PRELIMINARY DETERMINATION
ON PERMIT APPLICATION MAQP #5263-02

Date of Posting: September 14, 2023

Name of Applicant: Montana Renewables LLC
Source: Renewable Fuels Plant
Location: NE quarter of Section 1, Township 20 North, Range 3 East in Cascade County

Proposed Action: DEQ proposes to issue a permit, with conditions, to the above-named applicant. The application was assigned Montana Air Quality Permit (MAQP) Application Number 5263-02.

Proposed Conditions: See attached Preliminary Determination of MAQP #5263-02.

Public Comment: Any member of the public desiring to comment must submit comments to DEQ-ARMB-Admin@mt.gov or to the address below. Comments may address DEQ's analysis and Preliminary Determination, or the information submitted in the application. All comments are due by September 29, 2023. Copies of the application and DEQ's analysis may be requested at https://deq.mt.gov (at the bottom of the home page, select *Request Public Records)*. For more information, you may contact DEQ at (406) 444-3490, or DEQ-ARMB-Admin@mt.gov.

Departmental Action: DEQ intends to make a Decision on the application following the Public Comment period. A copy of the Decision will be available on DEQ's website, https://deq.mt.gov/public/publicnotice (select *AIR)*. The permit shall become final on the date stated in the Decision, unless the Board of Environmental Review (Board) orders a stay on the permit.

Procedures for Appeal: Any person who is directly and adversely affected by DEQ's Decision may request a hearing before the Board. The appeal must be filed by the date that will be stated in the Decision. The request for a hearing must contain an affidavit setting forth the grounds for the request. The hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for a hearing to: Chairman, Board of Environmental Review, P.O. Box 200901, Helena, MT 59620, or the Board Secretary: DEQBERSecretary@mt.gov.

For DEQ,

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Enclosures

MONTANA AIR QUALITY PERMIT

Issued to: Montana Renewables LLC 1900 Street NE Great Falls, Montana 59404	MAQP: #5263-02 Application Received: August 31, 2023 Application Complete: August 31, 2023 Preliminary Determination: September 14, 2023 Department's Decision: Permit Final:

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

Section I: Permitted Facilities

A. Plant Location

The legal description of the site is the Northeast (NE) quarter of Section 1, Township 20 North, Range 3 East in Cascade County, Montana. The renewable fuels plant sits on the site previously occupied by the Montana Calumet Refinery. A map of the site is included in the Environmental Assessment attached to this permit.

B. Current Permit Action

On August 31, 2023, the Department of Environmental Quality (DEQ) received an application to modify MAQP #5263-01. Since the last MAQP was issued on July 7, 2022; the overall facility design has evolved. MRL operates one existing Renewable Diesel Unit (RDU) Combined Feed Heater (H-4101) and one existing RDU Fractionator Feed Heater (H-4102), in MAQP #5263-01. The annual average firing rates of H-4101 and H-4102 are permitted not to exceed 25 million British thermal units (MMBtu)/hour (hr) and 30 MMBtu/hr, respectively. MRL proposes to return the two heaters to the firing rates that were permitted when the heaters were part of the Calumet Montana Refinery (CMR). No physical changes have been made to either heater, and H-4101 and H-4102 would be returned to their original firing rates of 54 MMBtu/hr, and 38 MMBtu/hr, respectively.

MRL also proposes to add two diesel-fired low pressure (LP) boilers, identified as, LPB-1 and LPB-2, which would be used for steam generation to heat rail cars that supply materials to the RDU. Each LP boiler will have a maximum heat input capacity of 2.2 MMBtu/hr. The two LP boilers will be trailer-mounted, and each trailer will be equipped with one diesel-fired non-emergency generator (Gen-1 and Gen-2). Each generator would be powered by an EPA Tier 4 certified engine with a maximum rated power capacity of 12.3 horsepower (hp).

MRL also proposes to add four small diesel fuel storage tanks to fire the two LP boilers and non-emergency generators.

Section II: Conditions and Limitations

A. Emission Limitations

1. RDU Combined Feed Heater (H-4101)

a. NOx emissions shall not exceed 0.035 lb/MMBtu (Higher Heating Value) (HHV) on a 30-day rolling average basis using ultra-low NOx burners (ULNBs) and monitored via CEMS including an O_2 analyzer and NOx analyzer (ARM 17.8.752 and ARM 17.8.749).

b. MRL shall use good combustion practices and an oxygen monitoring system to control CO emissions which may not exceed 0.055 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

c. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize PM (ARM 17.8.752 and ARM 17.8.749).

d. PM (filterable) emissions shall not exceed 0.00051 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

e. PM_{10} (filterable plus condensable) emissions shall not exceed 0.00051 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

f. $PM_{2.5}$ (filterable plus condensable) emissions shall not exceed 0.00042 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

g. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize volatile organic compounds (VOCs) (ARM 17.8.752 and ARM 17.8.749).

h. The annual average firing rate of H-4101 shall not exceed 54 MMBtu/hr (HHV) (ARM 17.8.752 and ARM 17.8.749).

i. MRL shall conduct the work practice standards for minimizing CO required under 40 CFR 63 Subpart DDDDD (40 CFR 63 Subpart DDDDD, ARM 17.8.749 and ARM 17.8.342).

j. H-4101 shall only combust natural gas and RDU off-gas (ARM 17.8.749).

k. H-4101 shall not combust RDU off-gas fuel containing H_2S in excess of 30 ppmv. Additionally, the heater shall not combust RD off-gas fuel containing H_2S in excess of 10 ppmv on an annual average basis (ARM 17.8.749.)

l. Opacity shall not exceed 20% averaged over any 6 consecutive minutes (ARM 17.8.304)

2. Hydrogen Plant #3 - Reformer Heaters (H-3815A and H-3815B)

   a. The annual average firing rate of each heater (H-3815A and H-3815B) shall not exceed 67.0 MMBtu/hr (HHV) (ARM 17.8.749).

   b. NOx emissions from each heater shall be controlled by an ULNB and the combined NOx emissions from the two heaters shall not exceed 0.051 lb/MMBtu (HHV) on a 30-day rolling average basis and monitored via CEMS including an O_2 analyzer and NOx analyzer (ARM 17.8.752 and ARM 17.8.749).

   c. MRL shall control PM (filterable), PM_{10} (filterable plus condensable) and $PM_{2.5}$ (filterable plus condensable) emissions from each heater by utilizing good combustion practices and only combusting low sulfur fuels (ARM 17.8.752 and ARM 17.8.749):

      i. PM (filterable) emissions shall not exceed 0.00051 lb/MMBtu (HHV) on a 1-hour average.

      ii. PM_{10} (filterable plus condensable) emissions shall not exceed 0.00051 lb/MMBtu (HHV) on a 1-hour average.

      iii. $PM_{2.5}$ (filterable plus condensable) emissions shall not exceed 0.00042 lb/MMBtu (HHV) on a 1-hour average.

   d. MRL shall control CO emissions using good combustion practices and CO emissions shall not exceed 0.03 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

   e. Opacity shall not exceed 20% averaged over any 6 consecutive minutes (ARM 17.8.304).

   f. H-3815A and H-3815B shall only combust natural gas and PSA off-gas, which are inherently low sulfur fuels (ARM 17.8.749).

3. Hydrogen Plant #4 (H-4801). MRL shall comply with the following requirements:

   a. NOx emissions shall be controlled by an ULNB and shall not exceed 0.04 lb/MMBtu (HHV) on a 30-day rolling average basis and monitored via CEMS including an O_2 analyzer and NOx analyzer (ARM 17.8.752 and ARM 17.8.749).

   b. MRL shall use good combustion practices and a continuous oxygen monitoring system to control CO emissions which may not exceed 0.03 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

c. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize PM (ARM 17.8.752 and ARM 17.8.749).

d. H-4801 shall not combust PSA off-gas fuel containing H_2S in excess of 30 ppmv. Additionally, the heater shall not combust PSA off-gas fuel containing H_2S in excess of 10 ppmv on an annual average basis (ARM 17.8.752 and ARM 17.8.749).

e. H-4801 shall not combust RDU off-gas fuel containing H_2S in excess of 30 ppmv. Additionally, the heater shall not combust RDU off-gas in fuel containing H_2S in excess of 10 ppmv on an annual average basis (ARM 17.8.749 and ARM 17.8.752).

f. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize VOCs (ARM 17.8.752 and ARM 17.8.749).

g. The annual average firing rate of H-4801 shall not exceed 213 MMBtu/hr (HHV) (ARM 17.8.749).

h. MRL shall comply with 40 CFR 63 Subpart DDDDD which requires the process heater to undergo a tune-up every five years, as specified in 40 CFR 63. 7540 (40 CFR 63, Subpart DDDDD, ARM 17.8.342 and ARM 17.8.749).

i. H-4801 shall only combust natural gas, PSA off-gas and RDU off-gas (ARM 17.8.749).

j. Opacity shall not exceed 20% averaged over any 6 consecutive minutes (ARM 17.8.304).

4. New Tanks #301, #302, #303, #304, #305, #306, #307, #308, #309, #0801, and #4201

a. MRL shall control VOC emissions from Tank #301, #302, #303, #305, #306, #307, #308, #309 and #0801 by equipping each tank with a fixed roof and submerged fill design (ARM 17.8.752 and ARM 17.8.749).

b. MRL shall control VOC emissions from Tank #304 by equipping it with an external floating roof (ARM 17.8.752 and 40 CFR 60, Subpart Kb, ARM 17.8.340 and ARM 17.8.749).

c. MRL shall control VOC emissions from Tank #4201 by equipping it with a carbon adsorption control device (ARM 17.8.749 and ARM 17.8.752).

d. Tanks #301, #302 and #303 shall only be used to store renewable feed or an equivalent material with equal or lower vapor pressure (ARM 17.8.749).

e. Tank #304 shall only be used to store renewable naphtha or an equivalent material with equal or lower vapor pressure (ARM 17.8.749).

f. Tank #305 shall only be used to store renewable diesel or an equivalent material with equal or lower vapor pressure (ARM 17.8.749).

g. Tanks #306 and #307 shall only be used to store renewable kerosene or an equivalent material with equal or lower vapor pressure (ARM 17.8.749).

h. Tanks #308 and #309 shall only be used to store renewable kerosene or sustainable aviation fuel or an equivalent material with a vapor pressure equal or lower than the highest vapor pressure of renewable kerosene and sustainable aviation fuel (ARM 17.8.749).

i. Tank #0801 shall only be used to store conventional diesel (ARM 17.8.749).

j. Tank #4201 shall only be used to store wastewater produced by the PTU (ARM 17.8.749).

5. Hot Oil Expansion Tank (D-4203)

MRL shall utilize proper equipment design and good operating practices to minimize VOCs from the Hot Oil Expansion Tank (D-4203) (ARM 17.8.752 and ARM 17.8.749).

6. PTU Blowdown Drum (D-4208)

MRL shall utilize carbon adsorption for VOC control on the PTU Blowdown Drum (D-4208) (ARM 17.8.749 and ARM 17.8.752).

7. Tank #112 shall only be used to store renewable feed or RDU slop oil or an equivalent material with equal or lower vapor pressure (ARM 17.8.749).

8. Tanks #50 and #102 shall each be equipped with a fixed roof (ARM 17.8.752).

9. Tank #128 shall each be equipped with a fixed roof with pressure/vacuum vent and submerged fill (ARM 17.8.749 and ARM 17.8.752).

10. MRL shall utilize equipment design and Leak Detection and Repair (LDAR) practices to control VOCs from the RDU, Hydrogen Plant #4, Storage Tanks, and PTU piping fugitive components, and PTU Wastewater Components (ARM 17.8.752 and ARM 17.8.749).

a. RDU piping fugitive components "in VOC service" shall comply with the equipment leak provisions found in 40 CFR 60.482-1a through 60.482-10a. Pursuant to NESHAP Subpart FFFF, the RDU piping fugitive components "in organic HAP service" shall comply with the new source equipment leak provisions found in 40 CFR 63.2480 (ARM 17.8.749).

b. Hydrogen Plant #4 piping fugitive components "in VOC service" shall comply with the equipment leak provisions found in 40 CFR 60.482-1a through 60.482-10a (ARM 17.8.749).

c. Storage Tank piping fugitive components "in VOC service" shall comply with the equipment leak provisions found in40 CFR 60.482-1a through 60.482.-10a. Pursuant to NESHAP Subpart FFFF, the Storage Tank piping fugitive components in "organic HAP service" shall comply with the new source equipment leak provisions found in 40 CFR 63.2480 (ARM 17.8.749).

d. PTU piping fugitive components "in VOC service" shall comply with the equipment leak provisions found in 40 CFR60.482-1a through 60.482-10a (ARM 17.8.749)

11. MRL shall follow the applicable requirements under 40 CFR 63, Subpart FFFF for all existing and new tanks depending upon whether each specific tank is in Group 1 or Group 2 (ARM 17.8.749, ARM 17.8.342 and 40 CFR 63, Subpart FFFF).

12. MRL shall utilize equipment design and equipment monitoring and maintenance practices to control VOCs from the RDU, Hydrogen Plant #4, Storage Tank, and PTU wastewater components (ARM 17.8.752 and ARM 17.8.749).

a. RDU "individual drain systems," "oil-water separators," and "aggregate facilities" shall comply with the provisions found in 40 CFR 60.692–1 through 60.692–7. The RDU wastewater components shall comply with NESHAP Subpart FF and the wastewater provisions found in 40 CFR 63.2485 of NESHAP Subpart FFFF (ARM 17.8.749).

b. Hydrogen Plant #4 "individual drain systems," "oil-water separators," and "aggregate facilities" shall comply with the provisions found in 40 CFR 60.692–1 through 60.692–7. The Hydrogen Plant #4 wastewater components shall comply with NESHAP Subpart FF (ARM 17.8.749).

c. Storage Tank "individual drain systems," "oil-water separators," and "aggregate facilities" shall comply with the provisions found in 40 CFR 60.692–1 through 60.692–7. The Storage Tank wastewater components shall comply with NESHAP Subpart FF and the wastewater provisions found in 40 CFR 63.2485 of NESHAP Subpart FFFF (ARM 17.8.749).

d. PTU "individual drain systems," "oil-water separators," and "aggregate facilities" shall comply with the provisions found in 40 CFR 60.692-1 through 60.692-7. The PTU wastewater components shall comply with NESHAP Subpart FF (ARM 1.8.749).

13. MRL shall comply with the emission control requirements of 40 CFR 63.2455 for each RDU Group 1 continuous process vent (40 CFR 63, Subpart FFFF, ARM 17.8.342 and ARM 17.8.749).

14. MRL shall comply with the monitoring requirements of 40 CFR 63.2455 for each applicable RDU Group 2 continuous process vent (40 CFR 63, Subpart FFFF, ARM 17.8.342 and ARM 17.8.749).

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

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

17. MRL shall treat all unpaved portions of the access roads with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.13 (ARM 17.8.749).

18. RDU Fractionator Feed Heater (H-4102)

    a. NOx emissions shall not exceed 0.04 lb/MMBtu (HHV) on a 1-hour average using ULNBs (ARM 17.8.752 and ARM 17.8.749).

    b. MRL shall use good combustion practices and an oxygen monitoring system to control CO emissions which may not exceed 0.055 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

    c. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize PM (ARM 17.8.752 and ARM 17.8.749).

    d. PM (filterable) emissions shall not exceed 0.00051 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

    e. PM_{10} (filterable plus condensable) emissions shall not exceed 0.00051 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

    f. $PM_{2.5}$ (filterable plus condensable) emissions shall not exceed 0.00042 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

    g. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize VOCs (ARM 17.8.752 and ARM 17.8.749).

    h. The annual average firing rate of H-4102 shall not exceed 38 MMBtu/hr (HHV) (ARM 17.8.749).

i. MRL shall conduct the work practice standards for minimizing CO and VOCs required under 40 CFR 63 Subpart DDDDD (40 CFR 63 Subpart DDDDD, ARM 17.8.749 and ARM 17.8.342).

j. H-4102 shall only combust pipeline quality natural gas and RDU off-gas (ARM 17.8.749).

k. H-4102 shall not combust RDU off-gas fuel containing H_2S in excess of 30 ppmv. Additionally, the heater shall not combust RDU off-gas fuel containing H_2S in excess of 10 ppmv on an annual average basis (ARM 17.8.749 and ARM 17.8.752).

l. Opacity shall not exceed 20% averaged over any 6 consecutive minutes (ARM 17.8.304)

19. Hot Oil Heater (H-4201)

    a. NOx emissions shall not exceed 0.02 lb/MMBtu (HHV) on a 1-hour average using (ULNBs (ARM 17.8.752 and ARM 17.8.749).

    b. MRL shall use good combustion practices and an oxygen system to control CO emissions which may not exceed 0.04 lb/MMBtu (HHV) on a 1-hour average (ARM 17.8.752 and ARM 17.8.749).

    c. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize PM (ARM 17.8.752 and ARM 17.8.749).

    d. MRL shall utilize an oxygen monitoring system and good combustion practices to minimize VOCs (ARM 17.8.752 and ARM 17.8.749).

    e. The annual average firing rate of H-4201 shall not exceed 38 MMBtu/hr (HHV) (ARM 17.8.752 and ARM 17.8.749).

    f. MRL shall conduct the work practice standards for minimizing CO and VOCs required under 40 CFR 63 Subpart DDDDD (40 CFR 63 Subpart DDDDD, ARM 17.8.749 and ARM 17.8.342).

    g. H-4201 shall only combust pipeline quality natural gas which is inherently low in sulfur (ARM 17.8.749 and Arm 17.8.752).

    h. Opacity shall not exceed 20% averaged over any 6 consecutive minutes (ARM 17.8.304)

20. Railcar loading of renewable kerosene and sustainable aviation fuel shall utilize submerged fill loading (ARM 17.8.749 and ARM 17.8.752).

21. Truck loading and railcar loading of PTU wastewater shall utilize carbon adsorption to minimize VOC releases (ARM 17.8.749 and ARM 17.8.752).

22. Low Pressure Boilers (LPB-1 and LPB-2)

a. Each LPB boiler shall comply with 40 CFR 63 Subpart DDDDD (40 CFR 63 Subpart DDDDD, ARM 17.8.749 and ARM 17.8.342).

b. Each LPB boiler shall not exceed an annual average firing rate of 2 MMBtu/hr (HHV) (ARM 17.8.752 and ARM 17.8.749).

c. Each LPB boiler shall only be fired on ultra-low sulfur diesel (maximum sulfur content of 15 ppm) (ARM 17.8.749 and ARM 17.8.752).

d. Each LPB boiler shall follow good combustion practices and follow the manufacturer's recommendations for maintenance and operation (ARM 17.8.749 and ARM 17.8.752).

23. Non-Emergency Generators (Gen-1 and Gen-2)

a. Each non-emergency generator shall comply with 40 CFR 63 Subpart ZZZZ by meeting the requirement of 40 CFR 60 Subpart IIII (40 CFR 63 Subpart ZZZZ, 40 CFR 60 Subpart IIII, ARM 17.8.749, ARM 17.8.340, and ARM 17.8.342).

b. Each non-emergency generator shall only be fired on ultra-low sulfur diesel (maximum sulfur content of 15 ppm) (ARM 17.8.749 and ARM 17.8.752).

c. Each non-emergency generator shall be EPA Tier 4 certified (ARM 17.8.749 and ARM 17.8.752).

d. Each non-emergency generator shall follow good combustion practices and follow the manufacturer's recommendations for maintenance and operation (ARM 17.8.749 and ARM 17.8.752).

B. Testing Requirements

1. The RDU Combined Feed Heater (H-4101) shall be tested for CO and NOx concurrently and the results submitted to the Department in order to demonstrate compliance with the emission limits contained in Section II.A.1. The initial testing shall occur within 180 days of startup of the heater after it is transferred from Calumet Montana Refining, LLC (CMR) to MRL. Test procedures shall use EPA Reference Methods 10 and 7E or equivalent, as approved by the Department (ARM 17.8.105 and ARM 17.8.106).

2. The combined emissions from Hydrogen Plant #3 Reformer Heaters (H-3815A and H-3815B) shall be tested in the common stack for CO and NOx concurrently and the results submitted to the Department in order to demonstrate compliance with the emission limits contained in Section II.A.2. The initial testing shall occur within 180 days of startup of the heaters after they are transferred from CMR to MRL. Test procedures shall use EPA Reference Methods 10 and 7E or equivalent, as approved by the Department (ARM 17.8.105 and ARM 17.8.106).

3. The Hydrogen Plant #4 Reformer Heater (H-4801) shall be tested for CO and NOx concurrently and the results submitted to the Department in order to demonstrate compliance with the emission limits contained in Section II.A.3. The initial testing shall occur within 180 days of startup of the heater. Test procedures shall use EPA Reference Methods 10 and 7E or equivalent, as approved by the Department (ARM 17.8.105 and ARM 17.8.106).

4. The RDU Fractionator Feed Heater (H-4102) shall be tested for CO and NOx concurrently and the results submitted to the Department in order to demonstrate compliance with the emission limits contained in Section II.A 17.a. The initial testing shall occur within 180 days of startup of the heater after it is transferred from CMR to MRL. Test procedures shall use EPA Reference Methods 10 and 7E or equivalent, as approved by the Department (ARM 17.8.105 and ARM 17.8.106).

5. The Hot Oil Heater (H-4201) shall be tested for CO and NOx concurrently and the results submitted to the Department in order to demonstrate compliance with the emission limits contained in Section II.A.18.a. The initial testing shall occur within 180 days of startup of the heater. Test procedures shall use EPA Reference Methods 10 and 7E or equivalent, as approved by the Department (ARM 17.8.105 and ARM 17.8.106).

6. MRL shall sample and analyze the concentration (dry basis) of H_2S in the Hydrogen Plant #4 PSA off-gas fuel at least once per week, in order to demonstrate compliance with the limit in Section II.A.3.d (ARM 17.8.749).

7. MRL shall sample and analyze the concentration (dry basis) of H_2S in the RDU off-gas fuel at least once per month in order to demonstrate compliance with the limit in Section II.A.1.k, II.A.3.e, and II.A.17.k.

8. The NOx and O_2 CEMS on the RDU Combined Feed Heater (H-4101), Hydrogen Plant #3 Reformer Heaters (H-31815A/H-3815B), and Hydrogen Plant #4 Reformer Heater (H-4801) shall comply with 40 CFR 60.13- 60.19 Subpart A—General Provisions and 40 CFR 60 Appendices B and F (ARM 17.8.749).

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

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

C. Operational Reporting Requirements

1. MRL shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

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

2. MRL shall document, by month, the total MMBtu's combusted for each of the heaters (RDU Combined Feed Heater (H-4101), Hydrogen Plant #3 Reformer Heaters (H-3815A and H-3815B), Hydrogen Plant #4 Reformer Heater (H-4801), RDU Fractionator Feed Heater (H-4102), and Hot Oil Heater (H-4201), and apply the appropriate emission factors on a lb/MMBtu basis to calculate the monthly emissions. The monthly emissions information for the calendar year shall be submitted annually to the Department along with the annual emission inventory (ARM 17.8.749).

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

4. All records compiled in accordance with this permit must be maintained by MRL as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request. These records may be stored at a location other than the plant site upon approval by the Department (ARM 17.8.749).

D. Notification

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

1. Startup date of the RDU Combined Feed Heater (H-4101) after it is transferred from CMR to MRL within 15 working days of the start-up date.

2. Startup date of the Hydrogen Plant #4 Reformer Heater (H-4801) within 15 working days of the startup date.

3. Startup date of the RDU Fractionator Feed Heater (H-4102) after it is transferred from CMR to MRL within 15 working days of the start-up date.

4. Startup date of the Hot Oil Heater (H-4201) within 15 working days of the startup date.

5. Startup dates of each of the new tanks #301, #302, #303, #304 #305, #306, #307,

#308, #309, #0801, and #4201 within 15 working days of the startup date of each tank.

6. Date of transfer of Hydrogen Plant #3 from CMR to MRL and dates of transfer of each of the existing tanks (#29, #50, #102, #112, #116, #128 and #140) from CMR to MRL within 15 working days of transfer of each.

7. Startup dates of each of the Low Pressure Boilers (LPB-1 and LPB-2) within 15 working days of the startup of each.

SECTION III: General Conditions

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

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

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

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

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

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

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

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

Montana Air Quality Permit (MAQP) Analysis
Montana Renewables LLC.
MAQP #5263-02

I. Introduction/Process Description

A. Permitted Equipment

Pretreatment Unit (PTU) including

- Deaerator, liquid-liquid separator, and blowdown process vessels
- Liquid reactors
- Heat exchangers
- Filters and static mixers; and
- Piping and piping components (pumps, valves, flanges, connectors, etc.).

Hot Oil System including:

- Hot Oil Heater (H-4201)
- Hot Oil Expansion Tank (D-4203)

PTU Wastewater Handling including:
- Tank #4201
- Truck loading facility and
- Railcar loading facility (or use of existing railcar loading infrastructure transferred from Calumet Montana Refining, LLC (CMR) to Montana Renewables, LLC (MRL).

Railcar Unloading of Renewable Feedstock

Railcar Loading of Renewable Diesel, Renewable Kerosene, and Sustainable Aviation Fuel

Equipment previously permitted under MAQP #5263-00 and changes to the original project design including other new equipment is noted below:

Hydrogen Plant #4 will be installed at the MRL plant to supply hydrogen feedstock to the Renewable Diesel Unit (RDU)

- Hydrogen Plant #4 Reformer Heater (H-4801)
- Piping fugitive components and
- Wastewater components

New Tanks storing either renewable feed or renewable fuels

- Tank #301
- Tank #302
- Tank #303
- Tank #304
- Tank #305

MRL also proposes to receive, refurbish as necessary, and operate the following existing equipment transferred from CMR

RDU Combined Feed Heater (H-4101)

Hydrogen Plant #3: (including Hydrogen Plant #3 Reformer Heaters H-3815A and H-3815B given new emitting unit numbers).

MHC Fractionator Feed Heater (H-4102) (Now RDU Fractionator Feed Heater H-4102)

Tanks

- Tank #29
- Tank #50
- Tank #102
- Tank #112
- Tank #116
- Tank #128 and
- Tank #140

Associated piping, valves, pumps and supporting equipment.

The plant will also share some connectivity with flaring devices, material unloading and loading facilities, utility systems (e.g., steam and cooling water), and wastewater treatment systems owned and operated by CMR. These are further described in the permit analysis.

Existing and new equipment related to Renewable Kerosene and Sustainable Aviation Fuel Production and other Design Changes.

Existing RDU side stripper for renewable kerosene production.

New piping (pumps, valves, flanges, connectors) and heat exchanger to handle and cool renewable kerosene.

New process vessels in the RDU to perform filtration, coalescence and drying of renewable kerosene.

Four new tanks to store renewable kerosene and sustainable aviation fuel (SAF)
- Tank #306 for storing renewable kerosene
- Tank #307 for storing renewable kerosene
- Tank #308 for storing renewable kerosene or sustainable aviation fuel
- Tank #309 for storing renewable kerosene or sustainable aviation fuel

Tank #0801 for storing conventional diesel which will be blended with renewable diesel during railcar loading operations.

Low Pressure Boilers
LPB-1
LPB-2

Non-emergency Generators
Gen-1
Gen-2

Small Diesel Storage Tanks (4)

B. Source Description

The equipment described above operates at the MRL Great Falls Renewable Fuels Plant, which is adjacent to the CMR Great Falls Refinery. MRL operates as a subsidiary to Calumet Specialty Products Partners, L.P., as does CMR. The renewable equipment operating at the site is not a petroleum refinery and the numerous regulatory requirements for petroleum refineries do not apply to any of the new or transferred equipment operating under MAQP #5263-02.

C. Permit History

MAQP #5263-00 was issued on October 26, 2021. The proposed project allowed MRI to construct and operate a renewable diesel plant with a projected capacity of 15,000 barrels per day (bpd). Most of the equipment used for the renewable diesel plant was transferred from the existing CMR petroleum refinery assets with additional equipment also permitted for the new facility.

MAQP #5263-01 was issued on July 7, 2022. On April 26, 2022, the DEQ received an application to modify MAQP #5263-00. Since the initial MAQP was issued on October 26, 2021, construction has begun for the new facility but the original design details have evolved to accommodate the latest project plan. The application was submitted under the name Renewable Feed Flexibility Project. The primary change in the plant design entailed installing a pretreatment unit (PTU) to allow the facility to treat raw renewable materials such as fats and oils which will result in the need to handle and transfer additional wastewater from the facility. The additional wastewater generation also required an additional storage tank as well as load-out facilities that use trucks, existing rail load-out infrastructure, or the installation of new rail load-out facilities. Finally, kerosene and a sustainable aviation fuel were added as products produced from the renewable fuels unit. These two new planned products also required new tanks as well as changes in the planned use of other tanks. MRL also proposed to permit the MHC Fractionator Feed Heater (H-4102) which had earlier been planned for shutdown and will now be called the RDU Fractionator Feed Heater (H-4102). Additional process equipment is also being permitted and is described in the MAQP analysis. MAQP #5263-01 replaced MAQP #5263-00.

D. Current Permit Action

On August 31, 2023, DEQ received an application to modify MAQP #5263-01. Since the last MAQP was issued on July 7, 2022; the overall facility design has evolved. MRL operates one existing Renewable Diesel Unit (RDU) Combined Feed Heater and one existing RDU Fractionator Feed Heater, identified as H-4101 and H-4102 respectively, in MAQP #5263-01. The annual average firing rates of H-4101 and H-4102 are permitted not to exceed 25 one million British thermal units (MMBtu)/hour (hr) and 30 MMBtu/hr, respectively. MRL proposes to return the two heaters to the firing rates that were permitted when the heaters were part of CMR. No physical changes have been made to either heater, and H-4101 and H-4102 would be returned to their original firing rates of 54 MMBtu/hr, and 38 MMBtu/hr, respectively.

MRL also proposes to add two diesel-fired LP boilers, identified as, LPB-1 and LPB-2, which will be used for steam generation to heat rail cars that supply materials to the RDU. Each LP boiler will have a maximum heat input capacity of 2.2 MMBtu/hr. The two LP boilers will be trailer-mounted, and each trailer will be equipped with one diesel-fired non-emergency generator (Gen-1 and Gen-2). Each generator will be powered by an EPA Tier 4 certified engine with a maximum rated power capacity of 12.3 horsepower (hp).

MRL also proposed to add four small diesel fuel storage tanks to fire the two low pressure boilers and two non-emergency generators. **MAQP #5263-02** replaces MAQP #5263-01.

E. Response to Public Comments
(To be included if any received)

PD Section Referenced	Comment	DEQ Response

II. Applicable Rules and Regulations

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

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

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

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

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

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

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

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

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

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

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

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

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

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, MRL shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

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

6. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. Sulfur Oxide Emissions-Sulfur in Fuel. This rule requires that no person shall cause, allow or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.

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

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

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

   b. 40 CFR 60, Subpart D_C – Standards of Performance for Small Industrial-Commercial Institutional Steam Generating Units.

   c. 40 CFR 60, Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.

   d. 40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

9. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. This source shall comply with the standards and provisions of 40 CFR Part 61, as appropriate.

   a. 40 CFR 61, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAP Subpart as listed below:

b. 40 CFR 61, Subpart M – National Emission Standard for Asbestos. Any demolition occurring would fall under this subpart as applicable.

c. 40 CFR 61, Subpart FF – National Emission Standard for Benzene Waste Operations

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

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

b. 40 CFR 63, Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing

c. 40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

d. 40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

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

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

2. ARM 17.8.402 Requirements. MRL must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP).

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

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

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

F. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year of any pollutant. MRL has a PTE greater than 25 tons per year of NOx, CO and VOCs, therefore an air quality permit is required.

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

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

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. MRL submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. MRL submitted an affidavit of publication of public notice for September 8, 2023, in the Great Falls Tribune, as proof of compliance with the public notice requirements.

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

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

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

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving MRL of the responsibility for complying

with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.760 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.

12. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

13. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

14. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

15. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

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

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

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

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

This facility is not a major stationary source because although the facility is a listed source its PTE is below 100 tons per year for all non-greenhouse gas pollutants.

H. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #5263-02 for MRL, the following conclusions were made:

a. The facility's PTE is less than 100 tons/year for non-greenhouse gas pollutants.

b. The facility's PTE, in combination with the CMR Great Falls Refinery's PTE is greater than 10 tons/year for any one HAP and greater than 25 tons/year for all HAPs.

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

d. This facility is subject to NSPS 40 CFR 60, Subpart A, Subpart Dc, Subpart Kb and Subpart IIII.

e. This facility is subject to NESHAP 40 CFR 63, Subpart A, Subpart FFFF, and Subpart DDDDD and Subpart ZZZZ.

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

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

Based on these facts, the Department determined that MRL is subject to the Title V operating permit program. Since there is common ownership and adjacent/contiguous property, Title V applicability is assumed as long as the current ownership structure exists.

III. BACT Determination

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

The BACT determination summary is presented directly below. The DEQ reviewed these methods, as well as previous BACT determinations. The following control options have been reviewed by the DEQ in order to make the following BACT determination.

RDU Combined Feed Heater (H-4101)

This heater was analyzed for BACT in MAQP #5263-00 which remains valid since no physical changes were made to this heater. That analysis has been incorporated into this permit.

The RDU Combined Feed Heater (H-4101) will combust a blend of pipeline quality natural gas and RDU off-gas. The heater will emit CO due to the incomplete oxidation of hydrocarbons present in the natural gas and RDU off-gas. However, natural gas and RDU off-gas are both low-carbon fuels. This fuel characteristic will promote low levels of CO emissions from the heater.

Furthermore, the heater is equipped with an oxygen monitoring system, which allows the plant to make on-line optimization adjustments to the heater's combustion process, as needed. This system greatly assists in minimizing the heater's CO emissions by providing the plant with the capability to maintain good combustion practices at the heater.

The heater is not subject to any NSPS or NESHAP CO emission standard. However, the heater is subject to the following NESHAP Subpart DDDDD work practice standards that will continue to minimize its CO emissions.

- Pursuant to 40 CFR 63. 7540(a)(10)(i), MRI will inspect the heater's burner(s), and clean or replace any components of the burner(s) as necessary.

- Pursuant to 40 CFR 63. 7540(a)(10)(ii), MRI will inspect the flame pattern of the heater's burner(s) and adjust the burner(s) as necessary to optimize the flame pattern, consistent with the manufacturer's specifications.

- Pursuant to 40 CFR 63.7540(a)(10)(iv), MRI will optimize total emissions of CO. This optimization is consistent with the manufacturer's specifications and the NOx emission limitation to which the heater is subject.

- Pursuant to 40 CFR 63. 7540(a)(10)(v), MRI will measure the CO and oxygen concentrations in the heater's exhaust stream before and after making the adjustments referenced above.

Additionally, the heater is subject to the following MT DEQ maximum air pollution control capability CO emission standard in the CMR MAQP #2161-35.

- Pursuant to ARM 17.8.752 CO emissions from the heater shall not exceed 0.055 lb/MMBtu.

CO BACT Determination

Step 1: Identify Control Technologies
The following are available CO emission control technologies for the RDU Combined Feed Heater (H-4101).

- Good Combustion Practices

- Thermal Oxidation

- Catalytic Oxidation

Below these technologies are generally described.

Good Combustion Practices

Good combustion practices for a gaseous fuel enclosed combustion device provide a properly set and controlled air-to-fuel ratio and appropriate combustion zone residence time, temperature, and turbulence parameters essential to achieving low CO emission levels. Incomplete combustion of fuel hydrocarbons can occur because of improper combustion mechanisms, which may result from poor burner/combustion device design, operation, and/or maintenance. However, a heater is designed and typically operated to maximize fuel combustion efficiency so that its fuel usage cost is minimized while maximizing process heating performance. Good combustion practices can be achieved by following a combustion device manufacturer's operating procedures and guidelines, as well as complying with NESHAP Subpart DDDDD work practice standards, which require a combustion device to undergo regular tune-ups.

Thermal Oxidation

Thermal oxidation can be used to reduce CO contained in a source's exhaust stream by maintaining the stream at a high enough temperature in the presence of oxygen, resulting in the oxidation of CO to CO_2. Thermal oxidation of a CO exhaust stream can be achieved by routing the stream to a flare, afterburner, or regenerative or recuperative thermal oxidizer. The effectiveness of all thermal oxidation processes is influenced by residence time, mixing, and temperature. Auxiliary fuel is typically required to achieve the temperature needed to ensure proper CO exhaust stream oxidation in a thermal oxidation device or process. The necessary amount of auxiliary fuel is dependent on the CO content of the exhaust stream, as well as the amount of hydrocarbon that may be present in the exhaust stream. The use of auxiliary fuel is considered an extra energy impact for the evaluation.

Catalytic Oxidation

Catalytic oxidation makes use of catalysts, such as the precious metals platinum, palladium, or rhodium, without the addition of any chemical reagents to reduce the temperature at which CO oxidizes to CO_2. The effectiveness of catalytic oxidation is dependent on the exhaust stream temperature and the presence of potentially poisoning contaminants in the exhaust stream. The amount of catalyst volume is dependent upon the exhaust stream flow rate, CO content, and temperature, as well as the desired CO removal efficiency. The catalyst will experience activity loss over time due to physical deterioration or chemical deactivation. Therefore, the catalyst must be periodically replaced. Catalyst life varies from manufacturer-to-manufacturer, but three to six-year windows are not uncommon. Periodic testing of the catalyst is necessary to monitor its activity (i.e., oxidation promoting effectiveness) and predict its remaining life. Catalyst disposal is considered a negative impact for this technology.

Step 2: Eliminate Technically Infeasible Options

The technical feasibility of the CO emission control technologies determined to be available for the RDU Combined Feed Heater (H-4101) is evaluated below.

Good Combustion Practices

Good combustion practices are an integral component of the design and operation of the heater. Therefore, this option is technically feasible for the heater.

Thermal Oxidation

Thermal oxidation is not technically feasible for the control of CO emissions from the heater due to the very low concentration of CO in its exhaust stream. The application of thermal oxidation to reduce the heater's CO emission rate would require the combustion of a considerable amount of fuel to achieve the elevated temperature necessary to promote the oxidation of the small amount of CO that will be present in the heater's exhaust stream. This fuel combustion would generate additional combustion pollutants, including CO. Thus, the CO emission reduction effectiveness of the thermal oxidation system would be reduced, if not negated, because of the CO generated by the thermal oxidation process.

Emission control technology application data sets indicates thermal oxidation has not been used to control CO emissions from a comparable heater. Based on these factors, MRI determined that it is not technically feasible to use thermal oxidation to control the heater's CO emissions.

Catalytic Oxidation

Catalytic oxidation is not technically feasible for the control of CO emissions from the heater because its exhaust gas temperature is too low for the effective operation of the oxidation catalyst. The optimum temperature range for catalytic oxidation is 850 to 1,100°F. Below temperatures of 500 to 600°F, the CO removal efficiency of the oxidation catalyst is considerably reduced. The heater's convection section incorporates a considerable amount of heat recovery to heat an RDU feed oil and hydrogen mixture in one set of coils and water in a separate set of coils. Specifically, the convection section incorporates a feed preheat coil and a boiler feedwater coil. The exhaust gas temperature after these heat recovery operations is approximately 460°F. Therefore, the exhaust gas temperature of the heater is too low for the effective operation of catalytic oxidation. Moreover, due to the considerably low concentration of CO in the heater's exhaust stream, the potential effectiveness of a catalytic oxidation system in this case would be limited.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The only remaining available CO emission control technology for the RDU Combined Feed Heater (H-4101) is good combustion practices.

Step 4: Evaluate Most Effective Control Options and Document Results

The only remaining available CO emission control technology for the RDU Combined Feed Heater (H-4101) is good combustion practices.

Step 5: Select BACT

MRI determined that good combustion practices represent the maximum air pollution control capability for CO emissions from the RDU Combined Feed Heater (H-4101).

Therefore, MRI will control CO emissions from the heater by using good combustion practices and complying with the following emission limitation: CO emissions from the RDU Combined Feed Heater (H-4101) shall not exceed 0.055 lb/MMBtu (HHV), based on a 1-hour average.

NOx

The RDU Combined Feed Heater (H-4101) will emit NOx, primarily due to the thermal and prompt NOx generation mechanisms because the heater's fuel will not contain appreciable amounts of organo-nitrogen compounds that result in fuel NOx emissions. Thermal NOx results from the high temperature thermal dissociation and subsequent reaction of combustion air molecular nitrogen and oxygen, and it tends to be generated in the high temperature zone near the burner of an external combustion device. The rate of thermal NOx generation is affected by the following three factors: oxygen concentration, peak flame temperature, and duration at peak flame temperature. As these three factors increase in value, the rate of thermal NOx generation increases.

Prompt NOx occurs at the flame front through the relatively fast reaction between combustion air nitrogen and oxygen molecules and fuel hydrocarbon radicals, which are intermediate species formed during the combustion process. Prompt NOx may represent a meaningful portion of the

NOx emissions resulting from low NOx burners (LNBs) and ULNBs due to the relatively low levels of thermal NOx generated by these burners.

The heater is currently subject to the following NSPS Subpart Ja NOx emission standard.

- Pursuant to NSPS Subpart Ja, NOx emissions from the heater shall not exceed 40 ppmvd at 0% oxygen or 0.040 lb/MMBtu (HHV), both based on a 30-day rolling average determined daily.

However, the heater will not be an affected facility under NSPS Subpart Ja after the MHC is converted to the RDU.

The heater is also subject to the following MT DEQ maximum air pollution control capability NOx emission standard and Consent Decree (MAQP #2161-35) NOx control technology requirement.

- Pursuant to ARM 17.8.752, NOx emissions from the heater shall not exceed 0.035 lb/MMBtu (HHV), based on a 30-day rolling average.

- Pursuant to Paragraph 16.F of the Consent Decree, the heater shall be equipped with "Next Generation ULNBs."

Step 1: Identify Control Technologies
The following are available NOx emission control technologies for the RDU Combined Feed Heater (H-4101).

- LNBs/ULNBs

- SCR

- SNCR

- Non-Selective Catalytic Reduction (NSCR) Below these technologies are generally described.

LNBs/ULNBs
LNBs/ULNBs are available in a variety of configurations and burner types, and they may incorporate one or more of the following concepts: lower flame temperatures; fuel rich conditions at the maximum flame temperature; and decreased residence times for oxidation conditions. These burners are often designed so that fuel and air are pre-mixed prior to combustion, resulting in lower and more uniform flame temperatures. Pre-mix burners may require the aid of a blower to mix the fuel with air before combustion takes place.
Additionally, an LNB/ULNB may be designed so that a portion of a combustion device's flue gas is recycled back into the burner in order to reduce the burner's flame temperature. However, instead of recycled flue gas, steam can also be used to reduce a burner's flame temperature. Furthermore, LNBs/ULNBs may use staged combustion, which involves creating a fuel rich zone to start combustion and stabilize a burner's flame, followed by a fuel lean zone to complete combustion and reduce the burner's peak flame temperature.

SCR
SCR is a post-combustion treatment technology that promotes the selective catalytic chemical reduction of NOx (both nitric oxide and nitrogen dioxide) to molecular nitrogen and water. SCR technology involves the mixing of a reducing agent (aqueous or anhydrous ammonia or urea) with

NOx-containing combustion gases and the resulting mixture is passed through a catalyst bed, which catalyst serves to lower the activation energy of the NOx reduction reactions. In the catalyst bed, the NOx and ammonia contained in the combustion gas-reagent mixture are adsorbed onto the SCR catalyst surface to form an activated complex and then the catalytic reduction of NOx occurs, resulting in the production of nitrogen and water from NOx. The nitrogen and water products of the SCR reaction are desorbed from the catalyst surface into the combustion exhaust gas passing through the catalyst bed. From the SCR catalyst bed, the treated combustion exhaust gas is emitted to the atmosphere. SCR systems can effectively operate at a temperature above 350°F and below 1,100°F, with a more refined temperature window dependent on the composition of the catalyst used in the SCR system.

SNCR

SNCR is a post-combustion treatment technology that is effectively a partial SCR system. A reducing agent (aqueous or anhydrous ammonia or urea) is mixed with NOx-containing combustion gases and a portion of the NOx reacts with the reducing agent to form molecular nitrogen and water. As indicated by the name of this technology, SNCR unlike SCR does not utilize a catalyst to promote the chemical reduction of NOx.

Because a catalyst is not used with SNCR, the NOx reduction reactions occur at high temperatures. SNCR typically requires thorough mixing of the reagent in the combustion chamber of an external combustion device because this technology requires at least 0.5 seconds of residence time at a temperature above 1,600°F and below 2,100°F. A combustion device equipped with SNCR technology may require multiple reagent injection locations because the optimum location (temperature profile) for reagent injection may change depending on the load at which the combustion device is operating. At temperatures below 1,600°F, the desired NOx reduction reactions will not effectively occur and much of the injected reagent will be emitted to the atmosphere along with the mostly uncontrolled NOx emissions. At temperatures above 2,100°F, the desired NOx reduction reactions will not effectively occur, and the ammonia or urea reagent will begin to react with available oxygen to produce additional NOx emissions.

NSCR

NSCR is a post-combustion treatment technology that promotes the catalytic chemical reduction of NOx (both nitric oxide and nitrogen dioxide) to molecular nitrogen and water. NSCR technology has been applied to nitric acid plants and rich burn and stoichiometric internal combustion engines to reduce NOx emissions. NSCR technology uses a reducing agent (hydrocarbon, hydrogen, or CO), which can be inherently contained in the exhaust gas due to rich combustion conditions or injected into the exhaust gas, to react in the presence of a catalyst with a portion of the NOx contained in the source's exhaust gas to generate molecular nitrogen and water. NSCR systems can effectively operate at a temperature above 725°F and below 1,200°F, with a more refined temperature window dependent on the source type and composition of the catalyst used in the NSCR system.

Step 2: Eliminate Technically Infeasible Options

The technical feasibility of the NOx emission control technologies determined to be available for the RDU Combined Feed Heater (H-4101) is evaluated below.

LNBs/ULNBs

The heater is already equipped with ULNBs. Therefore, this option is technically feasible and was incorporated into the baseline emissions for the heater.

SCR

This option is technically feasible for the heater.

SNCR
Due to the temperature and mixing profile sensitivities of an SNCR system, these systems often have not achieved the expected amounts of theoretical NOx emission reduction, especially in turndown modes of operation. However, MRI conservatively estimated SNCR is technically feasible to control the heater's NOx emissions.

NSCR
NSCR technology is not technically feasible for the control of NOx emissions from the heater because it does not operate at the 0.5% or less excess oxygen concentration necessary to ensure NOx reduction with NSCR. Instead, the heater operates with an excess oxygen concentration of approximately 3%. This excess oxygen concentration promotes both low levels of CO and high combustion (thermal) efficiency, while also providing for safe heater operations during variations in fuel gas operating conditions (e.g., fuel gas composition changes, fuel gas supply pressure variations) that may occur at the plant. Furthermore, research of emission control technology application data sets indicated NSCR has not been used to control NOx emissions from a comparable heater. These factors indicate it is not technically feasible to use NSCR to control the heater's NOx emissions.

Step 3: Rank Remaining Control Technologies by Control Effectiveness
The remaining available NOx emission control technologies for the RDU Combined Feed Heater (H-4101) are listed below from the highest to lowest potential emission control relative to the emissions unit's baseline emissions.

- SCR

- SNCR

- ULNBs: this control technology was incorporated into the emissions unit's baseline emissions because the unit is already equipped with ULNBs.

Step 4: Evaluate Most Effective Control Options and Document Results
Below we evaluate the cost effectiveness of the installation and operation of the NOx emission control technologies that were determined to be technically feasible for the RDU Combined Feed Heater (H-4101) but not already included in its base design.

SCR
As indicated in the application, MRI estimated that the installation and operation of an SCR system on the heater would result in a cost effectiveness equal to approximately $82,977 per ton of NOx emission reduction, which is not cost effective. 61 Also, the installation of an SCR system on the heater would require additional energy to operate the SCR system's electrical equipment (e.g., pumps, heaters/vaporizers, instrumentation) and provide fan power to overcome the pressure drop across the SCR catalyst bed(s). This increase in electricity usage at the plant would result in increased GHG and non-GHG emission rates at one or more power generating stations, reducing the net environmental benefit of the SCR system. Furthermore, the SCR catalyst would require periodic replacement, which would result in a spent catalyst waste stream. This waste stream may represent hazardous waste depending on the composition of the catalyst and the heater's combustion products collected on the catalyst. Lastly, an SCR system would experience ammonia slip during operation, resulting in ammonia emissions from the heater's stack, which may negatively impact regional haze

due to an increase in the amount of atmospheric ammonia available to generate visibility impairing ammonium nitrates and ammonium sulfates.

In summary, MRI determined that it would not be cost effective to equip the heater with an SCR system, and the operation of an SCR system on the heater would result in collateral emissions of GHG and non-GHG pollutants, as well as the generation of an additional solid.

For these reasons, MRI eliminated an SCR system from consideration as the maximum air pollution control capability for the heater's NOx emissions.

SNCR
As indicated in the application, MRI estimated that the installation and operation of an SNCR system on the heater would result in a cost effectiveness equal to approximately $54,966 per ton of NOx emission reduction, which is not cost effective. Also, the installation of an SNCR system on the heater would require additional energy to operate the SNCR system's electrical equipment (e.g., pumps, heaters/vaporizers, instrumentation). This increase in electricity usage at the site would result in increased GHG and non-GHG emission rates at one or more power generating stations, reducing the net environmental benefit of the SNCR system. Furthermore, an SNCR system would experience ammonia slip during operation, resulting in ammonia emissions from the heater's stack, which may negatively impact regional haze due to an increase in the amount of atmospheric ammonia available to generate visibility impairing ammonium nitrates and ammonium sulfates.

In summary, MRI determined that it would not be cost effective to equip the heater with an SNCR system, and the operation of an SNCR system on the heater would result in collateral emissions of GHG and non-GHG pollutants. For these reasons, MRI eliminated an SNCR system from consideration as the maximum air pollution control capability for the heater's NOx emissions.

Step 5: Select Maximum Air Pollution Control Capability
MRI determined that ULNBs represent the maximum air pollution control capability for the NOx emissions from the RDU Combined Feed Heater (H-4101). The heater is already equipped with ULNBs and MRI will continue to comply with the following emission limitation that was previously determined to reflect the performance of the maximum air pollution control capability for this unit: NOx emissions from the RDU Combined Feed Heater (H- 4101) shall not exceed 0.035 lb/MMBtu (HHV), based on a 30-day rolling average.

PM/PM10/PM2.5

The RDU Combined Feed Heater (H-4101) will emit PM10 and PM2.5 comprised of filterable and condensable portions. A gaseous fuel combustion device can emit PM10 and PM2.5 at elevated levels due to the incomplete combustion of higher molecular weight hydrocarbons present in the device's gaseous fuel.   However, the heater will combust pipeline quality natural gas and RDU off-gas, which are primarily comprised of hydrogen and relatively low molecular weight hydrocarbons. Therefore, elevated PM10 and PM2.5 emissions from the heater as a result of the incomplete combustion of high molecular weight hydrocarbons are not expected to occur. Additionally, the referenced fuels will contain low levels of sulfur, further minimizing the generation of PM10 and PM2.5 when they are combusted.

The heater is not subject to any NSPS or NESHAP PM, PM10, or PM2.5 emission standard. However, it is subject to the following MT DEQ opacity and maximum air pollution control capability PM, PM10, and PM2.5 standards:

- Pursuant to ARM 17.8.304(2), emissions from the heater shall not exceed an opacity of 20% or greater averaged over six consecutive minutes.

- Pursuant to ARM 17.8.752, PM emissions from the heater shall not exceed 0.00051 lb/MMBtu.

- Pursuant to ARM 17 .8.752, PM10 emissions from the heater shall not exceed 0.00051 lb/MMBtu.

- Pursuant to ARM 17.8.752, PM2.5 emissions from the heater shall not exceed 0.00042 lb/MMBtu.

Step 1: Identify Control Technologies
The following are available PM emission control technologies for the RDU Combined Feed Heater (H-4101).

- Good Combustion Practices

- Electrostatic Precipitator (ESP)

- Filter

- Wet Scrubber

- Cyclone

Below these technologies are generally described.

Good Combustion Practices
Please see earlier section for a discussion of this technology.

ESP
An ESP uses an electric field and collection plates to remove PM from a flowing gaseous stream. The PM contained in the gaseous stream is given an electric charge by passing the stream through a corona discharge. The resulting negatively charged PM is collected on grounded collection plates, which are periodically cleaned without re-entraining the PM into the flowing gaseous stream that is being treated by the ESP. In a dry ESP, the collection plate cleaning process can be accomplished mechanically by knocking the PM loose from the plates. Alternatively, in a wet ESP, a washing technique is used to remove the collected PM from the collection plates. ESPs can be configured in several ways, including a plate-wire ESP, a flat-plate ESP, and a tubular ESP. As the diameter of the PM decreases, the efficiency of an ESP decreases.

Filter
A filter is a porous media that removes PM from a gaseous stream as the stream passes through the filter. For an emissions unit with an appreciable exhaust rate, the filter system typically contains multiple filter elements. Filters can be used to treat exhaust streams containing dry or liquid PM.

Filters handling dry PM become coated with collected PM during operation and this coating ("cake") contributes to the filtration mechanism. A dry PM filter system commonly used in industrial scale applications is a "baghouse." A baghouse is comprised of multiple cylindrical bags, and the number of bags is dependent on the exhaust rate requiring treatment, the PM loading of the exhaust stream, and the baghouse design. The two most common baghouse designs today are the reverse-air and pulse-jet designs. These design references indicate the type of bag cleaning system used in the baghouse.

Filters handling liquid PM rely on the impingement of the entrained liquid PM on the surface of the filter media and the retention of these liquid particles on the surface until multiple particles coalesce into particles of sufficient size that are able to fall back against the flowing gas stream and collect at a location below the filter. For the high efficiency removal of submicron liquid particles from a gaseous stream, Brownian diffusion filters are used. "Brownian diffusion" is the random movement of submicron particles in a gaseous stream as these particles collide with gas molecules. Liquid PM filter systems can be comprised of pad or candle filter elements. These filter elements require little operation and maintenance attention.

Wet Scrubber
A wet scrubber uses absorption to remove PM from a gaseous stream. Absorption is primarily a physical process, though it can also include a chemical component, in which a pollutant in a gas phase contacts a scrubbing liquid and is dissolved in the liquid. A key factor dictating the performance of a wet scrubber is the solubility of the pollutant of concern in the scrubbing liquid. Water is commonly used as the scrubbing liquid in a wet scrubber used for PM emission control, but other liquids can be used depending on the type of PM or other pollutant(s) to be removed from the gaseous stream undergoing treatment. There are several types of wet scrubbers, including packed-bed counterflow scrubbers, packed-bed cross-flow scrubbers, bubble plate scrubbers, and tray scrubbers.

Cyclone
A cyclone is the most common type of inertial separator used to collect medium-sized and coarse PM from gaseous streams. The PM contained in a gaseous stream treated in a cyclone moves outward under the influence of centrifugal force until it contacts the wall of the cyclone. The PM is then carried downward by gravity along the wall of the cyclone and collected in a hopper located at the bottom of the cyclone. Although cyclones provide a relatively low cost, mechanically simple option for the removal of larger diameter PM from gaseous streams, alone they do not typically provide adequate PM removal, especially when the gaseous stream contains smaller diameter PM. Instead, these devices are typically used to preclean a gaseous stream by removing larger diameter PM upstream of PM emission control devices that are more effective at removing smaller diameter PM.

Eliminate Technically Infeasible Options
The technical feasibility of the PM emission control technologies determined to be available for the RDU Combined Feed Heater (H-4101) is evaluated below.

Good Combustion Practices
Good combustion practices are already an integral component of the design and operation of the heater. Therefore, this option is technically feasible for the heater.

ESP
MRI estimated that the PM emitted by the heater will be PM10 only, which is a characteristic that would limit the control effectiveness of an ESP. Additionally, the PM10 concentration in the heater's exhaust stream is below the concentration typically seen in an ESP's exhaust stream. Thus, an ESP would not lower the heater's PM10 emissions by any appreciable amount. Furthermore,

research of emission control technology application data sets indicates an ESP has not been used to control PM emissions from a comparable heater.
These factors indicate it would not be technically feasible to use an ESP to control PM emissions from the heater.

Filter
The PM10-only profile of the heater's PM emissions would limit the control effectiveness of a filter. Additionally, the PM10 concentration in the heater's exhaust stream is below the concentration typically seen in a filter's exhaust stream. Thus, a filter would not lower the heater's PM10 emissions by any appreciable amount. Furthermore, research of emission control technology application data sets indicates a filter has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use a filter to control PM emissions from the heater.

Wet Scrubber
The PM10-only profile of the heater's PM emissions indicates a wet scrubber would require a considerable pressure drop to effectively reduce the heater's PM emissions. Additionally, the PM10 concentration in the heater's exhaust stream is below the concentration typically seen in a wet scrubber's exhaust stream. Furthermore, the liquid carryover in the exhaust stream from a wet scrubber contains dissolved and suspended solids, which would result in a new PM emission mechanism, reducing any negligible PM10 control effectiveness of the wet scrubber in this application. Moreover, research of emission control technology application data sets indicates a wet scrubber has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use a wet scrubber to control PM emissions from the heater.

Cyclone
The PM10-only profile of the heater's PM emissions would limit the control effectiveness of a cyclone. Additionally, the PM10 concentration in the heater's exhaust stream is below the concentration typically seen in a cyclone's exhaust stream. Thus, a cyclone would not lower the heater's PM10 emissions by any appreciable amount. Furthermore, research of emission control technology application data sets indicates a cyclone has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use a cyclone to control PM emissions from the heater.

Step 3: Rank Remaining Control Technologies by Control Effectiveness
The only remaining available PM, PM10, and PM2.5 emission control technology for the RDU Combined Feed Heater (H-4101) is good combustion practices.

Step 4: Evaluate Most Effective Control Options and Document Results
The only remaining available PM, PM10, and PM2.5 emission control technology for the RDU Combined Feed Heater (H-4101) is good combustion practices.

Step 5: Select Maximum Air Pollution Control Capability
MRI determined that good combustion practices represent the maximum air pollution control capability for the PM, PM10, and PM2.5 emissions from the RDU Combined Feed Heater (H-4101). Therefore, MRI will continue to control PM, PM10, and PM2.5 emissions from the heater by using good combustion practices and continuing to comply with the following emission limitations that were previously determined to reflect the performance of the maximum air pollution control capability for this unit:

- PM emissions from the heater shall not exceed 0.00051 lb/MMBtu (HHV), based on a 1-hour average;

- PM10 emissions from the heater shall not exceed 0.00051 lb/MMBtu (HHV), based on a 1-hour average; and

- PM2.5 emissions from the heater shall not exceed 0.00042 lb/MMBtu (HHV), based on a 1-hour average.

SO_2

The RDU Combined Feed Heater (H-4101) will combust a blend of pipeline quality natural gas and RDU off-gas. The natural gas will contain a negligible amount of H_2S. Additionally, the RDU off-gas will be treated to minimize its H_2S content. Therefore, the heater will emit only a small amount of SO_2.

The heater is currently subject to the following NSPS Subpart Ja SO_2 emission standards.

- Pursuant to NSPS Subpart Ja, the heater shall not burn any refinery fuel gas that · contains H_2S in excess of 162 ppmv on a 3-hour rolling average basis and 60 ppmv on a 365 successive calendar day rolling average basis.

However, the heater will not be an affected facility under NSPS Subpart Ja after the MHC is converted to the RDU.

The heater is also subject to the following MT DEQ SO_2 emission standard, which will continue to apply to the heater.

- Pursuant to ARM 17.8.322(5), the heater shall not burn any gaseous fuel containing sulfur compounds in excess of 60 grains per 100 ft^3 of gaseous fuel, calculated as H_2S at standard conditions (or approximately 808 ppmv H_2S).

Step 1: Identify Control Technologies
The following are available SO_2 emission control technologies for the RDU Combined Feed Heater (H-4101).

- Low Sulfur Fuel

- Flue Gas Desulfurization

Below these technologies are generally described.

Low Sulfur Fuel
A gaseous fuel may inherently contain low levels of sulfur compounds, or it may be treated to remove sulfur compounds using absorption or adsorption technologies. For example, pipeline quality natural gas may be from a well that produces inherently low sulfur gas, or it may be treated using absorption or adsorption technology to lower its sulfur content. Low sulfur gaseous fuels result in low levels of SO_2 emissions when they are combusted.

Flue Gas Desulfurization

Flue gas desulfurization is commonly used to reduce SO_2 emissions from coal-fired and oil- fired combustion sources due to the relatively high concentration of SO_2 (thousands of ppmv) contained in the flue gas generated by these sources. Flue gas desulfurization can be accomplished using wet, semi-dry, and dry scrubbers, although wet scrubbers are normally capable of higher SO_2 removal efficiencies than semi-dry and dry scrubbers.

In a wet scrubber, an aqueous slurry of sorbent is injected into a source's flue gas and the SO_2 contained in the gas dissolves into the slurry droplets where it reacts with an alkaline compound present in the slurry. The treated flue gas is then emitted to the atmosphere after passing through a mist eliminator that is designed to remove any entrained slurry droplets, while the falling slurry droplets make their way to the bottom of the scrubber where they are collected and either regenerated and recycled or removed as a waste or byproduct.

Semi-dry scrubbers are like wet scrubbers, but the slurry used in a semi-dry scrubber has a higher sorbent concentration, which results in the complete evaporation of the slurry water and the formation of a dry spent sorbent material that is entrained in the treated flue gas. This dry spent sorbent is removed from the flue gas using a baghouse or ESP. In a dry scrubber, a dry sorbent material is pneumatically injected into a source's flue gas and the dry spent sorbent material entrained in the treated flue gas is removed using a baghouse or ESP.

Step 2: Eliminate Technically Infeasible Options

The technical feasibility of the SO_2 emission control technologies determined to be available for the RDU Combined Feed Heater (H-4101) is evaluated below.

Low Sulfur Fuel

Low sulfur fuel is technically feasible for the heater.

Flue Gas Desulfurization

The heater will emit SO_2 at concentrations less than 15 ppmv, which are below the concentrations oftentimes seen in a wet scrubber's exhaust stream. Additionally, the liquid carryover in the exhaust stream from a wet scrubber or the solid carryover in the exhaust stream from a semi-dry or dry scrubber would result in a new PM emission mechanism for the heater. Moreover, research of emission control technology application data sets indicated wet, semi-dry, and dry scrubbers have not been used to control SO_2 emissions from a comparable heater. These factors indicate it would not be technically feasible to use flue gas desulfurization technologies to control SO_2 emissions from the heater.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The only remaining available SO_2 emission control technology for the RDU Combined Feed Heater (H-4101) is low sulfur fuel.

Step 4: Evaluate Most Effective Control Options and Document Results

The only remaining available SO_2 emission control technology for the RDU Combined Feed Heater (H-4101) is low sulfur fuel.

Step 5: Select Maximum Air Pollution Control Capability

MRI determined that combusting low sulfur gaseous fuel represents the maximum air pollution control capability for the SO_2 emissions from the RDU Combined Feed Heater (H- 4101). Specifically, MRI shall control SO_2 emissions from the RDU Combined Feed Heater (H-4101) by combusting gaseous fuel meeting the following H_2S standards: 162 ppmv H_2S on a 3-hour rolling average basis and 60 ppmv H_2S on a 365 successive calendar day rolling average basis.

VOC

The RDU Combined Feed Heater (H-4101) will emit VOC due to the incomplete oxidation of hydrocarbons present in the heater's gaseous fuel. However, the low molecular weight characteristic of the hydrocarbons in the fuel will promote low levels of VOC emissions from the heater.

Furthermore, the heater is equipped with an oxygen monitoring system, which allows the plant to make on-line optimization adjustments to the heater's combustion process, as needed. This system greatly assists in minimizing the heater's VOC emissions by providing the plant with the capability to maintain good combustion practices at the heater.

The heater is not subject to any NSPS or NESHAP VOC emission standard. However, the heater is subject to the following NESHAP Subpart DDDDD work practice standards that will continue to minimize its VOC emissions.

- Pursuant to 40 CFR 63. 7540(a)(10)(i), MRI will inspect the heater's burner(s), and clean or replace any components of the burner(s) as necessary.

- Pursuant to 40 CFR 63. 7540(a)(10)(ii), MRI will inspect the flame pattern of the heater's burner(s) and adjust the burner(s) as necessary to optimize the flame pattern, consistent with the manufacturer's specifications.

Step 1: Identify Control Technologies
The following are available VOC emission control technologies for the RDU Combined Feed Heater (H-4101).

- Good Combustion Practices

- Thermal Oxidation

- Catalytic Oxidation

Below these technologies are generally described.

Good Combustion Practices
Please see earlier section for discussion of this technology.

Thermal Oxidation
Please see earlier section for discussion of this technology.

Catalytic Oxidation
Please see earlier section for a discussion of this technology.

Step 2: Eliminate Technically Infeasible Options
The technical feasibility of the VOC emission control technologies determined to be available for the RDU Combined Feed Heater (H-4101) is evaluated below.

Good Combustion Practices

Good combustion practices are an integral component of the design and operation of the heater. Therefore, this option is technically feasible for the heater.

Thermal Oxidation

Thermal oxidation is not technically feasible for the control of VOC emissions from the heater due to the very low concentration of VOC in its exhaust stream. The application of thermal oxidation to reduce the heater's VOC emission rate would require the combustion of a considerable amount of fuel to achieve the elevated temperature necessary to promote the oxidation of the small amount of VOC that will be present in the heater's exhaust stream. This fuel combustion would generate additional combustion pollutants, including VOC. Thus, the VOC emission reduction effectiveness of the thermal oxidation system would be reduced, if not negated, because of the VOC generated by the thermal oxidation process.

In summary, the addition of a second thermal oxidation process to the heater system may not reduce the heater's VOC emissions by any appreciable amount, if at all, and this add-on control technology would considerably increase the energy requirements of the heater system while notably increasing the amount of combustion pollutants, such as NOx and CO2, emitted into the atmosphere. Furthermore, research of emission control technology application data sets indicated thermal oxidation has not been used to control VOC emissions from a comparable heater. These factors indicate it is not technically feasible to use thermal oxidation to control VOC emissions from the heater.

Catalytic Oxidation

Catalytic oxidation is not technically feasible for the control of VOC emissions from the heater because its exhaust gas temperature is too low for the effective operation of the oxidation catalyst. The optimum temperature range for catalytic oxidation is 850 to 1,100°F. Below temperatures of 500 to 600°F, the VOC removal efficiency of the oxidation catalyst is considerably reduced. As previously discussed, the heater's convection section incorporates a considerable amount of heat recovery to heat an RDU feed oil and hydrogen mixture in one set of coils and water in a separate set of coils. The exhaust gas temperature after these heat recovery operations is approximately 460°F. Therefore, the exhaust gas temperature of the heater is too low for the effective operation of catalytic oxidation. Moreover, due to the considerably low concentration of VOC in the heater's exhaust stream, the potential effectiveness of a catalytic oxidation system would be limited in this case.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The only remaining available VOC emission control technology for the RDU Combined Feed Heater (H-4101) is good combustion practices.

Step 4: Evaluate Most Effective Control Options and Document Results

The only remaining available VOC emission control technology for the RDU Combined Feed Heater (H-4101) is good combustion practices.

Step 5: Select Maximum Air Pollution Control Capability

MRI determined that good combustion practices represent the maximum air pollution control capability for the VOC emissions from the RDU Combined Feed Heater (H-4101). Therefore, MRI will control VOC emissions from the heater by using good combustion practices.

RDU Fractionator Feed Heater (H-4102)
This heater was previously analyzed for BACT and that analysis is incorporated into this permit.

Carbon Monoxide (CO)

Step 1: Identify Control Technologies

Good Combustion Practices
Good combustion practices for a gaseous fuel enclosed combustion device provide a properly set and controlled air-to-fuel ratio and appropriate combustion zone residence time, temperature, and turbulence parameters essential to achieving low CO emission levels. Incomplete combustion of fuel hydrocarbons can occur because of improper combustion mechanisms, which may result from poor burner/combustion device design, operation, and/or maintenance. However, a heater is designed and typically operated to maximize fuel combustion efficiency so that its fuel usage cost is minimized while maximizing process heating performance. Good combustion practices can be achieved by following a combustion device manufacturer's operating procedures and guidelines, as well as complying with NESHAP Subpart DDDDD work practice standards, which require a combustion device to undergo regular tune-ups.

Thermal Oxidation

Thermal oxidation can be used to reduce CO contained in a source's exhaust stream by maintaining the stream at a high enough temperature in the presence of oxygen, resulting in the oxidation of CO to CO_2. Thermal oxidation of a CO exhaust stream can be achieved by routing the stream to a flare, afterburner, or thermal oxidizer. The effectiveness of all thermal oxidation processes is influenced by residence time, turbulence, and temperature. Auxiliary fuel is typically required to achieve the temperature needed to ensure proper CO exhaust stream oxidation in a thermal oxidation process. If additional fuel is present in the feed stream, some oxidizers are self-sustaining and do not require additional fuel. The necessary amount of auxiliary fuel is dependent on the CO content of the exhaust stream, as well as the amount of hydrocarbon that may be present in the exhaust stream.

Catalytic Oxidation

Catalytic oxidation makes use of catalysts, using precious metals platinum, palladium, or rhodium, to reduce the temperature at which CO oxidizes to CO_2. The effectiveness of catalytic oxidation is dependent on the exhaust stream temperature and the presence of potentially poisoning contaminants in the exhaust stream. The amount of catalyst volume is dependent upon the exhaust stream flow rate, CO content, and temperature, as well as the desired CO removal efficiency. The catalyst will experience activity loss over time due to physical deterioration and/or chemical deactivation. Therefore, periodic testing of the catalyst is necessary to monitor its activity (i.e., oxidation promoting effectiveness) and predict its remaining life. As needed, the catalyst will require periodic replacement. Catalyst life varies from manufacturer-to manufacturer, but three to six-year windows are not uncommon.

Step 2: Eliminate Technically Feasible Options

Good Combustion Practices

Good combustion practices are an integral component of the design and operation of the heater. Therefore, this option is technically feasible for the heater.

Thermal Oxidation

Thermal oxidation is not technically feasible for the control of CO emissions from the heater due to the very low concentration of CO in its exhaust stream. The application of thermal oxidation to reduce the heater's CO emission rate would require the combustion of a considerable amount of fuel to achieve the elevated temperature necessary to promote the oxidation of the small amount of CO that will be present in the heater's exhaust stream. This fuel combustion would generate additional combustion pollutants, including CO. Thus, the CO emission reduction effectiveness of the thermal oxidation system would be reduced, if not negated, because of the CO generated by the thermal oxidation process.
In summary, the addition of a second thermal oxidation process to the heater system may not reduce the heater's CO emissions by any appreciable amount, if at all, and this add-on control technology would considerably increase the energy requirements of the heater system while notably increasing the amount of combustion pollutants, such as NOx and CO_2, emitted into the atmosphere. Furthermore, research of emission control technology application data (i.e., EPA's Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC) database) indicates thermal oxidation has not been used to control CO emissions from a comparable heater. Based on these factors, MRL determined that it is not technically feasible to use thermal oxidation on this heater to control the heater's CO emissions.

Catalytic Oxidation

Catalytic oxidation is not technically feasible for the control of CO emissions from the heater because its exhaust gas temperature is too low for the effective operation of the oxidation catalyst. The optimum temperature range for catalytic oxidation is 850 to 1,100°F. Below temperatures of 500 to 600°F, the CO removal efficiency of the oxidation catalyst is considerably reduced. The heater's convection section incorporates heat recovery to heat a process stream in a set of coils. Specifically, the convection section incorporates a feed preheat coil. The exhaust gas temperature after this heat recovery operation is too low for the effective operation of catalytic oxidation. Moreover, due to the considerably low concentration of CO in the heater's exhaust stream, the potential effectiveness of a catalytic oxidation system in this case would be limited.

Step 3: Rank Remaining Control Technologies

The only remaining available CO emission control technology for the RDU Fractionator Feed Heater (H-4102) is good combustion practices.

Step 4: Evaluate Most Effective Control Options

The only remaining available CO emission control technology for the RDU Fractionator Feed Heater (H-4102) is good combustion practices.

Step 5: Select BACT

MRL determined that good combustion practices represent the maximum air pollution control capability for CO emissions from the RDU Fractionator Feed Heater (H-4102).

Therefore, MRL will control CO emissions from the heater by using good combustion practices and complying with the following emission limitation: CO emissions from the RDU Fractionator Feed Heater (H-4102) shall not exceed 0.055 lb/MMBtu (HHV), based on a 1-hour average.

NOx

The RDU Fractionator Feed Heater (H-4102) will emit NOx, primarily due to the "thermal" and "prompt" NOx generation mechanisms because the heater's fuel will not contain appreciable amounts of organo-nitrogen compounds that result in "fuel" NOx emissions. Thermal NOx results from the high temperature thermal dissociation and subsequent reaction of combustion air molecular nitrogen and oxygen, and it tends to be generated in the high temperature zone near the burner of an external combustion device. The rate of thermal NOx generation is affected by the following three factors: oxygen concentration, peak flame temperature, and duration at peak flame temperature. As these three factors increase in value, the rate of thermal NOx generation increases.

Prompt NOx occurs at the flame front through the relatively fast reaction between combustion air nitrogen and oxygen molecules and fuel hydrocarbon radicals, which are intermediate species formed during the combustion process. Prompt NOx may represent a meaningful portion of the NOx emissions resulting from low NOx burners (LNBs) and ultra low NOx burners (ULNBs). The heater will not be subject to an NSPS NOx emission standard after the proposed change in its operation. However, the heater was previously subject to a BACT requirement (ARM 17.8.752) of 0.040 lb/MMBtu (HHV) based on a 3-hour average.

Step 1: Identify Control Technologies

Low NOx Burners, Ultra Low NOx Burners (LNBs/ULNBs)

LNBs/ULNBs are available in a variety of configurations and burner types, and they may incorporate one or more of the following concepts: lower flame temperatures; fuel rich conditions at the maximum flame temperature; and decreased residence times for oxidation conditions. These burners are often designed so that fuel and air are pre-mixed prior to combustion, resulting in lower and more uniform flame temperatures. Pre-mix burners may require the aid of a blower to mix the fuel with air before combustion takes place. Additionally, an LNB/ULNB may be designed so that a portion of a combustion device's flue gas is recycled back into the burner in order to reduce the burner's flame temperature. However, instead of recycled flue gas, steam can also be used to reduce a burner's flame temperature. Furthermore, LNBs/ULNBs may use staged combustion, which involves creating a fuel rich zone to start combustion and stabilize a burner's flame, followed by a fuel lean zone to complete combustion and reduce the burner's peak flame temperature.

Selective Catalytic Reduction (SCR)

SCR is a post-combustion treatment technology that promotes the selective catalytic chemical reduction of NOx (both nitric oxide and nitrogen dioxide) to molecular nitrogen and water. SCR technology involves the mixing of a reducing agent (aqueous or anhydrous ammonia or urea) with NOx-containing combustion gases and the resulting mixture is passed through a catalyst bed, where the catalyst serves to lower the activation energy of the

NOx reduction reactions. In the catalyst bed, the NOx and ammonia contained in the combustion gas-reagent mixture are adsorbed onto the SCR catalyst surface to form an activated complex and then the catalytic reduction of NOx occurs, resulting in the production of nitrogen and water from NOx. The nitrogen and water products of the SCR reaction are desorbed from the catalyst surface into the combustion exhaust gas passing through the catalyst bed. From the SCR catalyst bed, the treated combustion exhaust gas is emitted to the atmosphere. SCR systems can effectively operate at a temperature above 350°F and below 1,100°F, with a more refined temperature window dependent on the composition of the catalyst used in the SCR system.

Selective Non-catalytic Reduction (SNCR)
SNCR is a post-combustion treatment technology that is effectively a partial SCR system. A reducing agent (aqueous or anhydrous ammonia or urea) is mixed with NOx-containing combustion gases and a portion of the NOx reacts with the reducing agent to form molecular nitrogen and water. As indicated by the name of this technology, SNCR unlike SCR does not utilize a catalyst to promote the chemical reduction of NOx.

Because a catalyst is not used with SNCR, the NOx reduction reactions occur at high temperatures. SNCR typically requires thorough mixing of the reagent in the combustion chamber of an external combustion device because this technology requires at least 0.5 seconds of residence time at a temperature above 1,600°F and below 2,100°F. A combustion device equipped with SNCR technology may require multiple reagent injection locations because the optimum location (temperature profile) for reagent injection may change depending on the load at which the combustion device is operating. At temperatures below 1,600°F, the desired NOx reduction reactions will not effectively occur and much of the injected reagent will be emitted to the atmosphere along with the mostly uncontrolled NOx emissions. At temperatures above 2,100°F, the desired NOx reduction reactions will not effectively occur, and the ammonia or urea reagent will begin to react with available oxygen to produce additional NOx emissions.

Non-Selective Catalytic Reduction (NSCR)

NSCR is a post-combustion treatment technology that promotes the catalytic chemical reduction of NOx (both nitric oxide and nitrogen dioxide) to molecular nitrogen and water. NSCR technology has been applied to nitric acid plants and rich burn and stoichiometric internal combustion engines to reduce NOx emissions. NSCR technology uses a reducing agent (hydrocarbon, hydrogen, or CO), which can be inherently contained in the exhaust gas due to rich combustion conditions or injected into the exhaust gas, to react in the presence of a catalyst with a portion of the NOx contained in the source's exhaust gas to generate molecular nitrogen and water. NSCR systems can effectively operate at a temperature above 725°F and below 1,200°F, with a more refined temperature window dependent on the source type and composition of the catalyst used in the NSCR system.

Step 2: Eliminate Technically Infeasible Options

LNBs/ULNBs
The heater is already equipped with ULNBs. Therefore, this option is technically feasible and was incorporated into the baseline emissions for the heater.

SCR

This option is technically feasible for the heater.

SNCR

Due to the temperature and mixing profile sensitivities of an SNCR system, these systems often have not achieved the expected amounts of theoretical NOx emission reduction, especially in turndown modes of operation. However, MRL conservatively estimated SNCR is technically feasible to control the heater's NOx emissions.

NSCR

NSCR technology is not technically feasible for the control of NOx emissions from the heater because it does not operate at the 0.5% or less excess oxygen concentration necessary to ensure NOx reduction with NSCR. Instead, the heater operates with an excess oxygen concentration of approximately 2-3%. This amount of excess oxygen promotes both low levels of CO and high combustion (thermal) efficiency, while also providing for safe heater operations during variations in fuel gas operating conditions (e.g., fuel gas composition changes, fuel gas supply pressure variations). Furthermore, research of EPA's RBLC database indicates NSCR has not been used to control NOx emissions from a comparable heater. These factors indicate it is not technically feasible to use NSCR to control the heater's NOx emissions.

Step 3: Rank Remaining Control Technologies

The remaining available NOx emission control technologies for the RDU Fractionator Feed Heater (H-4102) are listed below from the highest to lowest potential emission control relative to the emissions unit's baseline emissions.

SCR
SNCR
ULNBs: this control technology was incorporated into the emissions unit's baseline emissions because the unit is already equipped with ULNBs.

Step 4: Evaluate Most Effective Control Options

SCR

MRL estimated that the installation and operation of an SCR system on the heater would result in a cost effectiveness equal to approximately $43,699 per ton of NOx emission reduction, which is not cost effective. Also, the installation of an SCR system on the heater would require additional energy to operate the SCR system's electrical equipment (e.g., pumps, heaters/vaporizers, instrumentation) and provide fan power to overcome the pressure drop across the SCR catalyst bed(s). This increase in electricity usage at the plant would generate emissions at the power plants generating the electricity thus reducing the net environmental benefit of the SCR system. Furthermore, the SCR catalyst would require periodic replacement, which would result in a spent catalyst waste stream. This waste stream may represent hazardous waste depending on the composition of the catalyst and the heater's combustion products collected on the catalyst.

An SCR system would also cause ammonia slip during operation, resulting in ammonia emissions from the heater's stack, which may negatively impact regional haze due to an increase in the amount of atmospheric ammonia available to generate visibility impairing ammonium nitrates and ammonium sulfates.

In summary, MRL determined that it would not be cost effective to equip the heater with an SCR system, and the operation of an SCR system on the heater would likely result in additional emissions, as well as the generation of an additional solid waste stream at the site. For these reasons, MRL eliminated an SCR system from consideration as the maximum air pollution control capability for the heater's NOx emissions.

SNCR

MRL estimated that the installation and operation of an SNCR system on the heater would result in a cost effectiveness equal to approximately $31,752 per ton of NOx emission reduction, which is not cost effective. The installation of an SNCR system on the heater would require additional energy to operate the SNCR system's electrical equipment (e.g., pumps, heaters/vaporizers, instrumentation). This increase in electricity usage at the site would generate emissions at the power plants generating the electricity thus reducing the net environmental benefit of the SNCR system. Furthermore, an SNCR system would experience ammonia slip during operation, resulting in ammonia emissions from the heater's stack, which may negatively impact regional haze due to an increase in the amount of atmospheric ammonia available to generate visibility impairing ammonium nitrates and ammonium sulfates.

In summary, MRL determined that it would not be cost effective to equip the heater with an SNCR system, and the operation of an SNCR system on the heater would likely result in additional emissions. For these reasons, MRL eliminated an SNCR system from consideration as the maximum air pollution control capability for the heater's NOx emissions.

Step 5: Select BACT

MRL determined that ULNBs represent the maximum air pollution control capability for the NOx emissions from the RDU Fractionator Feed Heater (H-4102). The heater is already equipped with ULNBs and MRL will continue to comply with the following emission limitation that was previously determined to reflect the BACT for this unit where NOx emissions from the RDU Fractionator Feed Heater (H-4102) shall not exceed 0.04 lb/MMBtu (HHV), based on a 1-hour average.

PM/PM_{10}/$PM_{2.5}$

The RDU Fractionator Feed Heater (H-4102) will emit PM_{10} and $PM_{2.5}$ comprised of filterable and condensable portions. A gaseous fuel combustion device can emit PM_{10} and $PM_{2.5}$ at elevated levels due to the incomplete combustion of higher molecular weight hydrocarbons present in the device's gaseous fuel. However, the heater will combust pipeline quality natural gas and RDU off-gas, which are primarily comprised of hydrogen and relatively low molecular weight hydrocarbons. Therefore, elevated PM_{10} and $PM_{2.5}$ emissions from the heater as a result of the incomplete combustion of high molecular weight hydrocarbons are not expected to occur. Additionally, the referenced fuels will contain low levels of sulfur, further minimizing the generation of PM_{10} and $PM_{2.5}$ when they are combusted.

The heater is not currently subject to an NSPS or NESHAP PM, PM_{10}, or $PM_{2.5}$ emission standard, and it will not be subject to an NSPS or NESHAP PM, PM_{10}, or $PM_{2.5}$ emission standard after the proposed change in its operation. However, the heater is subject to the following DEQ opacity and BACT limits for PM, PM_{10}, and $PM_{2.5}$ standards:

Pursuant to ARM 17.8.304(2), emissions from the heater shall not exceed an opacity of 20% or greater averaged over six consecutive minutes.

Pursuant to ARM 17.8.752, PM emissions from the heater shall not exceed 0.00051 lb/MMBtu.

Pursuant to ARM 17.8.752, PM_{10} emissions from the heater shall not exceed 0.00051 lb/MMBtu.

Pursuant to ARM 17.8.752, $PM_{2.5}$ emissions from the heater shall not exceed 0.00042 lb/MMBtu.

Step 1: Identify Control Technologies

Good Combustion Practices
Electrostatic Precipitator
Filter
Wet Scrubber
Cyclone
Good Combustion Practices – See description of Good Combustion practices on page 11.

Electrostatic Precipitator (ESP)

An ESP uses an electric field and collection plates to remove PM from a flowing gaseous stream. The PM contained in the gaseous stream is given an electric charge by passing the stream through a corona discharge. The resulting negatively charged PM is collected on the flowing gaseous stream that is being treated by the ESP. In a dry ESP, the collection plate cleaning process can be accomplished mechanically by knocking the PM loose from the plates. Alternatively, in a wet ESP, a washing technique is used to remove the collected PM from the collection plates. ESPs can be configured in several ways, including a plate-wire ESP, a flat-plate ESP, and a tubular ESP. As the diameter of the PM decreases, the efficiency of an ESP decreases.

Filter

A filter is a porous media that removes PM from a gaseous stream as the stream passes through the filter. For an emissions unit with an appreciable exhaust rate, the filter system typically contains multiple filter elements. Filters can be used to treat exhaust streams containing dry or liquid PM.

Filters handling dry PM become coated with collected PM during operation and this coating ("cake") contributes to the filtration mechanism. A dry PM filter system commonly used in industrial scale applications is a "baghouse." A baghouse is comprised of multiple cylindrical bags, and the number of bags is dependent on the exhaust rate requiring treatment, the PM loading of the exhaust stream, and the baghouse design. The two most common baghouse designs today are the reverse-air and pulse-jet designs. These design references indicate the type of bag cleaning system used in the baghouse.

Filters handling liquid PM rely on the impingement of the entrained liquid PM on the surface of the filter media and the retention of these liquid particles on the surface until multiple particles coalesce into particles of sufficient size that are able to fall back against the flowing gas stream and collect at a location below the filter. For the high efficiency removal of submicron liquid particles from a gaseous stream, Brownian diffusion filters are used. "Brownian diffusion" is the random movement of submicron particles in a gaseous stream as these particles collide with gas molecules. Liquid PM filter systems can be comprised of pad or candle filter elements. These filter elements require little operation and maintenance attention.

Wet Scrubber

Wet scrubber uses absorption to remove PM from a gaseous stream. Absorption is primarily a physical process, though it can also include a chemical component, in which a pollutant in a gas phase contacts a scrubbing liquid and is dissolved in the liquid. A key factor dictating the performance of a wet scrubber is the solubility of the pollutant of concern in the scrubbing liquid. Water is commonly used as the scrubbing liquid in a wet scrubber used for PM emission control, but other liquids can be used depending on the type of PM or other pollutant(s) to be removed from the gaseous stream undergoing treatment. There are several types of wet scrubbers, including packed-bed counterflow scrubbers, packed-bed cross-flow scrubbers, bubble plate scrubbers, and tray scrubbers.

Cyclone

A cyclone is the most common type of inertial separator used to collect medium-sized and coarse PM from gaseous streams. The PM contained in a gaseous stream treated in a cyclone moves outward under the influence of centrifugal force until it contacts the wall of the cyclone. The PM is then carried downward by gravity along the wall of the cyclone and collected in a hopper located at the bottom of the cyclone. Although cyclones provide a relatively low cost, mechanically simple option for the removal of larger diameter PM from gaseous streams, alone they do not typically provide adequate PM removal, especially when the gaseous stream contains smaller diameter PM. Instead, these devices are typically used to preclean a gaseous stream by removing larger diameter PM upstream of PM emission control devices that are more effective at removing smaller diameter PM.

Step 2: Eliminate Technically Infeasible Options

Good Combustion Practices

Good combustion practices are already an integral component of the design and operation of the heater. Therefore, this option is technically feasible for the heater.

ESP

MRL estimated that the PM emitted by the heater will be PM_{10} only, which is a characteristic that would limit the control effectiveness of an ESP. Additionally, the PM_{10} concentration in the heater's exhaust stream is below the concentration typically seen in an ESP's exhaust stream. Thus, an ESP would not lower the heater's PM_{10} emissions by any appreciable amount. Furthermore, research of EPA's RBLC database indicates an ESP has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use an ESP to control PM emissions from the heater.

Filter

The PM_{10}-only profile of the heater's PM emissions would limit the control effectiveness of a filter. Additionally, the PM_{10} concentration in the heater's exhaust stream is below the concentration typically seen in a filter's exhaust stream. Thus, a filter would not lower the heater's PM_{10} emissions by any appreciable amount. Furthermore, research of EPA's RBLC database indicates a filter has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use a filter to control PM emissions from the heater.

Wet Scrubber

The PM_{10}-only profile of the heater's PM emissions indicates a wet scrubber would require a considerable pressure drop to effectively reduce the heater's PM emissions. Additionally, the PM_{10} concentration in the heater's exhaust stream is below the concentration typically seen in a wet scrubber's exhaust stream. Furthermore, the liquid carryover in the exhaust stream from a wet scrubber contains dissolved and suspended solids, which would result in a new PM emission mechanism, reducing any negligible PM_{10} control effectiveness of the wet scrubber in this application. Moreover, research of EPA's RBLC database indicates a wet scrubber has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use a wet scrubber to control PM emissions from the heater.

Cyclone

The PM_{10}-only profile of the heater's PM emissions would limit the control effectiveness of a cyclone. Additionally, the PM_{10} concentration in the heater's exhaust stream is below the concentration typically seen in a cyclone's exhaust stream. Thus, a cyclone would not lower the heater's PM_{10} emissions by any appreciable amount. Furthermore, research of EPA's RBLC database indicates a cyclone has not been used to control PM emissions from a comparable heater. These factors indicate it would not be technically feasible to use a cyclone to control PM emissions from the heater.

Step 3: Rank Remaining Control Technologies

The only remaining available PM, PM_{10}, and $PM_{2.5}$ emission control technology for the RDU Fractionator Feed Heater (H-4102) is good combustion practices.

Step 4: Evaluate Most Effective Control Options

The only remaining available PM, PM_{10}, and $PM_{2.5}$ emission control technology for the RDU Fractionator Feed Heater (H-4102) is good combustion practices.

Step 5: Select BACT

MRL determined that good combustion practices represent the maximum air pollution control capability for the PM, PM_{10}, and $PM_{2.5}$ emissions from the RDU Fractionator Feed Heater (H-4102). Therefore, MRL will continue to control PM, PM_{10}, and $PM_{2.5}$ emissions from the heater by using good combustion practices and continuing to comply with the following emission limitations that were previously determined to reflect the performance of the maximum air pollution control capability for this unit:

PM emissions from the heater shall not exceed 0.00051 lb/MMBtu (HHV), based on a 1-hour average;

PM_{10} emissions from the heater shall not exceed 0.00051 lb/MMBtu (HHV), based on a 1-hour average; and

$PM_{2.5}$ emissions from the heater shall not exceed 0.00042 lb/MMBtu (HHV), based on a 1-hour average.

SO_2

The RDU Fractionator Feed Heater (H-4102) will combust a blend of pipeline quality natural gas and RDU off-gas. The natural gas will contain a negligible amount of H2S. Additionally, the RDU off-gas will be treated to minimize its H_2S content. Therefore, the heater will emit only a small amount of SO_2.

The heater is currently subject to the following NSPS Subpart Ja SO_2 emission standards.

Pursuant to NSPS Subpart Ja, the heater shall not burn any refinery fuel gas that contains H_2S in excess of 162 ppmv on a 3-hour rolling average basis and 60 ppmv on a 365 successive calendar day rolling average basis.

However, the heater will not be an affected facility under NSPS Subpart Ja after the MHC is converted to the RDU.

The heater is also subject to the following DEQ SO_2 emission standard, which will continue to apply to the heater after the proposed change in its operation.

Pursuant to ARM 17.8.322(5), the heater shall not burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 ft^3 of gaseous fuel, calculated as H_2S at standard conditions (or approximately 808 ppmv H_2S).

Step 1: Identify Control Technologies

The following are available SO_2 emission control technologies for the RDU Fractionator Feed Heater (H-4102).

Low Sulfur Fuel

Flue Gas Desulfurization

Below, these technologies are generally described.

Low Sulfur Fuel

A gaseous fuel may inherently contain low levels of sulfur compounds, or it may be treated to remove sulfur compounds using absorption or adsorption technologies. For example, pipeline quality natural gas may be from a well that produces inherently low sulfur gas, or it may be treated using absorption or adsorption technology to lower its sulfur content. Low sulfur gaseous fuels result in low levels of SO_2 emissions when they are combusted.

Flue Gas Desulfurization

Flue gas desulfurization is commonly used to reduce SO_2 emissions from coal-fired and oil- fired combustion sources due to the relatively high concentration of SO_2 (thousands of ppmv) contained in the flue gas generated by these sources. Flue gas desulfurization can be accomplished using wet, semi-dry, and dry scrubbers, although wet scrubbers are normally capable of higher SO_2 removal efficiencies than semi-dry and dry scrubbers.

In a wet scrubber, an aqueous slurry of sorbent is injected into a source's flue gas and the SO_2 contained in the gas dissolves into the slurry droplets where it reacts with an alkaline compound present in the slurry. The treated flue gas is then emitted to the atmosphere after passing through a mist eliminator that is designed to remove any entrained slurry droplets, while the falling slurry droplets make their way to the bottom of the scrubber where they are collected and either regenerated and recycled or removed as a waste or byproduct.

Semi-dry scrubbers are like wet scrubbers, but the slurry used in a semi-dry scrubber has a higher sorbent concentration, which results in the complete evaporation of the slurry water and the formation of a dry spent sorbent material that is entrained in the treated flue gas. This dry spent sorbent is removed from the flue gas using a baghouse or ESP. In a dry scrubber, a dry sorbent material is pneumatically injected into a source's flue gas and the dry spent sorbent material entrained in the treated flue gas is removed using a baghouse or ESP

Step 2: Eliminate Technically Infeasible Options

Low Sulfur Fuel

Low sulfur fuel is technically feasible for the heater.

Flue Gas Desulfurization

The heater will emit SO_2 at concentrations less than 15 ppmv, which are below the concentrations oftentimes seen in a wet scrubber's exhaust stream. Additionally, the liquid carryover in the exhaust stream from a wet scrubber or the solid carryover in the exhaust stream from a semi-dry or dry scrubber would result in a new PM emission mechanism for the heater. Moreover, research of EPA's RBLC database indicates wet, semi-dry, and dry scrubbers have not been used to control SO_2 emissions from a comparable heater. These factors indicate it would not be technically feasible to use flue gas desulfurization technologies to control SO_2 emissions from the heater.

Step 3: Rank Remaining Control Technologies
The only remaining available SO_2 emission control technology for the RDU Fractionator Feed Heater (H-4102) is low sulfur fuel.

Step 4: Evaluate Most Effective Control Technologies
The only remaining available SO_2 emission control technology for the RDU Fractionator Feed Heater (H-4102) is low sulfur fuel.

Step 5: Select BACT
MRL determined that combusting low sulfur gaseous fuel represents BACT for the SO_2 emissions from the RDU Fractionator Feed Heater (H- 4102). Specifically, MRL will control SO_2 emissions from the RDU Fractionator Feed Heater (H-4102) by combusting gaseous fuel meeting the following H_2S standards: ≤30 ppmv H_2S and ≤10 ppmv H2S on an annual average basis.

VOC

The RDU Fractionator Feed Heater (H-4102) will emit VOC due to the incomplete oxidation of hydrocarbons present in the heater's gaseous fuel. However, the low molecular weight characteristic of the hydrocarbons in the fuel will promote low levels of VOC emissions from the heater.

Furthermore, the heater is equipped with an oxygen monitoring system, which allows the plant to make on-line optimization adjustments to the heater's combustion process, as needed. This system greatly assists in minimizing the heater's VOC emissions by providing the plant with the capability to maintain good combustion practices at the heater.

The heater is not currently subject to an NSPS or NESHAP VOC emission standard, and it will not be subject to an NSPS or NESHAP VOC emission standard after the proposed change in its operation. However, the heater will continue to be subject to the following NESHAP Subpart DDDDD work practice standards that will minimize its VOC emissions.

Pursuant to 40 CFR 63.7540(a)(10)(i), MRL will inspect the heater's burners, and clean or replace any components of the burners as necessary.

Pursuant to 40 CFR 63.7540(a)(10)(ii), MRL will inspect the flame pattern of the heater's burners and adjust the burners as necessary to optimize the flame pattern, consistent with the manufacturer's specifications.

Step 1: Identify Control Technologies
The following are available VOC emission control technologies for the RDU Fractionator Feed Heater (H-4102).

Good Combustion Practices

Thermal Oxidation

Catalytic Oxidation

Good Combustion Practices: See page 13 discussion.
Thermal Oxidation See page 13 discussion.
Catalytic Oxidation: See page 13 discussion.

Step 2: Eliminate Technically Infeasible Options

Good Combustion Practices:
Good combustion practices are an integral component of the design and operation of the heater. Therefore, this option is technically feasible for the heater.

Thermal Oxidation
Thermal oxidation is not technically feasible for the control of VOC emissions from the heater due to the very low concentration of VOC in its exhaust stream. The application of thermal oxidation to reduce the heater's VOC emission rate would require the combustion of a considerable amount of fuel to achieve the elevated temperature necessary to promote the oxidation of the small amount of VOC that will be present in the heater's exhaust stream. This fuel combustion would generate additional combustion pollutants, including VOC. Thus, the VOC emission reduction effectiveness of the thermal oxidation system would be reduced, if not negated, because of the VOC generated by the thermal oxidation process.

In summary, the addition of a second thermal oxidation process to the heater system may not reduce the heater's VOC emissions by any appreciable amount, if at all, and this add-on control technology would considerably increase the energy requirements of the heater system while notably increasing the amount of combustion pollutants, such as NOx and CO_2, emitted into the atmosphere. Furthermore, research of EPA's RBLC database indicates thermal oxidation has not been used to control VOC emissions from a comparable heater. These factors indicate it is not technically feasible to use thermal oxidation to control VOC emissions from the heater.

Catalytic Oxidation
Catalytic oxidation is not technically feasible for the control of VOC emissions from the heater because its exhaust gas temperature is too low for the effective operation of the oxidation catalyst. The optimum temperature range for catalytic oxidation is 850 to 1,100°F. Below temperatures of 500 to 600°F, the VOC removal efficiency of the oxidation catalyst is considerably reduced. As previously discussed, the heater's convection section incorporates heat recovery in the form of a feed preheat coil. The exhaust gas temperature after this heat recovery operation is too low for the effective operation of catalytic oxidation. Moreover, due to the considerably low concentration of VOC in the heater's exhaust stream, the potential effectiveness of a catalytic oxidation system would be limited in this case.

Step3: Rank Remaining Control Technologies
The only remaining available VOC emission control technology for the RDU Fractionator Feed Heater (H-4102) is good combustion practices.

Step 4: Evaluate Most Effective Control Options
The only remaining available VOC emission control technology for the RDU Fractionator Feed Heater (H-4102) is good combustion practices.

Step 5: Select BACT
MRL determined that good combustion practices represent the maximum air pollution control capability for the VOC emissions from the RDU Fractionator Feed Heater (H-4102). Therefore, MRL will control VOC emissions from the heater by using good combustion practices.

LP Boilers (LPB-1 and LPB-2)

Each of the two LP boilers have an annual maximum design firing rate of 2 MMBtu/hr. These two boilers will use distillate fuel oil for combustion to generate steam needed to heat the railcars. As demonstrated previously, these two boilers will be subject to the tuning requirements of the Boiler MACT pursuant to 40 CFR 63.7500(d). Both these boilers will use ULSD as fuel for combustion.

MRL reviewed the Reasonably Available Control Technology (RACT)/Best Available Control Technology (BACT)/lowest achievable emission rate (LAER) Clearinghouse (RBLC) data for similarly rated boilers using diesel fuel under the RBLC process code 13.220 – Distillate Fuel Oil (ASTM # 1, 2, includes kerosene, aviation, diesel fuel). Very few boilers that were rated in the range of 1-8 MMBtu/hr can be found in the RBLC and the review demonstrated that these small boilers had no add-on controls, used ULSD, followed good combustion and operation practices and had emission rates based on AP-42, Chapter 1.3 – Fuel Oil Combustion. Therefore, a full top down BACT analysis is not warranted.

MRL proposes that the following conditions be considered BACT for the two LP boilers:

- Comply with applicable requirements under the Boiler MACT;
- Usage of ULSD as fuel;
- Follow good combustion practices; and
- Follow proper operating and maintenance requirements per manufacturer recommendations.

Non-Emergency Generators (Gen-1 and Gen-2)

Each of the two-diesel fired non-emergency generators is rated with a gross output power rating of 12.3 hp. These two generator engines are EPA Tier 4 certified engines. As these are diesel-fired engines and manufactured after April 1, 2006, they are considered new engines and pursuant to 40 CFR 63.6590(c)(7), they will need to demonstrate compliance with 40 CFR Part 63 Subpart ZZZZ (RICE MACT) by complying with the applicable requirements of 40 CFR Part 60 Subpart IIII (NSPS IIII). As these two engines will be operating post the October 1, 2020, date, pursuant to 40 CFR 60.4207(b), the diesel fuel used in these engines should meet the requirements set forth in 40 CFR 80.510(b) for non- road diesel fuel (i.e., maximum sulfur content of 15 ppm and, either a minimum cetane index of 40 or maximum aromatic content of 35 percent by volume). MRL will use ULSD as its sulfur content does not exceed 15 ppm.

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

IV. Emission Inventory

To better describe the proposed emission changes occurring with this application, the following table presents the potential to emit from the earlier issued MAQP #5263-01, and the emissions being permitted under MAQP #5263-02, as well as the resulting changes from these permit versions.

Pollutant Potential to Emit Summary with the Proposed Modifications			
Pollutant	**Currently Permitted Emissions in Permit No. 5263-01 (tpy)**	**Emissions from Proposed Modifications and Additions (tpy)**	**Total Facility Potential to Emit (tpy)**

CO	65.50	12.58	78.08
NOx	79.67	9.68	89.35
PM (filterable only)	2.47	0.40	2.87
PM_{10}	8.61	0.44	9.05
$PM_{2.5}$	8.54	0.33	8.87
SO_2	5.65	0.26	5.91
VOC	95.53	2.23	97.76
GHGs, as CO_2e	N/A	N/A	N/A

The facility inventory indicates MRL will be below PSD thresholds for all permitted equipment.

V. Existing Air Quality

As of July 8, 2002, Cascade County is designated as an Unclassifiable/Attainment area for all criteria pollutants.

VI. Ambient Air Impact Analysis

The emissions increases associated with this permit action are minor increases over the previously permitted levels for the MRL Great Falls Renewable Fuels Plant. Projected increases over MAQP #5263-01 are less than 15 tpy each of the pollutants.

The Department determined that the project-related VOC, PM_{10}, $PM_{2.5}$, NO_2, and CO emissions will not cause or contribute to a violation of a federal or state ambient air quality standard.

VII. Taking or Damaging Implication Analysis

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

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].

YES	NO	
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

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

VIII. Environmental Assessment

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

Analysis Prepared By: Craig Henrikson
Date: September 5, 2023

DEPARTMENT OF ENVIRONMENTAL QUALITY
Air, Energy & Mining Division
Air Quality Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

Montana Renewables LLC

Environmental Assessment for

Montana Air Quality Permit #5263-02

Air Quality Bureau

APPLICANT: Montana Renewables LLC (MRL)		
SITE NAME: MRL Great Falls Renewable Fuels Plant		
PROPOSED PERMIT NUMBER: Montana Air Quality Permit Number 5263-02		
APPLICATION DATE: Received on 08/31/2023		
LOCATION: Lat/Long 47.522981, -111.295454		**COUNTY: Cascade**
PROPERTY OWNERSHIP:	**FEDERAL ____ STATE ____ PRIVATE _X___**	
EA PREPARER:	**Craig Henrikson**	
EA Draft Date	**EA Final Date**	**Permit Final Date**
09/14/2023		

COMPLIANCE WITH THE MONTANA ENVIRONMENTAL POLICY ACT

The Montana Department of Environmental Quality (DEQ) prepared this Environmental Assessment (EA) in accordance with requirements of the Montana Environmental Policy Act (MEPA). An EA functions to determine the need to prepare an EIS through an initial evaluation and determination of the significance of impacts associated with the proposed action. However, an agency is required to prepare an EA whenever, as here, statutory requirements do not allow sufficient time for the agency to prepare an EIS (ARM 17.4.607.3.c). This document may disclose impacts over which DEQ has no regulatory authority.

COMPLIANCE WITH THE CLEAN AIR ACT OF MONTANA

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

SUMMARY OF THE PROPOSED ACTION: MRL has applied for a Montana air quality permit under the CAA of Montana. The permit action has been assigned Montana Air Quality Permit (MAQP) Number 5263-02. The proposed project would allow MRL to increase the firing rate for two existing heaters, add two trailer-mounted low-pressure boilers each with a non-emergency generator, and add four small diesel storage tanks. The proposed project would result in additional emissions due to the firing rate increases and new equipment and therefore requires a modification to their existing MAQP. MRL was previously permitted under MAQP #5263-01 to install and operate equipment for the production of renewable fuels, and this revised MAQP expands MRL's capabilities to produce biofuels. The previously prepared EA is incorporated into this analysis as the anticipated impacts that occur with the proposed emission increases are similar to the analysis for MAQP #5263-01.

Table 1: Proposed Action Details

Summary of Proposed Action	
General Overview	MRL's air quality permit application consists of the following changes and new equipment: Increased firing rate for H-4101 from 25 to 54 MMBtu/hr Increased firing rate for H-4102 from 30 to 38 MMBtu/hr New Low Pressure Boiler LPB-1 New Low Pressure Boiler LPB-2 New Non-emergency generator Gen-1 New Non-emergency generator Gen-2 The facility would be permitted to emit from this equipment until MRL requested permit revocation or until the permit were revoked by DEQ due to gross non-compliance with the permit conditions.
Proposed Action Estimated Disturbance	
Disturbance	There is no new greenfield disturbance with this action as the two low pressure boilers are portable and the small diesel storage tanks will sit on existing industrial property.
Proposed Action	

Duration	**Construction:** Construction or commencement could start within three years of issuance of the final air quality permit otherwise the authority to construct expires. **Construction Period:** The construction period could begin as soon as the air quality permit (and any other required permits) were in place. Seasonal construction activities are allowed once a Department Application Completeness Determination has been issued. **Operation Life:** Renewable fuels equipment would be expected to last at least thirty years.
Construction Equipment	This project has limited construction equipment as it involves two low pressure boilers and four small diesel storage tanks.
Personnel Onsite	**Construction:** This project is limited to setting two low pressure boilers and four small diesel storage tanks. **Operations:** One new full-time contractor job will support the low pressure boiler operations.
Location and Analysis Area	**Location**: The proposed project is located on existing property with an address of 1900 10th Street NE, Great Falls Montana 59404. This parcel is located within Section 1 of Township 20 North, Range 03 East. Adjacent and within the existing CMR Great Falls Refinery footprint as specified in Figure 1. Areas bordered in red represent disturbance areas and transferred equipment. **Analysis Area**: The area being analyzed as part of this environmental review includes the immediate project area (Figure 1), as well as neighboring lands surrounding the analysis area, as reasonably appropriate for the impacts being considered.
Air Quality	The Draft EA will be attached to the Preliminary Determination Air Quality Permit which would include all enforceable conditions for operation of the emitting units
Conditions incorporated into the Proposed Action	The conditions developed in the Decision (Air Quality Permit) of the Montana Air Quality Permit dated September 14, 2023, set forth in Sections II.A-D.

Emission estimates for the project to date is located in Section IV. Emission Inventory in the Permit Analysis. Total project emissions are shown to be below PSD trigger thresholds.

Pollutant Potential to Emit Summary with the Proposed Modifications					
Pollutant	**Currently Permitted Emissions in Permit No. 5263-01 (tpy)**	**Emissions from Proposed Modifications and Additions (tpy)**	**Total Facility Potential to Emit (tpy)**	**PSD Major Source Threshold [3] (tpy)**	**Subject to PSD Review (Yes/No)**
CO	65.50	12.58	78.08	100	No
NOx	79.67	9.68	89.35	100	No

PM (filterable only)	2.47	0.40	2.87	100	No
PM_{10}	8.61	0.44	9.05	100	No
$PM_{2.5}$	8.54	0.33	8.87	100	No
SO_2	5.65	0.26	5.91	100	No
VOC	95.53	2.23	97.76	100	No
GHGs, as CO2e	N/A	N/A	N/A	N/A	N/A

The site emissions for all pollutants would be less than 100 tons per year (tpy) with the highest emission level being VOCs, secondly, oxides of nitrogen (NOx) and third, carbon monoxide (CO). Particulate matter species and sulfur dioxide (SO_2) would each be less than 10 tpy.

The proposed action would be located on private land, within the City of Great Falls, Montana. All information included in the EA is derived from the permit application, discussions with the applicant, analysis of aerial photography, topographic maps, consultation with DEQ staff, and other research tools.

PURPOSE AND BENEFIT FOR PROPOSED ACTION: DEQ's purpose in conducting this environmental review is to act upon MRL's air quality permit application (MAQP #5263-02) for the purpose of on-going treatment of raw materials to produce renewable fuels.

The benefits of the proposed action, if approved, would allow MRL to utilize higher firing rates on two existing boilers, and heat raw materials with two portable low-pressure boilers for materials received in rail cars. Authority to operate the proposed equipment would continue until the permit was revoked, either at the request of MRL or by DEQ because of non-compliance with the conditions within the air quality permit.

As the overall project scope has only changed slightly from the previous EAs for MAQP #5263-00 and MAQP #5263-01, the previous EA's conclusions are still representative for the modifications proposed. Any changes will be highlighted within this EA as part of the issuance of MAQP #5263-02.

REGULATORY RESPONSIBILITIES: In accordance with ARM 17.4.609(3)(c), DEQ must list any federal, state, or local, authorities that have concurrent or additional jurisdiction or environmental review responsibility for the proposed action and the permits, licenses, and other authorizations required.

MRL must conduct its operations according to the terms of its permit, the CAA of Montana, §§ 75-2-101, *et seq*., MCA, and ARMs 17.8.101, *et seq*.

Upon review of the MRL air quality permit application when combined with HAP emissions from CMR Great Falls Refinery, a Title V permit is in place for both operations that are under the common ownership of Calumet Specialty Products Partners, L.P. and the properties are contiguous and/or adjacent.

No other preconstruction permit applications have been submitted by MRL to DEQ at the time of this EA. CMR does have two Title V applications which are currently being reviewed and a draft permit will be issued in Q4 of 2023. MRL is a subsidiary of Calumet Specialty Products Partners, L.P. MRL must cooperate fully with, and follow the directives of any federal, state, or local entity that may have authority over the MRL Great Falls Renewable Fuels Plant. These permits, licenses, and other authorizations may include: City of Great Falls, Cascade County Weed Control Board, OSHA (worker safety), DEQ AQB (air quality) and Water Protection Bureau groundwater and surface water discharge; stormwater, and MDT and Cascade County (road access).

MRL has requested the air quality permit modification would use property that is currently owned by part of a 44.46 acre parcel. The parcel identified is a 44.46 acre site located adjacent to the Missouri River as well as adjacent to the City of Great Falls Wastewater Treatment Plant.

Figure 1: Map of general location of the proposed project.

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

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

The duration of an impact is quantified as follows:

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

The severity of an impact is measured using the following:

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

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

The site is located on the north-side of the Missouri River on Calumet Montana Refining property adjacent to the river. The parcel proposed for the MRL operation is located approximately 370 feet from the river's edge. The elevation is approximately 3,323 feet as referenced by the nearest topographic map on the Montana DEQ GIS website which has a topographic elevation marked very close to the Burlington Northern Santa Fe railway track.

The Calumet Montana Refinery (Site or CMR) is located on Pleistocene age glacial lake deposits, which overlie the consolidated Kootenai Formation. Lemke (1977) calls these sediments Deposits of Glacial Lake Great Falls. Lemke (1977) describes two subunits as an upper stratigraphic unit consisting predominantly of non-plastic fine sand and silt and a lower stratigraphic unit consisting mostly of laminated to non-laminated plastic clay and minor amounts of silt. Previous investigation activities at the CMR facility have documented the presence of unconsolidated Pleistocene fluvial and lake deposits and various fill material at the surface and immediately beneath the Site. These surficial units have been encountered at variable depths across the site that range as much as 10 to 20 ft below ground surface. The Pleistocene deposits are generally saturated but yield minimal quantities of water to wells because of their low hydraulic conductivity (Wilke 1983). (Directly from MRL – email dated 8/31/2021 from Casey Mueller).

Underlying the Pleistocene glacial lake deposits is the Cretaceous-age Kootenai formation that has been differentiated into the fifth (upper) and fourth (lower) members. The fifth member of the Kootenai formation is encountered sitewide immediately beneath the surficial Pleistocene deposits and/or fill material and is distinguished by red-weathered mudstone that contains lenses and beds of brownish-gray and greenish-gray, cross-bedded, micaceous sandstone and light gray nodular limestone concretions. The lower part contains a dark-gray shale and lignite bed with a significant pre-angiosperm flora. The bottom of the Kootenai formation's upper member occurs at 60-100 feet below ground level near the Site. Groundwater in this unit beneath the site occurs under semi-confined conditions.

Direct Impacts: The information provided above is based on the information that DEQ had available to it at the time of completing this EA and provided by the applicant as part of the permit application detailing the proposed site. Available information includes the permit application, analysis of aerial photography, topographic maps, and other research tools. None of the planned disturbance at the site is considered first time disturbance. Soils would be disturbed during construction and operation of the proposed action. MAQP #5263-00 estimated approximately 12 acres of disturbance would occur for the life of the project and MAQP #5263-01 estimated an additional 3-5 acres of disturbance. There is no impact expected to topography and geology. MAQP #5263-02 does not anticipate any new greenfield disturbances.

Secondary Impacts: No secondary impacts to topography, geology, stability, and moisture would be expected.

2. WATER QUALITY, QUANTITY, AND DISTRIBUTION:

The Missouri River is approximately 370 feet to the south. No wetlands have been identified on the site. There is a long narrow parcel of property owned by CMR between the parcel proposed for the MRL facility and the Missouri River. Available information includes the permit application, analysis of aerial photography, topographic maps, and other research tools.

Direct Impacts: The information provided above is based on the information that DEQ had available to it at the time of completing this EA and provided by the applicant for the purpose of obtaining the pending air quality permit. MRL has not submitted any water quality or MPDES permit applications to DEQ. MRL has indicated within the application that additional permits are not planned except for a renewal for their wastewater pretreatment permit with the City of Great Falls (Wastewater Treatment Plant). This permit limits the allowable discharge of flow, pH, solids and metals from the CMR/MRL site as well as oil and grease. Based on communication with MRL, the permit limits are not expected to change with the addition of the MRL equipment but must be updated to reflect the additional process equipment connected to the wastewater system related to MAQP #5263-00. Based on this information, DEQ does not anticipate an impact to surface water features and water quality, quantity, and distribution management. Wastewater generated from the PTU will not be commingled with the wastewater from the rest of the facility. All PTU wastewater will be shipped directly off-site using railcars.

Six new storage tanks are planned for the Renewable Feed Flexibility Project. This includes one for wastewater, four for various renewable products and one for conventional diesel.

Precipitation and surface water would generally be expected to infiltrate into the subsurface, however, any surface water that may leave the site could carry sediment from the disturbed site. Soil disturbances and storm water during construction would be managed under the Montana Pollutant Discharge Elimination System (MPDES) General Permit for Storm Water Discharges associated with construction activity as MRL would be required for construction and potentially during operations. The applicant would need to obtain authorization to discharge under the General Permit for Storm Water Discharges associated with construction activity prior to ground disturbance. MRL would manage erosion control using a variety of Best Management Practices (BMP) including but not limited to non-draining excavations, containment, diversion and control of surface run off, flow attenuation, revegetation, earthen berms, silt fences, and gravel packs. This plan would minimize any stormwater impacts to surface water in the vicinity of the project. The proposed action could require MRL to obtain a stormwater discharge plan during construction and potentially during operations. This plan would minimize any stormwater impacts to surface water in the vicinity of the project.

No fragile or unique water resources or values are present. Impacts to water quality and quantity, which are resources of significant statewide and societal importance are not expected. MAQP #5263-02 does not anticipate a significant change in water quality or quantity but additional water usage is required to produce the steam which will be generated by the low pressure boilers.

Secondary Impacts: No secondary impacts to water quality, quantity and distribution would be expected. No secondary impacts from storm water runoff would be expected.

3. **AIR QUALITY:**

As of July 8, 2002, Cascade County is designated as an Unclassifiable/Attainment area for all criteria pollutants according to 40 CFR 81.327. Any new stationary source falling under one of the 28 source categories listed in the "major stationary source" definition at ARM 17.8.801(22) would be a major stationary source if it emits, or has the potential to emit, 100 tpy or more of any regulated Prevention of Significant Deterioration (PSD) pollutant, except for (greenhouse gases) GHGs. The plant would be a "chemical process plant", which is one of the 28 source categories. Therefore, the PSD major source threshold for the plant is 100 tpy. Historical wind patterns at the Great Falls International Airport which is located 4.6 miles to the southwest from MRL, indicates prevailing westerly winds from February thru October, and November thru January winds are most often from the south. A local micro-climate along the Missouri flowing directly to the east would also provide a tendency for easterly air flow.

Direct Impacts: Emissions expected from the proposed action as submitted in the air quality permit application received on August 31, 2023, are shown in Table 2 below. The emissions presented represent the combined emissions that would occur not only from the Renewable Feed Flexibility Project but also from all of the permitted equipment at MRL. The total emission inventory is shown because MAQP #5263-01 includes equipment that is still under construction which was authorized under MAQP #5263-00. This summary concludes that the entire MRL facility remains below the PSD major source threshold of 100 tpy.

Table 2: Renewable Fuels Plant Pollutant Potential to Emit Summary

Pollutant Potential to Emit Summary with the Proposed Modifications			
Pollutant	**Currently Permitted Emissions in Permit No. 5263-01 (tpy)**	**Emissions from Proposed Modifications and Additions (tpy)**	**Total Facility Potential to Emit (tpy)**
CO	65.50	12.58	78.08
NOx	79.67	9.68	89.35
PM (filterable only)	2.47	0.40	2.87
PM_{10}	8.61	0.44	9.05
$PM_{2.5}$	8.54	0.33	8.87
SO_2	5.65	0.26	5.91
VOC	95.53	2.23	97.76
GHGs, as CO_2e	N/A	N/A	N/A

As each pollutant is less than 100 tpy, the proposed facility would not be a major PSD facility. No analysis of greenhouse gases is required for a non-major PSD facility.

Air quality standards, set by the federal government and DEQ AQB and enforced by the AQB, allow for pollutants at the levels permitted within the air quality permit. Once the site is fully constructed, emissions from the renewable fuels plant would include particulate matter (PM) species, oxides of nitrogen (NOx), carbon monoxide (CO), sulfur dioxide (SO_2), carbon dioxide (CO_2.) Residual volatile organic compounds (VOCs) would leak as fugitives from piping, valves, pumps and other process piping. Project emissions assume the process equipment operates 8,760 hours per year. Air pollution control equipment must be operated at the maximum design for which it is intended ARM 17.8.752(2). Limitations would be placed on the allowable emissions for the renewable fuels plant. As part of the air quality permit application, MRL submitted a Best

Available Control Technology (BACT) analysis for each emitting unit. These proposed limits were reviewed and incorporated into MAQP #5263-02 as federally enforceable conditions. These permit limits cover NOx, VOCs, particulate matter and CO with associated ongoing compliance demonstrations, as required by the Department.

Pursuant to ARM 17.8.304(2), fugitive dust emissions would need to meet an operational visible opacity of standard or 20 percent or less averaged over 6 consecutive minutes. Pursuant to ARM 17.8.308(1), MRL is required to take reasonable precautions to control emissions of airborne particulate matter from all phases of operation including material transport. Reasonable precautions would include items such the use of water during construction periods to minimize dust emissions. Air quality standards are also regulated by the federal Clean Air Act, 42 U.S.C. 7401 *et seq.* (1970) and Montana's Clean Indoor Air Act, Mont. Code Ann. § 50-40-101 *et seq.*, and are implemented and enforced by DEQ's AQB. As stated above, MRL is required to comply with all applicable state and federal laws.

For all the above reasons, impacts to air quality from the proposed project are anticipated to be short-term and minor.

Secondary Impacts: Criteria pollutants that would be released disperse into the atmosphere and travel with the wind direction, decreasing in concentration as the pollutants are diluted with ambient air. Concentrations of these pollutants would not be allowed to exceed ambient air quality standards where the public has access which usually is considered to be the property boundary of the industrial facility. Therefore, DEQ does not anticipate impacts to air quality in the area outside the property boundary including the adjacent areas of the City of Great Falls.

4. VEGETATION COVER, QUANTITY AND QUALITY:

There are no known rare or sensitive plants or cover types present in the site area. No fragile or unique resources or values, or resources of statewide or societal importance, are present. Petroleum refining has been conducted at this site since the early 1920's. An air quality permit for the site was first issued in 1985. The Department conducted research using the Montana Natural Heritage Program (MTNHP) website and ran the query titled "Environmental Summary Report" dated August 24, 2021. The proposed action is located at an existing refinery in an urban and industrial setting where the vegetation is limited. The Department did not re-run the MTNHP report since the previous report was just over two years old.

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

Secondary Impacts: Land disturbance at the site would leave little bare ground not occupied by tanks and process equipment.

5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Petroleum refining has been conducted at this site since the early 1920s. As described earlier in

Section 4. Vegetation Cover, the larger polygon area is represented by commercial and industrial operations and the Department conducted research using the Montana Natural Heritage Program (MTNHP) website and ran the query titled "Environmental Summary Report" dated August 24, 2021. However, avian population are not likely to exist on the property due to the existing industrial nature of the property. Avian species may be in the proximity of the proposed project due to the Missouri River.

Direct Impacts: The potential impact (including cumulative impacts) to terrestrial, avian and aquatic life and habitats would be negligible.

A list of species of concern is also identified within in Section 6. Unique, Endangered, Fragile or Limited Environmental Resources as reported from the MTNHP report on unique and endangered resources.

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

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

DEQ conducted a search using the Montana Natural Heritage Program (MTNHP) webpage. As discussed earlier the polygon selected was the 44.46 acre site.

Species of concern (SOC) from the MTNHP identified the following species: Spiny Softshell, Bald Eagle, Great Blue Heron, Golden Eagle, Black Crowned Night-Heron, Black Tern, Common Tern, Swift Fox, Horned Grebe, Ferruginous Hawk, Franklin's Gull, Piping Plover, Foster's Tern, Caspian Tern, American White Pelican, Common Loon, Trumpeter Swan, Harlequin Duck, Sedge Wren, Black-tailed Prairie Dog, Black-foot Ferret, and Gray-crowned Rosy-Finch. Many of these species listed as SOC have not been observed within the search polygon. The one exception noted is that Bald Eagles have been observed.

Direct Impacts: The majority species of concern from the MTNHP list are associated with the riverine habitat on the Missouri River, which is approximately 370 feet to the south of proposed action. These species would not be displaced by the proposed action as the site is completely industrial and the parcel in question does not contact the river or river banks. The potential impact (including cumulative impacts) to species present including bald eagles would be negligible.

Secondary Impacts: The proposed action would not have secondary impacts to endangered species because the permit conditions are protective of human and animal health.

7. **HISTORICAL AND ARCHAEOLOGICAL SITES:**

The Montana State Historic Preservation Office (SHPO) was notified of the application. SHPO conducted a file search and provided a letter dated August 25, 2021. The SHPO searched was conducted for Section 1 T20N R3E. Further a review of the project area was conducted by the DEQ archeologist on August 25, 2021. The file search identified 19 cultural resource sites within the search area criteria. After review, nine of the sites were further evaluated due to proximity to the project area. A new SHPO report for MAQP #5263-01 was not requested as the previous report was less than two years old.

Direct Impacts: Review of the SHPO report identified three of the 19 sites indicate a potential for impacts to Historic Properties, which is defined as any site that is eligible or potentially eligible to the National Register of Historic Places (NRHP). These are detailed and addressed below.

Site 24CA0656 is a NRHP eligible prehistoric processing site located within less than 300 meters of the project area. The current site status us unknown but given the distance of the project area from the site, there will be no adverse effect to Historic Properties.

Site 24CA0371 is a section of the Cascade County Portion of the Great Northern Railroad which is determined eligible for the NRHP. Though the line exists within the current project boundary, the line will not be physically disturbed, nor does the site retain or rely on aspects of visual integrity that would diminish its eligibility. Therefore, there will be no adverse effects to this Historic Property.

Site 24CA1751 is a historic dump located within the banks of the Missouri River. The site is currently listed as Undetermined for its NRHP status, which qualifies it as a Historic Property until otherwise evaluated. The site is outside of the proposed project area, therefore there will be no adverse effect to this Historic Property.

Due to the limited nature of the proposed disturbance for the project, and the lack of potential from visual elements, there will be no adverse effects to Historic Properties. If resources were discovered during operations resources, it would be MRL's responsibility to determine next steps as required by law.

Secondary Impacts: No secondary impacts to historical and archaeological sites are anticipated.

8. **SAGE GROUSE EXECUTIVE ORDER:**
The project would not be in core, general or connectivity sage grouse habitat, as designated by the Sage Grouse Habitat Conservation Program (Program) at: http://sagegrouse.mt.gov.

Direct Impacts: The proposed action is not located within Sage Grouse habitat, no direct impacts would occur.

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

9. AESTHETICS:
The site is located in an area mostly surrounded by industrial private property. Of the 1,280 acres in the larger MTNHP polygon, 1,095 acres are indicated as either private or unknown ownership. The project would occur on private land. The nearest residents to the proposed action reside to the northwest at a distance of approximately 500 feet. There are other houses located directly east of the refinery site starting at about 850 feet from eastern property boundary. It is not expected that the nearest residences to the proposed site would experience any noticeable change in noise levels. Standard noise reducing methods would be employed to minimize the risk that noise levels would rise above current baseline levels. An example of noise minimization would include compressors and pumps being enclosed. The noise levels at the property boundary of the proposed action would not be expected to change.

Direct Impacts: Equipment planned for this permit action would be limited to setting the trailer mounted low pressure boilers and small diesel tanks. Once the proposed action is completed, no discernable change in noise level would be expected. The trailer mounted boilers and new tanks may be visible from Smelter Avenue (Highway 87) located to the north of the refinery property.

Secondary Impacts: Negligible changes to the overall footprint are expected with this action.

10. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:
The site is located in an area characterized by heavy industry and commercial businesses.

Direct Impacts: With the ability to fire the boilers at a higher rate, additional electricity and fuel would be required. Similarly, the low pressure boilers would require electricity from the new generators. The MRL production capacity would remain at approximately 15,000 barrels per day (bpd). See the Air Quality and Water Quality sections of the EA to see the potential impacts from the proposed action regarding Air and Water resources.

Secondary Impacts: During operations, the proposed action would deliver renewable fuels via railcar and trucks to Canadian and west coast U.S. markets. These shipping deliveries would utilize highway and rail infrastructure for product delivery. Expanded production to include renewable kerosene and sustainable aviation fuel would provide for additional market opportunities.

11. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:
The site is immediately surrounded by commercial and industrial properties.

Direct Impacts: DEQ did not identify any other nearby activities that may affect the project. Therefore, impacts on other environmental resources are not likely to occur as result of this project.

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

12. HUMAN HEALTH AND SAFETY:

The applicant would be required to adhere to all applicable state and federal safety laws. The access to the public would be restricted to this property with techniques currently used by the Refinery to limit unrestricted access

Direct Impacts: Impacts to human health and safety are anticipated to be short-term and minor as a result of this project. Tanker and rail shipping are regulated by other state and federal laws to ensure they are operated safely. When the facility would shut down in the future, the direct impacts would cease to exist.

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

13. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:

The site is currently zoned heavy industrial as is reflected by the existing Calumet refinery and MRL operations, and other industrial and commercial properties. There is no agricultural activity at the site**.**

Direct Impacts: Most of the rest of the CMR and MRL property is already covered by equipment and access roads on the property. More of the property would be being utilized for industrial production. Impacts on the industrial, commercial, and agricultural activities and production in the area would be minor and short-term.

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

14. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Prior to issuance of MAQP #5263-00, there were approximately 187 permanent jobs located at the Calumet Refinery. Some of the existing employees have likely become employees of MRL. The Flexible Fuels Feed Project expanded the number of permanent employees that will be required at MRL to operate the PTU process and for the production of additional renewable fuels.

Direct Impacts: A full-time contractor job is expected to be required in order to operate the two low pressure boilers.

Secondary Impacts: No secondary impacts are anticipated.

15. LOCAL AND STATE TAX BASE AND TAX REVENUES:

The proposed action would not be expected to have a discernable impact on local tax revenue.

Direct Impacts: Local, state and federal governments would be responsible for appraising the property, setting tax rates, collecting taxes, from the companies, employees, or landowners benefitting from this operation.

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

16. DEMAND FOR GOVERNMENT SERVICES:

The proposed action is in a heavy industrial and commercial area.

Direct Impacts: Compliance review and assistance oversight by DEQ AQB would be conducted in concert with other area activity when in the vicinity. Oversight by DEQ AQB would be minor and short-term.

Secondary Impacts: No secondary impacts are anticipated.

17. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

A review was conducted of the City of Great Falls website on August 25, 2021 for MAQP #5263-00. A zoning map was located, and the proposed project would be located on an I-2 Heavy Industrial Zone parcel. Additional review of the City's Planning page revealed a Growth Policy was completed in 2013. Other Planning documents were also viewed one of which was a Missouri River Urban Corridor Plan (Plan). This document was dated 2004. The MRL property near the Missouri River is unlikely to be an area where the preservation of river frontage is addressed by the Plan. The website was again visited on May 12, 2022, to review whether any new documents are available relative to planning at or near the site. No new information was available.

Direct Impacts: MRL is proposing the boiler firing rate increases and two new boilers at the existing site which is already zoned as Heavy Industrial. No impacts from the proposed action would be expected relative to any locally adopted community planning goals.

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

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

The current site of the proposed action is in an area of industrial use. Recreation opportunities are located to the south of the proposed action via water-activities on the Missouri River. No wilderness areas or other recreational sites are in the vicinity.

Direct Impacts: There would be no impacts to the access to wilderness activities as none are in the vicinity of the proposed action. Recreationalists on the Missouri River would likely be able to see outlines of some of the equipment. These recreationalists might be river rafters, fishermen and others drawn to the river. The noise would be similar in nature to the existing CMR and existing MRL operations. If a receptor were to increase their distance from the proposed action, noise and visual impacts would decrease. Duration would be expected to be negligible and short-term.

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

19. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

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

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

20. SOCIAL STRUCTURES AND MORES:

Based on the required information provided by MRL, DEQ is not aware of any native cultural concerns that would be affected by the proposed activity.

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

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

21. CULTURAL UNIQUENESS AND DIVERSITY:

Based on the required information provided by MRL, DEQ is not aware of any unique qualities of the area that would be affected by the proposed activity.

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

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

22. PRIVATE PROPERTY IMPACTS:

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

There are private residences in the area of the proposed project. The closest residence is located approximately 500 feet to the northwest from the western property boundary. Other residences are located approximately 850 feet directly to the east from the eastern property boundary.

23. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

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

ADDITIONAL ALTERNATIVES CONSIDERED:

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

24. Climate Change-Related Litigation in Montana

This environmental review under MEPA does not contain an analysis of potential impacts of greenhouse gases or climate change.[1] DEQ is aware of the recent opinion in *Held v. State*.[2] That decision is being appealed to the Montana Supreme Court and final resolution is yet unsettled.[3] Consistent with our mission and values, DEQ will continue to assess our environmental review processes and perform robust and protective analysis.

[1] See § 75-1-201(2)(a), MCA.
[2] *Held v. State*, No. CDV-2020-307 (Mont. 1st Jud. Dist. Ct. Aug. 14, 2023) (declaring § 75-1-201(2)(a), MCA (2023) unconstitutional).
[3] *See Whitehall Wind, LLC v. Mont. PSC*, 2010 MT 2, P18 (holding that agencies are entitled to appeal a district court's decision overturning agency action prior to being required to implement the court's orders); *Grenz v. Mont. Dep't of Natural Res. & Conservation*, 2011 MT 17.

Other Ways to Accomplish the Action:

In order to meet the project objective of additional boiler capacity, additional fuel and electricity needs would be similar regardless of the equipment selected. Therefore, the associated emissions would not be substantially different than the proposed action.

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

CUMULATIVE IMPACTS:

Cumulative impacts are the collective impacts on the human environment within the borders of Montana of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location and generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through preimpact statement studies, separate impact statement evaluation, or permit processing procedures. There are currently no other permit applications for this facility pending before DEQ other than Title V permit actions. Although additional permits may be necessary for this facility in the future, without a pending preconstruction permit application containing the requisite information, DEQ cannot speculate about which permits may be necessary or which permits may be granted or denied. For example, at this time DEQ does not have sufficient information to determine whether or not a MPDES permit would be required although MRL does not anticipate needing one, and therefore cannot predict whether there would be a discharge associated with this facility. There may, therefore, be additional cumulative impacts (*e.g.* to water) associated with this facility in the future, but those impacts would be analyzed by future environmental reviews associated with those later permitting actions. (For example, if MRL applies for a MPDES permit DEQ will analyze the cumulative impacts of the already issued air quality permit and the then-pending MPDES permit.) This environmental review analyzes only the proposed action submitted by MRL, which is the air quality permit regulating the emissions from the equipment as listed in the "proposed action" section, above.

There are other sources of industrial emissions in the vicinity. CMR is known to have emissions including CO, VOCs, SO_2, NOx and particulate matter and currently operates under MAQP #2161. These emissions are limited thru enforceable conditions within their air quality permit. There is also the City of Great Falls Wastewater Treatment facility that like any treatment plant would have emissions. The Wastewater Plant operates under MAQP #4176-00 and has limits in place for both NOx and VOCs. Additionally, there is an incinerator operated in the area by the Montana Highway Patrol. MAQP #5174-00 is held by the Montana Highway Patrol for the purpose of destruction of drugs. The Highway Patrol incinerator is approximately 0.7 mile away. The incinerator is restricted on particulate matter emissions and opacity. Finally, Grain Craft (MAQP #2885-01) operates a flour milling operation to the southeast which is approximately 0.8 mile away and is limited only on opacity. Collectively, these sources and the proposed action can all contribute to the ambient air quality and when future permit actions occur at either MRL or CMR. These actions may require future analysis, depending upon the magnitude of future emission increases. Since the proposed action (even when the equipment previously permitted under MAQP #5263-01 is included) is not major for PSD, a review of existing permitted sources is not required. The proposed action would not be expected to have any discernable impact as the emission increases remain below PSD thresholds. No change in the EPA air quality designation would be expected. As of July 8, 2002, Cascade County was designated as an Unclassifiable/Attainment area for all criteria pollutants.

A review was also conducted of the City of Great Falls Growth Policy which appears to have been updated in 2013. Several elements which are addressed in the Growth Policy include provisions to guide land-use, transportation, economic development, housing needs and population projections.

DEQ considered potential impacts related to this project and potential secondary impacts. Due to the limited activities in the analysis area, cumulative impacts related to this project would be minor and short-term. The cumulative table for any direct and secondary impacts is located at the very end of this EA in Table III and is has been updated to reflect the latest changes being approved under MAQP #5263-02. Those cumulative impacts are also highlighted here regardless of the probability identified in Table III.

Air quality would not be expected to deteriorate or change from its current classification of Unclassifiable/Attainment for all criteria pollutants. The proposed action is not a PSD action as the project increases for the entire MRL facility would be less than 100 tpy. The MRL facility remains at a capacity of approximately 15,000 bpd of renewable fuels. Emissions of NOx and CO are also minimized through the use of ultra-low NOx burners along with continuous emission monitors for NOx and oxygen (O_2).

Historical and archaeologic sites are known to exist near the proposed project but not expected to be encountered due to the long history of crude oil refining on the site. Any excavation that would result in any significant findings would need to be investigated before further work continued.

Changes in aesthetics for the proposed project would not be expected to materially change the characteristics at the site. The site is already characterized as industrial in nature and includes large visible heaters and equipment. Typical engineering design for noise minimization would be incorporated to prevent excessive noise migration from the site.

Exposure to industrial equipment would be similar in nature to the hazards already occurring under the CMR and MRL permits.

The existing parcel where the new equipment will almost entirely be occupied by equipment either operated by MRL or by CMR. Any future construction projects at the site which would require a significant footprint, would be limited by the remaining physical space on the site.

PUBLIC INVOLVEMENT:

Scoping for this proposed action consisted of internal efforts to identify substantive issues and/or concerns related to the proposed operation. Internal scoping consisted of internal review of the environmental assessment document by DEQ Air Permitting staff.

Internal efforts also included queries to the following websites/ databases/ personnel:
- Montana State Historic Preservation Office
- Montana Department of Environmental Quality (DEQ)
- Cascade County Website
- Montana Natural Heritage Program
- Montana Cadastral Mapping Program

OTHER GOVERNMENTAL AGENCIES WITH JURSIDICTION:

The proposed project would be fully located on privately-owned land. All applicable local, state, and federal rules must be adhered to, which, at some level, may also include other local, state, federal, or tribal agency jurisdiction. Other Governmental Agencies which May Have Overlapping or Sole Jurisdiction include, but may not be limited to: City of Great Falls, Cascade County Commission or County Planning Department (zoning), Cascade County Weed Control Board, OSHA (worker safety), DEQ AQB (air quality) and Water Protection Bureau (groundwater and surface water discharge; stormwater), DNRC (water rights), and MDT and Cascade County (road access).

NEED FOR FURTHER ANALYSIS AND SIGNIFICANCE OF POTENTIAL IMPACTS

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

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

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

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

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

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

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

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

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

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

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

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

SIGNIFICANCE DETERMINATION

The severity, duration, geographic extent and frequency of the occurrence of the impacts associated with the proposed action would be limited. MRL proposes to raise the firing capacity of two existing boilers and add two trailer-mounted low pressure boilers to the renewable fuels plant. The estimated construction disturbance for MAQP #5263-00 was about 12 acres during construction. And the on-going disturbed acreage once operational would also be 12 acres. Once operational, the 12 acres includes the area that would be occupied by new equipment including the large storage tanks. For the revised MAQP #5263-01, an additional 3 to 5 acres of both disturbance and land permanently occupied would occur. MAQP #5263-02 is not anticipated to result in any new disturbance.

DEQ has not identified any significant impacts associated with the proposed action for any environmental resource. Approving MRL's Air Quality Application would not set precedent that commits DEQ to future actions with significant impacts or a decision in principle about such future actions. DEQ would conduct a new environmental review for any subsequent air quality permit applications sought by MRL. DEQ would make a decision on MRL's subsequent application based on the criteria set forth in the CAA of Montana.

DEQ's issuance of an Air Quality Permit to MRL for this proposed operation does not set a precedent for DEQ's review of other applications, including the level of environmental review. The level of environmental review decision is made based on a case-specific consideration of the criteria set forth in ARM 17.4.608.

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

Environmental Assessment and Significance Determination Prepared By:

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Name	**Title**

EA Reviewed By:

Julie Merkel	Permitting Services Section Supervisor
Name	**Title**

References

Air Quality Permit Applications Received April 26, 2022 and August 28, 2023
Montana State Historical Preservation Office (SHPO) Report Received August 25, 2021
Montana Natural Heritage Program (Website Search Downloads) Last Download Aug 15, 2021
Montana Cadastral GIS Layer – Through-Out Project Up Until Draft Issuance
Air Quality Bureau Permitted Source List-GIS Layer
Air Quality Permit MAQP #5263-01 and associated EA
Air Quality Permit MAQP #2885-01
Air Quality Permit MAQP #4176-00
Air Quality Permit MAQP #5174-00
Air Quality Permit MAQP #2161-39
City of Great Falls Website – Planning Documents – Reviewed on May 12, 2022, and again on September 11, 2023.
Wind Rose Information – Great Falls International Airport

Table III: Summary of Potential Impacts that could Result from the Renewable Fuels Project (Facility) now included with the latest equipment under MAQP #5263-02.

Potential Impact	Affected Resource and Section Reference	Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)	Probability[5] impact would occur	Cumulative Impacts	Measures to reduce impact as proposed by applicant	Significance (yes/no)
Soil Disturbance/Fugitive Dust	I. TOPOGRAPHY, GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE. II. WATER QUALITY, QUANTITY, AND DISTRIBUTION III. AIR QUALITY	**S**-medium: The 15-18 acre disturbance both during construction and following construction, could be susceptible to erosion and fugitive dust. **E**-medium: Total surface disturbance would be 15-18 acres. **D**-The entire construction project would occur within approximately one to one and half years. There is no existing vegetation on the site. **F**-During occasional moisture events or high wind events. **U/F**-Not unique or particularly fragile.	Certain	The construction period of approximately one to one and a half years limits the possible duration and extent of and erosion or fugitive dust. The majority of the site is currently already paved. Once constructed, there would no longer be exposed soils as those areas would be occupied by equipment pads. The latest equipment under MAQP #5263-02 would add little new disturbance.	MRL would be required to follow reasonable precautions for storm run-off and fugitive dust.	No
VOC, NOx, CO, PM emission release as well as fugitive dust	II. AIR QUALITY	**S**-low: Emissions released from MRL would largely be off-set by decreases occurring at CMR. The Renewable Feed Flexibility Project provides for minor increases over permitted levels in MAQP #5263-00. **E**-small: Total surface disturbance is estimated at 15-18 acres. **D**- The entire construction project would occur within approximately one to one a half years. Emissions from combustion processes would be on-going for the duration of the facility life. **F**-Daily during normal operation **U/F**-Not unique or particularly fragile.	Certain	The emission increases that would occur at MRL would largely be off-set by emission decreases at CMR. Discernable changes in ambient air quality would not be expected. The latest equipment under MAQP #5263-02 provides for emission increases but still below PSD levels.	Emission control technologies such as ultra-low NOx burners, Best Available Control Technology (BACT) limits, federal NESHAP requirements	No

Potential Impact	Affected Resource and Section Reference	Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)	Probability[5] impact would occur	Cumulative Impacts	Measures to reduce impact as proposed by applicant	Significance (yes/no)
Impacts to Historical and Archaeological Sites	III. HISTORICAL AND ARCHAEOLOGICAL SITES:	**S** -low: All areas proposed for disturbance have been previously disturbed. No impact to sites would be anticipated. **E** – low: Site has been petroleum refinery since 1920's. **D** – long-term, any disturbance to archaeological sites would be permanent **F**- Once **U/F**-Not unique or particularly fragile.	Unlikely	Impacts to historical and archaeological sites associated with the project would add to the cumulative impacts associated with any other future developments around the area. The latest changes under MAQP #5263-02 would add little new disturbance.	SHPO recommendations would be followed by MRL upon discovery of any historical site significance.	No
Noise increases and visual changes	IV. AESHETICS	**S**-low: Noise increases would not be expected to increase above current baseline. Visual changes would just include more industrial equipment into view from certain locations. **E**-small: The equipment would be installed on the interior of an existing parcel. Not readily accessible to public. **D**- The entire construction project would occur within approximately one to one and half years. Noise and visual changes would be on-going for the duration of the facility life. **F**-Daily: During life of the MRL facility **U/F**-Not unique or particularly fragile.	Possible	Discernable changes in noise would likely not occur. Visual differences would not change the fact the site is already a petroleum refinery and chemical plant. The latest changes under MAQP #5263-02 would have operating generators not currently on-site but these would be similar to existing noise at the site.	Equipment would be located away from exterior of property boundary.	No

Energy use increase onsite and transportation energy use increases	V. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY	**S**-low: Increases in energy use at MRL are mostly off-set by decreases at CMR. **E**-small: Shipping increases at MRL are mostly off-set by decreases at CMR but PTU wastewater shipping will increase. **D**- Energy use at MRL would be on-going for the duration of the facility. **F**-Daily during life of the MRL facility **U/F**-Not unique or particularly fragile.	Certain	Overall energy use would be off-set by the increases at MRL being balanced by the decreases at CMR. A renewable fuels product would be produced for emerging markets where non-fossil derived fuel is required and or preferred. The latest changes under MAQP #5263-02 would increase energy and steam usage, but small in comparison to the overall energy and steam usage at the site.	None proposed	No
Potential Impact	**Affected Resource and Section Reference**	**Severity[1], Extent[2], Duration[3], Frequency[4], Uniqueness and Fragility (U/F)**	**Probability[5] impact will occur**	**Cumulative Impacts**	**Measures to reduce impact as proposed by applicant**	**Significance (yes/no)**
Traffic Increases and employee exposure to new equipment	VI. HUMAN HEALTH AND SAFETY	**S**-low: Increases in shipping from MRL would largely be off-set by decreases at CMR. Equipment transferred from CMR to MRL would be similar in employee exposure for personnel hazards. **E**-low:. **D**- Traffic and employee personnel impacts would be on-going for the duration of the facility. **F**-Daily during life of the MRL facility **U/F**-Not unique or particularly fragile.	Possible	Overall traffic and personnel impacts would be off-set by the increases at MRL being balanced by the decreases at CMR. Some increase in shipping via railcar and truck would be associated with feedstock including canola oil and for additional truck and rail cars for PTU wastewater The latest changes under MAQP #5263-02 would not be expected to increase traffic and the new boilers would be operated by contracted staff..	None proposed.	No

Less bare land at site and increase in amount of land footprint used for diesel production	VII. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION	**S** -low: The 15-18-acre disturbance both during construction and following construction. **E** – low: Total surface disturbance would be 15-18 acres. **D** – Duration of the life of the MRL facility **F**- Daily **U/F**-Not unique or particularly fragile.	Certain	Any future projects would be limited by remaining physical space to install new equipment without the demolition of existing equipment. The latest changes under MAQP #5263-02, are intended to improve the design of the renewable fuels plant and may improve the overall chances of being viable for long-term operation.	None proposed.	No
Tax base increase and employment gains	VIII. QUANTITY AND DISTRIBUTION OF EMPLOYMENT	**S** -Medium; Construction workers employed during construction period. Increase in permanent employees across the MRL and CMR sites. **E** – low: Relatively low increase in permanent employees for area. **D** – Duration of the life of the MRL facility **F**- Daily **U/F**-Not unique or particularly fragile	Certain	Increase in permanently employed workers. The latest changes under MAQP #5263-02 increase contracted staff by one person to operate the new boilers.	None proposed.	No

Definitions are quantified as follows:

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

The severity of an impact is measured using the following:

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

1. Severity describes the density at which the impact may occur. Levels used are low, medium, high.
2. Extent describes the land area over which the impact may occur. Levels used are small, medium, and large.
3. Duration describes the time period over which the impact may occur. Descriptors used are discrete time increments (day, month, year, and season).
4. Frequency describes how often the impact may occur.

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