, or the use of unpaved or untreated areas without applying all such measures as may be required by the Director to prevent particulate matter from becoming airborne.

1. Permittee will control fugitive dust in accordance with the dust control plan entitled "Surface Area Disturbance Permit Fugitive Dust Control Plan, as submitted on March 21, 2013.

B. Fugitive Dust (NAC 445B.22037)

1. Permittee may not cause or permit the handling, transporting, or storing of any material in a manner which allows or may allow controllable particulate matter to become airborne.
2. Except as otherwise provided in subsection 4, Permittee may not cause or permit the construction, repair, demolition, or use of unpaved or untreated areas without first putting into effect an ongoing program using the best practical methods to prevent particulate matter from becoming airborne. As used in this subsection, "best practical methods" includes, but is not limited to, paving, chemical stabilization, watering, phased construction, and revegetation.
3. Except as provided in subsection 4, Permittee may not disturb or cover 5 acres or more of land or its topsoil until Permittee has obtained an Operating Permit for surface area disturbance to clear, excavate, or level the land or to deposit any foreign material to fill or cover the land.
4. The provisions of subsections 2 and 3 do not apply to:
 - a. Agricultural activities occurring on agricultural land; or
 - b. Surface disturbances authorized by a permit issued pursuant to NRS 519A.180 which occur on land which is not less than 5 acres or more than 20 acres.

C. Posting (NAC 445B.308.7)

1. Permittee shall install a sign constructed and labeled with materials capable of withstanding the strong winds, intense sunlight, and other conditions characteristic of Nevada's outdoors. The sign must be erected along the major street bordering the property, or at the main entrance to the site, within 50 feet of the border of the property. The sign must be clearly legible from the road and not be obstructed by signs, vehicles, vegetation, or any materials. The sign shall be replaced or repaired should it become damaged or difficult to read.
2. A sign that meets the following criteria will generally meet the requirements of subsection 1:
 - a. Grade A/C plywood ¾" thick, a minimum of 4 feet by 4 feet in dimension;
 - b. Two 4"x 4" posts with the base of the sign a minimum of 2 feet above ground level;
 - c. A minimum of two (2) carriage bolts for each post to secure the plywood sign to the posts.
3. The front of the sign must be labeled with dark lettering on a contrasting background. The sign shall clearly identify the name of the project, the name of the person (permittee, operator, or contractor) responsible for dust control, and provide the telephone number of the person responsible for dust control (valid during daylight hours, seven days a week), the project's street address (or physical location), and the air quality operating permit number. The sign must remain posted for the life of the permit. A sign labeled in block letters or numerals at least 4" high, in lines spaced 3" apart, in accordance with the following layout will generally meet the requirements of this section:

Fulcrum Sierra Biofuels, LLC – 22.8 Acres
Name of person responsible for dust control
in case of dust complaints, please call: (Your Number) -OR- Nevada Division Of Environmental Protection: (775) 687-9349
3600 Peru Drive, McCarran, NV
BAPC Permit AP2869-3306

*****End of Surface Area Disturbance Conditions*****



Nevada Department of Conservation and Natural Resources • Division of Environmental Protection

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Section VIII. Schedules of Compliance

A. N/A

*****End of Schedule of Compliance Conditions*****



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Section IX. Amendments

July 1, 2013 – Aircase #7331, New Class II Air Permit. Replaces Class II AP2869-2382.

June 25, 2014 – Aircase #7824, Air Permit Modification.

- Revise Systems 1-2-3-4-5-6-7-8-9-10-12-13-14. Remove System 11. Fulcrum will produce synthetic paraffinic kerosene from syngas instead of ethanol.
- Facility-wide emissions decrease by 10.74 tpy for PM/PM₁₀/PM_{2.5}, 31.32 tpy for NO_x, 18.42 tpy for SO₂, 12.22 tpy for CO, 39.94 tpy for VOC; increase by 0.29 tpy for H₂S.

This permit:

1. Is non-transferable. (NAC 445B.287.3)
2. Will be posted conspicuously at or near the stationary source. (NAC 445B.318.5)
3. Will expire and be subject to renewal five (5) years from: July 1, 2013. (NAC 445B.315)
4. A completed application for renewal of an operating permit must be submitted to the director on the form provided by him with the appropriate fee at least 70 calendar days before the expiration date of this operation permit. (NAC 445B.3473.2)
5. Any party aggrieved by the Department's decision to issue this permit may appeal to the State Environmental Commission (SEC) within ten days after the date of notice of the Department's action. (NRS 445B.340)

THIS PERMIT EXPIRES ON: July 1, 2018

Signature: 

Issued by: Jeffrey Kinder, P.E.
Supervisor, Permitting Branch
Bureau of Air Pollution Control

Phone: (775) 687-9475

Date: June 25, 2014

rp 04/13
rp 06/14

Class II Non-Permit Equipment List

Appended to Permit #AP2869-3306

Emission Unit #	Emission Unit Description
IA1.001	200 ton/day Oxygen Production Plant
IA1.002	Waste Water Treatment System – Enclosed System
IA1.003	Sulfur Removal Regeneration Unit – aqueous process
IA1.004	< 10,000 Gallon Diesel Storage Tank
IA1.005	< 1,000 Gallon Diesel Storage Tank collocated with the Emergency Generator
IA1.006	< 1,000 Gallon Diesel Storage Tank collocated with the Firewater Pump