North Dakota Department of Health
Environmental Health Section
Division of Air Quality

Department Response to Public Comments Regarding Issuance of an Air Pollution Control Permit to Construct for the Meridian Energy Group, Inc. - Davis Refinery

June 2018

This document contains a summary of public comments received during the public comment period regarding the proposed Air Pollution Control Permit to Construct for the Meridian Energy Group, Inc. - Davis Refinery (hereafter referred to as the "Davis Refinery"). The North Dakota Department of Health's (hereafter referred to as the "Department") response to each comment is shown after the comment. Although there are specific responses to each comment, the document should be read in its entirety with the understanding that a response to one comment may be applicable to additional comments.

Comment 1

Many commenters are opposed to the location of the proposed refinery.

Response to Comment 1

The Department does not have zoning authority and cannot approve or deny a permit based solely on the location of a facility. Primary authority on business location and land use is determined by the local zoning authority. The project received zoning authority from Billings County.

The Department evaluated the impacts on air quality from the Davis Refinery on the area, including the Class I area of Theodore Roosevelt National Park (TRNP) (South Unit); see Air Quality Impacts Analysis (AQIA). When the Department determines a proposed project complies with N.D. Admin. Code art. 33-15 air pollution control rules, then the Department must issue a permit to construct. N.D.A.C. § 33-15-14-02(8).

Comment 2

Many commenters objected to the issuance of an air quality permit due to the proximity of the Davis Refinery to Theodore Roosevelt National Park (TRNP).

Response to Comment 2

See response to Comment 1. Additionally, the Department conducted computer dispersion modeling to predict the impact of emissions on the air surrounding the facility, including the TRNP. This modeling showed that the Davis Refinery is expected to comply with the Ambient Air Quality Standards (AAQS) under N.D.A.C. § 33-15-02. See PTC17020_0_0AQIA Table 1 - Ambient Air Quality Standards (AAQS) Results Summary.

Comment 3

Many commenters expressed concerns about differing capacities of the Davis Refinery being provided to different regulatory agencies. For example, Meridian Energy reported a capacity of 49,500 barrels per day (bpd) to the North Dakota Public Service Commission (PSC), while the capacity of the facility provided for purposes of the air quality permit was 55,000 bpd. Many commenters also wanted the Department to include a condition requiring PSC siting before construction can commence.

Response to Comment 3

For the permit to construct, emissions from the facility were analyzed assuming a production capacity of 55,000 barrels per day (bpd) because, when the permit to construct application was submitted, this was the potential full buildout of the facility (both Phase 1 and Phase 2). Phase 2 was (and still is) dependent upon the success of Phase 1. Other regulatory agencies may have requirements restricting production capacity to lower levels, in which case the facility may be forced to operate at a lower capacity. Imposing a condition in the permit to construct requiring PSC siting would not be reasonable because a permit to construct is intended to address air pollution-related issues, not siting issues. See N.D.A.C. § 33-15-14-02(9) (authorizing the Department to impose "reasonable conditions" in a permit to construct). Concerns regarding the PSC's requirements must be addressed to the PSC.

Comment 4

Many commenters discussed the positive and negative economic impacts the Davis Refinery would have on the local economy.

Response to Comment 4

The Department cannot consider economic impacts when issuing a permit to construct under N.D.A.C. § 33-15-14(2).

Comment 5

Many commenters were concerned with negative health effects due to emissions from the facility.

Response to Comment 5

In issuing the permit to construct, the Department has determined that the Davis Refinery complies with N.D. Admin. Code art. 33-15 air pollution control rules, N.D.A.C. § 33-15-14-02(8). Many of these rules are primarily based on controlling and minimizing the health-based effects from sources of air pollution and these are the regulations used when the Department assesses emissions from a facility. These regulations include:

N.D.A.C. ch. 33-15-02 - Ambient Air Quality Standards (AAQS), which set ambient limits on the concentrations of PM_{10}, $PM_{2.5}$, SO_2, H_2S, NO_2, CO, O_3, and lead (Pb) and are based on protecting the health of sensitive populations. Additionally, the Department's Policy for the Control of Hazardous Air Pollutant (HAP) Emissions in ND (Air Toxics Policy)[1] established under N.D.A.C. § 33-15-02-04(3) allows the Department to establish specific limits of concentration for air contaminants that would be injurious to human health or well-being, or unreasonably interfere with the enjoyment of property, or that would injure plant or animal life. The air toxics analysis conservatively evaluates the compounding effects of carcinogenic and non-carcinogenic effects on human health.

N.D.A.C. ch. 33-15-12 - New Source Performance Standards (NSPS) [40 CFR 60], which set standards for new equipment and industrial classifications to reduce emissions based on up-to-date control technologies and designs;

N.D.A.C. ch. 33-15-13 - National Emission Standards for Hazardous Air Pollutants (NESHAPs) [40 CFR Part 61], which set requirements for the control of Hazardous Air Pollutants (HAPs);

N.D.A.C. ch. 33-15-22 - Maximum Available Control Technologies (MACT) standards [40 CFR Part 63], which sets standards for new and existing equipment and industrial classifications to reduce HAP emissions based on up-to-date control technologies and designs.

[1] https://deq.nd.gov/publications/AQ/policy/Modeling/Air_Toxics_Policy.pdf

The Davis Refinery was modeled to demonstrate compliance with the health-based AAQS and results were well below the AAQS (see PTC17020_0_0AQIA Table 1 - Ambient Air Quality Standards Results Summary).

Consistent with the Air Toxics Policy, the cancer impacts of HAP emissions from the facility were evaluated. The Department conducted a computer dispersion modeling analysis to estimate the maximum individual carcinogenic risk (MICR) due to emissions from the Davis Refinery. The results indicate that the MICR due to emissions is approximately 0.65 in 100,000, which is below the acceptable limit of 1 in 100,000 established by the Department's Air Toxics Policy. This means that an individual exposed to the highest average pollutant concentration in the ambient air continuously for 70 years is predicted to have a 0.00065 percent increased risk of developing cancer. It should be noted that the risk of developing cancer in the general population is approximately 30 percent (300,000 in a million). This is meant to provide factual information regarding the increased cancer risk and is not meant to minimize concerns regarding emissions from the facility.

Table 1 - Air Toxics MICR and Hazard Index Results (taken from the AQIA)

	IICR RESULTS	**[AZARD INDEX RESULTS****	**ASS (Y/N)**
Total	$.5 \times 10^{-6}$	.004	⁄es
Acceptable Level*	**$.0 \times 10^{-5}$**	**.0**	⁄es

* Established in the Air Toxics Policy.

** The hazard index is a value used to assess the non-carcinogenic health impacts from a facility as outlined in the Air Toxics Policy.

Comment 6

Several commenters were concerned with future Meridian expansions or that permitting this project will make it easier for other industrial sites to be built in that area.

Response to Comment 6

Alterations to the Davis Refinery will be subject to N.D.A.C. § 33-15-14-02(3)(b), which provides "[a]ny physical change in, or change in the method of operation of, a stationary source already existing which increases or may increase the emission rate or increase the ambient concentration by an amount greater than that specified in subdivision a of subsection 5 of any pollutant for which an ambient air quality standard has been promulgated under this article or which results in the emission of any such pollutant not previously emitted must be considered to be construction, installation, or establishment of a new source." Any new sources of air pollution in the area meeting the criterion established under N.D.A.C. § 33-15-14-02(1) will be required to obtain a permit to construct. The construction and operation of one facility does not allow more efficient or easier permitting of future facilities. The permitting process for any changes in existing equipment or any additional facilities considers any nearby sources of air pollution and the combined impacts these facilities have on the AAQS; no facility "may cause or permit the emissions of contaminants to the ambient air from any source in such a manner and amount that causes or contributes to a violation in the ambient air" of the AAQS. N.D.A.C. § 33-15-02-07(1).

Comment 7

Several commenters were concerned about the stringency and thoroughness of the Department's review and were concerned that the Department was "rubber stamping" this project/permit.

Response to Comment 7

Before issuing a permit to construct, the Department must determine either that "the proposed project will be in accordance with [N.D.A.C. art. 33-15], including whether the operation of any new stationary source at the proposed location will cause or contribute to a violation of any applicable ambient air quality standard" or that "the proposed project will provide all necessary and reasonable methods of emission control," N.D.A.C. § 33-15-14-02(8) (requiring the Department make an affirmative determination that either § 33-15-14-02(5)(a) or (b) has been met).

Here, the Department made a preliminary determination to issue the permit to construct based on the Davis Refinery's ability to meet both subdivisions (a) and (b) of N.D.A.C. § 33-15-14-02(5). This determination was made only after the Department thoroughly reviewed the application, including but not limited to: overall project description, refinery overview, process description, summary of emissions and detailed emissions calculations (including electronic spreadsheets),

regulatory applicability analysis, air modeling reports, and supporting modeling files. Additional attachments included: site plans, process flow diagrams, control technology review and the application forms. See N.D.A.C. § 33-15-14-02(2) (requiring permit application).

Due to the public interest in this project and its proximity to TRNP, the Department reviewed the project utilizing criteria similar to the criteria used for Prevention of Significant Deterioration (PSD) major sources (see table below):

	TRUE MINOR	SYNTHETIC MINOR	PSD MAJOR	MERIDIAN DAVIS REFINERY
Regulation Applicability Review	✓	✓	✓	✓
Emission Calculation Review	✓	✓	✓	✓
Set Emission Limits	✓	✓	✓	✓
Set Control Equipment Required	✓	✓	✓	✓
Air Toxics Review	✓	✓	✓	✓
Ambient Modeling			✓	✓
PSD Increment Modeling			✓	✓
Public Comment (PC)		✓	✓	✓
EPA Review (concurrent w/ PC)		✓	✓	✓
Federal Land Manager Review			✓	Consulted
Best Available Control Technology			✓	BACT-Like Controls

In total, the Department has spent over two years and over 1,000 staff-hours working to verify: the emission rates and limits can be achieved, the impacts of the facility's emissions on the nearby area (including TRNP) will not cause or contribute to a violation of any applicable ambient air quality standard, and a draft permit to construct sets enforceable emission conditions.

The Department also went beyond the minimum public participation requirements, granting an extended 45-day public comment period and holding a public hearing. See N.D.A.C. § 33-15-14-02(6) (listing public participation requirements). The Department carefully considered all comments in its preliminary determination, as required by N.D.A.C. § 33-15-14-02(6)(b)(7), in making its final determination. Based on the comments received, the Department made revisions to the final permit to construct, summarized as follows (also included with the final permit files):

- Added New Source Performance Standard (NSPS) Ja to fuel gas combustion (FGC) devices in Condition I.B.5.
- Added NSPS Dc to boilers in Condition I.B.5.
- Added NSPS GGGa to the ELDAR sources in Condition I.B.5.
- Added NSPS XX to the Loading/Unloading System in Condition I.B.5.
- Added NSPS Kb to the storage vessels in Condition I.B.5.
- Condition II.A Table, EU 11A, added gasoline loading loss emissions condition previously only listed in emission calculations (and by regulatory [NSPS XX] reference). Specifically, the 10 mg TOC/liter of gasoline loaded is now clearly stated as a permit condition.
- Condition II.A Table, general, added pollutant superscripts and table footnote to identify that an emission unit is subject to additional requirements as a result of a NSPS.
- Condition II.A Table, general, changed to display averaging times/requirements vs ppm equivalents for the FGC devices.
- Condition II.A.2, specifically added "and performance testing requirements" and "§60.104a" (testing reference).
- Added Condition II.A.3.c.:
    - By rule (NSPS Ja) each FGCD greater than 40 MMbtu/hr is subject to a NO_X limit of 0.040 lb/MMbtu determined daily on a 30-day rolling average basis. Demonstrating compliance with this limit can be accomplished by demonstrating compliance with the NO_X limits listed under Conditions II.A.3.a; allowed since the same averaging time is used for each limit.
- Added Condition II.A.4.c.:
    - By rule (NSPS Ja) units listed under Condition II.A.4.a are subject to the 3-hour and 365-day rolling average limit for H_2S in fuel gas. The permittee is required to demonstrate compliance with the NSPS Ja H_2S fuel gas limits as follows: 162 ppmv on a 3-hour rolling average basis and 60 ppmv on a 365-day rolling average basis.

- Condition II.A.8, added language to reflect the annual SO_2 limit to remain in compliance with emission calculations and facility restrictions. NSPS Ja limit of 2,500 ppm also remains as a regulatory limit.
- Condition II.A.10, ELDAR, NSPS GGGa will be used in conjunction with an OGI camera and TCEQ 28LAER for LDAR Compliance (no more MACT H reference).
- Condition II.A.12, Tanks, NSPS Kb is applicable to all tanks, MACT 6B to gasoline tanks, all volatile organic liquids tanks have SFP (no more MACT WW reference).
- Condition II.A.13, changed heading to "Truck Loading Rack Operations". Previously only identified MACT 6B. Facility is also subject to NSPS XX. No new/additional requirements were triggered as a result. The AQEA was also updated to reflect NSPS XX applicability:
    - This section more closely follows the other overlapping sections (i.e., LDAR and Tanks described above).
    - Condition II.A.13.a inserted to reflect operational limit of 10 mg TOC/liter gasoline.
- Condition II.A.17, update, "under routine operating conditions the facility is only allowed to operate three of the four Medium Pressure Boilers (EUs 8A-8D) and two of the three High Pressure Boilers (EUs 8E-8G)."
- Condition II.B, updated to include performance testing required on EU 11A for gasoline loading.
- Condition II.D.1, updated to reflect $VOC_{LOADING}$ emissions with the 10 mg/l limit (previously accounted for in LDAR calcs, now explicitly identified).
- Condition II.D. 1-4, removed "from non-emergency operations" on all engine emissions data to capture facility total emissions from engine operations during all periods.
- Condition II.E.1 Table, added EU 11A gasoline loading monitoring condition.
- Condition II.F.1.e, NSPS XX added as a recordkeeping and reporting condition.

Comment 8

Several commenters wanted a "holistic" review of all the environmental regulations/impacts from the proposed project.

Response to Comment 8

Environmental regulations are complex with authority to implement the rules split between several agencies at multiple levels of government (Local, State, and Federal). Each media (air, water, waste, etc.) and their associated rules are complex and require subject matter experts. Each agency or division within an agency reviews the project to determine if it will comply with the applicable rules within the agency's areas of expertise. Approval for each permit, authorization, license, etc.

is independent; therefore, obtaining an air permit is no guarantee that another permit or authorization will be issued.

Comment 9

Several commenters were concerned that the public hearing was held in Dickinson and wished it to be held in other parts of the state.

Response to Comment 9

The Department was not required to hold a public hearing under the applicable public participation procedures in N.D.A.C. § 33-15-14-02(6). Due to the public interest in the project, Dickinson State University was chosen due to its location in the region of the project and its capacity (seating and setup so attendees could see the Department's presentation and the commenters) and technical ability (large projector and sound system so attendees could hear).

Comment 10

Several commenters were concerned about the aesthetics of steam plume(s) from the facility.

Response to Comment 10

The Davis refinery's cooling tower will have the potential to produce a condensed water vapor plume under certain meteorological conditions. The cooling tower uses a newer design that is more efficient, resulting in less water drift (i.e., less loss of water to the atmosphere), than those used at sites operating older units, such as the Mandan Refinery or the power plants.

No process equipment at the proposed refinery will operate water-based (wet) pollution control equipment (e.g., a wet gas scrubber or wet electrostatic precipitator). Operating wet control equipment often results in visible water vapor plumes due to the amount of moisture added into the system at the control equipment (water loss to the atmosphere).

Comment 11

Several commenters were concerned about being able to see the refinery from the park and the analysis of visual impacts conducted by Meridian.

Response to Comment 11

There are no air quality requirements under N.D.C.C. ch. 23-25 or N.D.A.C. art. 33-15 on limiting man-made structures located outside the park that are visible from within park boundaries. The Department does not have the authority to regulate the visual impact of man-made structures outside of a Class I or any other area. Local zoning requirements may exist, but they are beyond the scope of this permit proceeding.

Comment 12

Several commenters were concerned about the light pollution from the refinery.

Response to Comment 12

There are no air quality requirements under N.D.C.C. ch. 23-25 or N.D.A.C. art. 33-15 relating to light pollution. Therefore, the Department does not have the authority to address light pollution in the permit to construct.

Comment 13

Several commenters were concerned about truck traffic and road dust.

Response to Comment 13

Haul roads within the property boundary of the Davis Refinery are to be paved, so dust should be minimized. This is consistent with the Department's rules, which include paving as a possible measure to abate and prevent road dust. See N.D.A.C. § 33-15-17-03(1). Additionally, N.D.A.C. § 33-15-08-01 applies to the Davis Refinery and associated truck traffic and states, "No person(s)

shall operate, or cause to be operated, any internal combustion engine which emits from any source any unreasonable and excessive smoke, obnoxious or noxious gases, fumes, or vapor."

Comment 14

Several commenters were concerned about the potential noise from the facility.

Response to Comment 14

There are no air quality requirements under N.D.C.C. ch. 23-25 or N.D.A.C. art. 33-15 relating to noise. Therefore, the Department does not have the authority to address noise in the permit to construct.

Comment 15

Several commenters were concerned about odors from the facility.

Response to Comment 15

There are no federal odor standards; however, the Department has an ambient air quality standard and an odor standard for H_2S, N.D.A.C. ch. 33-15-02 Table 1. and N.D.A.C. § 33-15-16-02.1. Additional odor regulations are under N.D.A.C. § 33-15-16-02. The Davis Refinery will not be a significant source of H_2S and is not expected to have objectionable odors in violation of N.D.A.C. § 33-15-16-01. The permit requires the Davis Refinery to comply with the all odor standards in N.D.A.C. ch. 33-15-16.

Comment 16

Several commenters were concerned about the water quality of the aquifer the Davis Refinery is proposing to obtain their process water from and the aquifer water's effect on the steam from the facility.

Response to Comment 16

For operational purposes, the water used by the Davis Refinery will be treated and monitored. Monitoring total dissolved solids (TDS) and volatile organic compounds (VOCs) content in cooling tower water is a standard industrial practice for safety reasons and to minimize downtime. See Meridian Response 71 in "Response to NPCA - EHM Final" document.

The TDS content, VOC content, water flow rate, and cooling tower drift are used to calculate actual emissions from cooling tower operations. See Meridian Response 72 in "Response to NPCA - EHM Final" document. These numbers will be reviewed by the Department to determine compliance with the Permit to Construct.

Comment 17

Several commenters were against fossil fuel usage in general, specifically related to greenhouse gas (GHG) and carbon dioxide (CO_2) emissions.

Response to Comment 17

There are no air quality requirements under N.D.C.C. ch. 23-25 or N.D.A.C. art. 33-15 which allow the Department to regulate greenhouse gas (GHG) emissions from the Davis Refinery. Therefore, the Department does not have the authority to address the GHG emissions. Under 40 CFR Part 98, the Davis Refinery will be required to report GHG emissions to the U.S. Environmental Protection Agency (EPA).

Comment 18

Several commenters asked about environmental impact statements.

Response to Comment 18

There is no requirement under either federal or state law for an environmental impact statement to be completed for the Davis Refinery prior to the issuance of a permit to construct.

Comments 19.a to 22.k.

from January 26, 2018 letter from the National Parks Conservation Association, the Environmental Law and Policy Center, Dakota Resource Council and the Environmental Integrity Project

The January 26, 2018 comment letter includes a significant number of comments and attachments, including the following documents which contain additional comments:

1) Comments on the Permit to Construct Application and Permit Application for Air Contaminant Sources for the Davis Refinery Project prepared by Dr. Phyllis Fox and dated August 22, 2017 (hereafter referred to as the August 22, 2017 Fox document).

2) Comments on the Permit to Construct for the Davis Refinery Project prepared by Dr. Phyllis Fox dated January 26, 2018 (hereafter referred to as the January 26, 2018 Fox document).

3) Comments regarding the North Dakota Department of Health's Air Quality Impact Analysis (AQIA) for Meridian's proposed Davis Refinery dated January 26, 2018 by Dr. Andrew Gray (hereafter referred to as the January 26, 2018 Gray letter).

It should be noted that the August 22, 2017 Fox document was submitted to the Department well before the beginning of the public comment period for the Permit to Construct for the Davis Refinery. To be considered, comments regarding a proposed Permit to Construct must be submitted during the public comment period. Since the January 26, 2018 Fox document incorporates the August 22, 2017 Fox document, the Department will consider the comments in the August 22, 2017 Fox document to be received during the public comment period and will review and respond to the comments.

The Department will respond to the comments in the following order:

Comments included in the August 22, 2017 Fox document: 19.a to 19.f.
Comments included in the January 26, 2018 Fox document: 20.a to 20.d.
Comments included in the January 26, 2018 Gray letter: 21.a to 21.e.

Although the comments included in the January 26, 2018 comment letter were from several organizations, the letter will hereafter be referred to as the January 26, 2018 NPCA letter for simplicity; comments are numbered: 22.a to 22.k.

Comment 19.a
(from the August 22, 2017 Fox document)

"Vendor Guarantees Are Not An Adequate Basis to Establish Potential to Emit (PTE) Limits"

Within this comment, the commenter discusses six main concerns as follows:

1) The vendor guarantee from Born, Inc. is not a vendor guarantee, so Born is not legally bound to meet the emission limits for the life of the refinery.

2) The Davis Refinery is not bound to using only Born, Inc. heaters.

3) The guarantee is only for heaters and excludes boilers.

4) The guarantees are valid only at design and 80 percent of design; also, startup, shutdown, and maintenance (SSM) emissions are not included in PTE calculations.

5) The guarantee does not specify an averaging time.

6) Particulate matter emissions are underestimated based on the guarantee.

Response to Comment 19.a

The Department responses to the six main concerns are as follows:

1) The vendor data were utilized to establish the emission limits in the Permit to Construct. These emission limits are enforceable and establish limits for NO_x and CO (the main pollutants of concern from combustion sources). The Davis Refinery is legally bound to meet these limits. Born, Inc.'s legal obligations are not relevant.

2) The Davis Refinery is bound by the representations made in the permit application under Permit to Construct Condition II.G. This includes the use of the Born, Inc. heaters (or equivalent, as determined by the Department).

3) Emission limits are established for the boilers and process heaters, and the Davis Refinery is legally bound to meet these emission limits. Based on the information provided in the application and the Department's experience with gaseous fuel combustion sources, compliance with the permitted limits for the boilers and process heaters is expected. See Permit to Construct Condition II.A.

4) The emission limits are valid at all times and SSM emissions are counted towards the annual emissions caps established in the Permit to Construct. See Permit to Construct Condition II.D.

5) The Department has revised the draft Permit to Construct to include averaging times. See comment provided by EPA (Comment 25.c) and Response to Comment 25.c. Additionally, see Permit to Construct Condition II.A.

6) Particulate matter (PM) limits are based on the information provided in the permit application (vendor memorandum) and are consistent with the Department's experience and expectations from gaseous fuel combustion. PM emission limits are established in the Permit to Construct and emissions testing is required to be conducted to verify that the emission limits are met. See Permit to Construct Condition II.A. and Condition II.B.

Comment 19.b

(from the August 22, 2017 Fox document)

"NO_x Emissions from Fuel Gas Combustion Devices (FGCD) Are Not Adequately Supported"

Within this comment, the commenter discusses five main concerns as follows:

1) None of the provided information includes stack tests on fuel gas combustion devices (FGCDs) equipped with both selective catalytic reduction (SCR) and ultra-low NO_X burners (ULNBs) designed to achieve NOx emissions of 0.0063 lb/MMBtu or lower.

2) As for the FGCDs equipped with ULNBs, the only marginally responsive information is the Sinclair Refinery stack tests.

3) The June submittals included a permit at a Motiva refinery in Texas for several FGCDs. These units were permitted to comply with a NO_x limit of 0.025 lb/MM Btu, annual average, averaged over all of the new FGCDs. This permit (Motiva) specifically increases the NO_x limit for these FGCDs to 0.12 lb/MM Btu, or by a factor of about five, during turndown events.

4) A short-term test is not representative of long-term operations over the lifetime of a facility.

5) Because the proposed NO_x (and SO_x) emission limits for FGCDs are lower than has been demonstrated in practice at similar sources in refineries, if NDDoH accepts these limits, the resulting permit must require compliance using CEMS that operated continuously during normal operations as well as during turndowns, startup, shutdown, and maintenance operations.

Response to Comment 19.b

The NO_x emissions from FGCDs are accurate because they are consistent with current burner technology performance and emissions testing results; further information is included below in items 1-5. These limits are included in the Permit to Construct Condition II.A.3.

The Department responses to the five main concerns are as follows:

1) A review of the NO_x performance test results at the St. Charles Energy Center in Waldorf, MD for an auxiliary boiler rated at 93.3 MMBtu/hr showed an average of 0.006 lb NO_x/MMBtu. This emission rate was achieved via use of natural gas, ultra low-NO_X burners, and flue gas recirculation. The Davis Refinery's use of selective catalytic reduction (SCR) coupled with ultra low-NO_x burners, as required in the Permit to Construct Condition II.A.3, is expected to achieve this emission rate due to the similarities of fuel composition and the effectiveness of these controls for gaseous fuel combustion. The permittee is required to demonstrate compliance with this limit through initial testing and operation of continuous emission monitoring systems (CEMS), as specified in the Permit to Construct Condition II.B., Condition II.E., and Condition II.E.6.

2) The Department disagrees with this comment. Based on the Department's experience and knowledge of fuel combustion characteristics, the proposed control strategy is feasible and expected to meet the limits established in Permit to Construct Condition II.A.3. The Davis Refinery is bound by the representations made in the permit application under Permit to Construct Condition II.G.

3) The facility will be required to comply with the NO_x permit conditions at all times as outlined in the Permit to Construct Condition II.A. (emission limits), Condition II.B. (emission testing), Condition II.D.3 (annual NO_X restriction), Condition II.E.6. (NO_X CEMS), Condition II.E.8. (NO_X testing), and Condition II.F (recordkeeping).

4) The facility is required to demonstrate continuous compliance with the NOx emission limits stated in the Permit to Construct. This is achieved through initial compliance testing (Permit to Construct Condition II.B), operation of CEMS (as specified in the Permit to Construct Condition II.E), and routine testing as specified in the applicable regulation(s) (Permit to Construct Condition II.A.2). Additionally, the Department requires testing once per permit term or upon request by the Department (Permit to Construct Condition II.X). Regardless of equipment age, the facility is required to demonstrate compliance with the permitted limits.

5) The Department disagrees with the assertion that "the proposed NO_x (and SO_x) emission limits for FGCDs are lower than has been demonstrated in practice at similar sources in refineries." The Andeavor Mandan Refinery operates process heaters with low NO_X burners that have achieved 0.027 lb NO_X per MMbtu, dating back to 2011 compliance testing. At a minimum, the Davis Refinery is required to utilize ultra-low NO_X burners on the fuel gas combustion devices. SO_2 emissions are the result of sulfur in the fuel, and the sulfur is limited by Condition II.A.4 in the Permit to Construct. The remaining comment is specific to operation of a CEMS; CEMS operation is required during all operations for applicable sources as indicated in the Permit to Construct Condition II.E.

Comment 19.c

(from the August 22, 2017 Fox document)

"CO Emission (sic) are Underestimated"

The commenter suggests that CO emissions are underestimated but concedes that stack testing at an existing refinery has demonstrated CO emission rates below 0.017 lb/MMBtu and that these limits demonstrate compliance with the most stringent CO emission limit of 0.028 lb/MMBtu established by the Permit to Construct. The commenter argues that short-term stack tests on new equipment are not adequate to demonstrate compliance on a long-term basis (including during SSM and turndown periods) and further argues that "several years of continuous emission monitoring data at similar sized heaters and boilers at refineries that are not new" is necessary to demonstrate that the CO emission limits are achievable.

Response to Comment 19.c

The CO emissions are accurate. As acknowledged by the commenter, test results from an existing refinery demonstrate compliance with the CO emission rates established in the Permit to Construct Condition II.A.5. (test results are available on the Department's website with the Meridian project

files). The Permit to Construct requires CEMS of CO emissions from the larger heaters (Condition II.E.7.), as well as periodic testing of the smaller heaters (Condition II.E.8.) to demonstrate compliance. The periodic testing is expected to provide a reasonable assurance of compliance with the CO emission limits. Emissions during SSM and turndown periods must be quantified and are included when determining compliance with the CO annual emission limits established in the Permit to Construct Condition II.D.2. The Department disagrees that "several years of continuous emission monitoring data at similar sized heaters and boilers at refineries that are not new" is necessary to demonstrate that the CO emission limits are achievable. Preventative maintenance, tune-ups, and routine testing will ensure the CO emissions do not increase above permitted limits with the age of the equipment.

Comment 19.d
(from the August 22, 2017 Fox document)

"VOC Emissions are Underestimated"

Within this comment, the commenter discusses five main concerns as follows:

1) VOC Emissions from Non-FGCD Sources were Underestimated. The commenter states that "Real-time monitoring at many refineries has demonstrated that VOC emissions from refineries are significantly underestimated using standard emission calculation methods, such as those used by Meridian for tanks, wastewater treatment, and fugitive leaks." The commenter supports this claim by citing studies that appear to use remote VOC monitoring data to estimate VOC emission rates from refineries.

2) Tank VOC and Hazardous Air Pollutant (HAP) Emissions are Underestimated. The commenter points out that the EPA model TANKS 4.0.9d was used to estimate emissions from the tanks and asserts that the EPA "no longer recommends using this model to calculate tank emissions." The commenter states that the TANKS website cautions the user to "use at your own risk." To support these claims, the commenter provided a copy of a portion of a quote from the EPA website as follows:

> *provide assistance to users of TANKS 4.09d. The model will remain on the website to be used at your discretion and at your own risk. We will continue to recommend the use of the equations/algorithms specified in AP-42 Chapter 7 for estimating VOC emissions from storage tanks. The equations specified in AP-42 Chapter 7*

3) The TANKS Model Inputs Underestimate Emissions.

4) Roof Landing, Degassing, and Cleaning Emissions Were Omitted.

5) Water Draw Tank Emissions Were Omitted.

6) Revised Tank VOC Emissions (the commenter provides revised emissions that the commenter purports to be more accurate).

7) Flare VOC and HAP Emissions are Underestimated.

8) Fugitive VOC and HAP Emissions are Underestimated.

Response to Comment 19.d

The VOC emissions are accurate because the Department reviewed the potential to emit calculations and was able to independently verify the proposed emissions were achievable.

The Department's responses to the eight main concerns are discussed below:

1) VOC emissions from non-FGCD sources are accurate because the Department reviewed the potential to emit calculations and verified these emissions against the proposed environmental programs (e.g., leak detection and repair program and tanks program) to ensure they were accurately represented. The February 27, 2014 letter titled "Re: Automatic Delegation of Clean Air Act (CAA) Section 111 requirements" and received from EPA Region 8 on March 6, 2014, states "the EPA Administrator retains authority to implement those sections that require: 1) approving equivalency determinations and alternate test methods. The Department used EPA-approved calculation methodologies and is unaware of any additional EPA-approved method for estimating VOC emission rates based on remote monitoring data.

2) Tank VOC and HAP emissions are accurate because the TANKS model is an acceptable methodology for quantifying emissions from these sources. Moreover, the commenter misrepresents EPA's position. The entire quote from the EPA TANKS website (accessed on February 6, 2018 at https://www3.epa.gov/ttnchie1/software/tanks/) is shown below:

> *The TANKS model was developed using a software that is now outdated. Because of this, the model is not reliably functional on computers using certain operating systems such as Windows Vista or Windows 7. We are anticipating that additional problems will arise as PCs switch to the other operating systems. Therefore, we can no longer provide assistance to users of TANKs 4.09d. The model will remain on the website to be used at your*

*discretion and at your own risk. We will continue to recommend the use of the equations/algorithms specified in AP-42 Chapter 7 for estimating VOC emissions from storage tanks. The equations specified in AP-42 Chapter 7 (*https://www.epa.gov/ttn/chief/ap42/index.html[2]*) can be employed with many current spreadsheet/software programs.*

The EPA statement does not recommend against using the TANKS model to calculate tank emissions. The EPA statement simply cautions users to be aware of potential issues with certain operating systems. The commenter also misquotes the EPA website. The website does not state "use at your own risk" but actually states "The model will remain on the website to be used at your discretion and at your own risk."

Based upon the above and the Department's extensive experience with the TANKS program, the Department has determined that the TANKS program is an acceptable program for calculating tank emissions. Issues raised by the commenter regarding the underestimation of VOC emissions by the TANKS model are addressed below in items 3 and 4.

3) The Department believes the emissions estimates provided sufficiently reflect expected operations. To summarize, the estimated emissions provided by the Davis Refinery from the crude oil storage tanks are ~1.8 tons per year of VOCs per tank (totaling ~3.6 tons per year), calculated using a Reid Vapor Pressure (RVP) of 5. To confirm the emissions estimate (or adjust accordingly) the Department used representative Bakken crude data from a nearby source and performed independent TANKS calculations. When using the same throughput and deck fitting information and only varying the vapor pressure, the resulting emissions were ~3.9 tons VOCs per year combined. This amounts to a difference of ~0.3 tons (~600 pounds) per year of VOCs when using the default 5 RVP versus a higher RVP for Bakken crude. The Department used Bakken crude data obtained from the Fryburg Rail Terminal located near the proposed refinery.

4) There are no planned roof landing, degassing, and cleaning emissions; however, all of these events will be taken into consideration as SSM events. See Meridian Response 17 in "Response to NPCA - EHM Final" document. The facility is required to track emissions from these events and report on them in the annual emissions inventory report, Permit to Construct Condition II.D.1. Additionally, this information is required to be captured and reported for compliance with the facility annual emissions restriction for VOCs and for regulatory compliance with NSPS Kb. See Permit to Construct Condition II.A.12 or N.D.A.C. § 33-15-12-02 (which adopts NSPS Kb), specifically 40 CFR 60 Subpart Kb, Section 112b(a)(1)(i).

[2] Note: website has moved to https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.

5) See Meridian Response 85 in "Response to NPCA - EHM Final" document. In summary, water draw emissions are controlled by vacuum truck removing water from the storage tanks using a vapor destruction device. This activity does not happen regularly and is expected to insignificantly affect the emissions; however, emissions from these events shall be accounted for in the annual emissions inventory report; see Permit to Construct Condition II.F.4.

6) See response to item 3 above.

7) The Department disagrees that Flare VOC and HAP emissions are underestimated, and the commenter does not provide sufficient information to justify otherwise. EPA's Emissions Estimation Protocol for Petroleum Refineries Version 3, April 2015 was used to quantify potential emissions from this source. The protocol uses an emissions factor based on the design capacity of the facility to quantify emissions from blowdown events. The Department found this to be a satisfactory representation of the excepted emissions.

Additionally, from the above-referenced Protocol:

> *Because of the myriad of potential malfunction events that could occur, it is impossible to provide specific guidance for all possible malfunction scenarios. However, because malfunction events are important to both annual and short-term emissions, the duration and emissions associated with each malfunction event should be recorded, and these emissions should be included in the annual emissions reported in response to the ICR* (information collection request).

The Davis Refinery will be required to document and report annual emissions resulting from flaring. This will be used to determine compliance with the Permit to Construct limits, see Condition II.D.

8) Fugitive VOC and HAP emissions estimates are based on the use of an enhanced leak detection and repair (eLDAR) program; see Condition II.B.10, Condition II.E.12, and Condition II.F. Additionally, see Meridian Response 88 in "Response to NPCA - EHM Final" for more information on the eLDAR program. Implementation and operation of the eLDAR program will be used to determine fugitive VOC and HAP emissions from actual operations. Compliance with the eLDAR program, as required under Permit to Construct Condition II.A.10., will ensure that fugitive emissions remain low. Fenceline monitoring will be utilized as an indicator of an increase in fugitive emissions from the facility.

Comment 19.e
(from the August 22, 2017 Fox document)

"Hazardous Air Pollutant Emissions Exceed Major Source Thresholds"

Response to Comment 19.e

HAP emissions do not exceed major source thresholds because the potential to emit considering controls is less than 10 tons per year or more of any hazardous air pollutant and less than 25 tons per year or more of any combination of hazardous air pollutants. The commenter references reports which purport to estimate VOC emissions based on remote monitoring data as the main basis for claiming that HAP emissions exceed major source thresholds. See Response to Comment 19.d above.

Comment 19.f
(from the August 22, 2017 Fox document)

"Impacts at Theodore Roosevelt National Park"
The commenter reiterates the claim that the facility is a major source under the PSD rules (40 CFR § 52.21) and discusses several review elements that must be completed under a PSD review.

Response to Comment 19.f

Based on an extensive review, the Department has determined that the facility is not a major source under the PSD rules and is therefore not subject to PSD review under N.D.A.C. § 33-15-15-01.2. Even though the facility is not subject to PSD review, the Department required a modeling analysis, in accordance with its October 6, 2014 Memo, Criteria Pollutant Modeling Requirements for a Permit to Construct. This modeling analysis demonstrated that expected emissions from the facility will not cause or contribute to an exceedance of the PSD Class I increments established under the PSD rules. The Class I increments are established to minimize the air quality degradation in Class I areas, such as TRNP.

A visibility analysis is only required for PSD-subject projects, N.D.A.C. § 33-15-19-01(1). Although not required, the Department consulted with the National Park Service (NPS) during the Department's review. The NPS conducted an analysis for air quality-related values (AQRVs), including visibility and acid deposition on plants, and the results indicated that during normal

operations “the refinery would not contribute significantly to diffuse haze or acid deposition” (see letter dated January 19, 2018 Re: Air Permit for Meridian Energy Davis Refinery).

Comment 20.a
(from the January 26, 2018 Fox document)

“The Refinery is a Major Source” In this comment, Dr. Fox refers to the claims she previously made in the August 22, 2017 Fox document, purporting the facility is a major source.

Response to Comment 20.a

As indicated in the Department response to the August 22, 2017 Fox document (Response to Comments 19.a though 19.f), the emissions calculations included in the permit application are adequately supported and demonstrate that the facility is capable of operating as a minor source of emissions. Continuous compliance with the conditions of the permit will be determined by the Department based on: facility inspections, satisfying testing requirements and meeting limits, performance monitoring, reporting, and recordkeeping.

Comment 20.b
(from the January 26, 2018 Fox document)

“Statement of Basis is Missing”

Response to Comment 20.b

A Statement of Basis is prepared by the Department for a Title V Permit to Operate under N.D.A.C. § 33-15-14-06(6)(a)(4), not a Permit to Construct. The Department prepared an analysis of emissions from the proposed facility including an Air Quality Effects Analysis (AQEA) and an Air Quality Impact Analysis) and a draft Permit to Construct in accordance with N.D.A.C. § 33-15-14-02. The AQEA outlines the air quality rules applicable to the facility. These documents adequately establish the basis for the permit conditions.

Comment 20.c
(from the January 26, 2018 Fox document)

"Emission Caps Are Not Established"

Response to Comment 20.c

Facility-wide emissions restrictions are included for the primary pollutants of concern based on extensive Department review (e.g., regulatory requirements and potential to emit calculations). See Condition II.D in the Permit to Construct.

Comment 20.d
(from the January 26, 2018 Fox document)

"Emission Limits Are Not Practically Enforceable"

Within this comment, the commenter claims the following:

1) Emission from Fired Sources are Unsupported and Not Enforceable. The commenter claims that emissions from fired sources (heaters, etc.) are not supported and bases this on CO and NO_x emissions that are partially supported by a vendor memorandum and that other pollutants (PM_{10}, $PM_{2.5}$, VOCs, SO_2, and HAPs) are based on EPA AP-42 emission factors (referred to by the commenter as "generic emission factors").

2) Emissions from the Thermal Oxidizer (EU7A) are Not Supported and Are Not Enforceable.

3) The emissions factors and annual operations of the emergency generators were based on generic AP-42 emission factors. Emergency Generator Emissions Are Not Enforceable and Are Omitted from Annual Caps.

Response to Comment 20.d

The emission limits are practically enforceable because they are technically accurate, have a time period for limitation, and include a method to determine compliance (monitoring, recordkeeping, reporting).

The Department's responses to the three claims are as follows:

1) Emissions from fuel combustion are supported based on the Department's extensive review of the emissions calculations and supporting information provide with the application. The Davis Refinery is bound by the representations made in the permit application under Permit to Construct Condition II.G. EPA AP-42 emission factors are routinely used to provide an *estimate* of emissions from an emissions source (See "Introduction to AP-42, Volume I, Fifth Edition" January 1995). The commenter provides no data to suggest that emissions from the refinery fuel gas and natural gas to be combusted at the Davis Refinery are expected to be significantly different than the refinery fuel gas or natural gas combusted at other refineries, of which EPA AP-42 emission factors are representative.

   The commenter quotes the Department's Bakken Guidance as stating that crude oil from the Bakken Pool "typically contains a high amount of lighter end components which have the potential to produce increased volumes of flash emissions" and concludes that standard emission factors do not apply. Crude oil from the Bakken Pool can contain a high amount of lighter end components, which can result in increased volumes of "flash" gas at storage tanks at *production facilities* (i.e., well sites). Therefore, the commenter's comments regarding gas are not relevant to the emissions estimates at the Davis Refinery, as the flash gas is not expected to be a factor at the Davis Refinery because the crude "flash" occurs upstream of the refinery.

   The commenter states that the vendor memorandum is not a valid basis for supporting the emission factors used for NO_x and CO. NO_x and CO emissions estimates are based on vendor guarantees as well as actual stack testing data conducted for similar units. The NO_x and CO data are part of the permit application, and the emission limits are established in Permit to Construct Condition II.A; therefore, the emissions limits for NO_x and CO are technically accurate and enforceable by the Department.

   Emissions of PM_{10}, $PM_{2.5}$, VOCs, and HAPs from gas combustion at the Davis Refinery do not have any regulatory emissions limits; however, these pollutants were accounted for during the permitting process and will be reported on in the annual emission inventory report (See Permit to Construct Condition II.F.4.c). Testing to confirm calculated emissions is required under Permit to Construct Condition II.B.

   SO_2 emissions from combustion sources at the Davis Refinery are inherently restricted by the H_2S limit applicable to all gas combusted at the facility (H_2S is converted to SO_2 in the combustion process). The H_2S concentration of the fuel gas is established by a federal regulation (NSPS Subpart Ja, adopted under N.D.A.C. § 33-15-12-02) and is continuously monitored (see Permit to Construct Condition II.A.4 and Condition II.E.2.); therefore, this restriction on SO_2 emissions is enforceable.

The main comment relates to emissions from gas-fired (combustion) sources; however, the commenter adds the assertion that "VOC emissions and HAP emissions, such as benzene, would be much higher from storage tanks and fugitive components process (sic) light fracked shale crudes." While it is true that VOC emissions from the storage of lighter crude oils are higher than for heavier crude oils, this is accounted for in the EPA TANKS program by using a higher Reid vapor pressure (RVP) for the Bakken crude oil stored in the tanks (see Item 3 in Response to Comment 19.d. Fugitive VOC emissions are more dependent on the leak detection threshold then the type of material stored.

Heat content question

The commenter questions the ability to determine emissions from combustion sources based on the data required (i.e., fuel flow and heat content) to be collected in the Permit to Construct. However, this is incorrect. This information is required to be collected (fuel gas flow and fuel gas heat content) under NSPS Ja, §60.107a(d). The facility is subject to this rule and is required to demonstrate compliance with all applicable sections adopted under N.D.A.C. § 33-15-12-02.

Additionally, the commenter states "the Permit does not set out any procedures to convert the measurements that are required into tons per year." The methodologies (e.g., stoichiometry) used to convert concentration-based limits, heating value-based limits, or mass-based limits are well established and do not need to be detailed within the Permit to Construct.

Smaller heaters/boilers enforceability

The commenter questions the practical enforceability of the emissions limits of NO_x and CO for the smaller combustion sources. The Department and EPA have established guidance (see EPA Conditional Test Methods 22 and 30) when it comes to portable analyzer testing to ensure the appropriate conditions are being met during testing (https://www3.epa.gov/ttn/emc/ctm/ctm-022.pdf and https://www3.epa.gov/ttn/emc/ctm/ctm-030.pdf). The test results will be used by the Department to determine compliance with the short-term emissions limits stated in the Permit to Construct (Condition II.A.3.b, Condition II.A.5, Condition II.B, and Condition II.E.8) and will be also used to calculate emissions to demonstrate compliance with the facility limit and for the annual emissions inventory report (Condition II.D.2, Condition II.D.3, and Condition II.F).

SO_2 questions

The Davis Refinery's fuel gas system and compliance strategy for SO_2 is consistent with current best practices in refinery operations; at a minimum, it shall be designed to comply with all regulatory requirements. In summary, the sulfur content of the refinery fuel gas and pipeline quality natural gas is tracked through specific regulations (NSPS Ja and NSPS Dc, adopted under N.D.A.C.

§ 33-15-12-02); see Permit to Construct Condition II.A.4, and Condition II.A.17. This is then used to calculate SO_2 emissions at the combustion source emission point (stack) based on the amount of fuel combusted in the unit. In addition, the acid gas flare (EP 10A) (which has the potential to flare sulfur-rich gas) will have a total sulfur CEMS to track sulfur emissions in the event of flaring.

PM/opacity from gas combustion

The commenter has concerns on whether the Permit to Construct requirements for particulate matter emissions are adequate for continued compliance and are practically enforceable. This has been addressed under Permit to Construct condition II.E.9, which states:

> *For purposes of compliance monitoring after the initial emissions test, burning of gaseous fuel shall be considered credible evidence of compliance with any applicable opacity and particulate matter emission limit. However, results from tests conducted in accordance with the test methods in 40 CFR 60 will take precedence over burning of gaseous fuel for evidence of compliance or noncompliance with any applicable opacity or particulate limit in the event of enforcement action. The permittee shall record the type of fuel used in the source unit on a daily basis.*

In the event of non-compliance, the Department can require testing and/or take enforcement under N.D.C.C. § 23-25-10.

Under NSPS Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (adopted under N.D.A.C. § 33-15-12-02), specifically 40 CFR § 60.43c(e)(4):

> *An owner or operator of an affected facility that commences construction, reconstruction, or modification after February 28, 2005, and that combusts only oil that contains no more than 0.50 weight percent sulfur or* ***a mixture of 0.50 weight percent sulfur oil with other fuels not subject to a PM standard under §60.43c and not using a post-combustion technology*** *(except a wet scrubber)* ***to reduce PM or SO_2 emissions is not subject to the PM limit in this section*** [emphasis added].

The natural gas used at the facility meets this criterion, and the sulfur limits established in the permit will ensure that the refinery fuel gas meets this criterion, so no PM limit is required under 40 CFR § 60.43c(e)(4). Further, the most recent NSPS applicable to fuel gas at refineries (NSPS Ja) does not address PM and opacity as potential issues with refinery fuel gas combustion. The only criteria air pollutants regulated for fuel gas combustion (under NSPS Ja, adopted under N.D.A.C. § 33-15-12-02) are SO_2 and NO_X, and for both of these, the facility has implemented a stricter limit than required by the regulation (NSPS Ja).

In summary, it is determined that the emissions estimates from combustion (fired) sources are adequately supported and are enforceable.

2) The commenter raises concern with potential emissions from the Thermal Oxidizer (EU7A), which is the emission point associated with the SRP operation. NSPS Ja, specifically 40 CFR §60.102a(f)(2)(i) (adopted under § N.D.A.C. 33-15-12-02), applies to the proposed SRP. This rule establishes a limit of 2,500 ppm by volume of SO_2 (dry basis) at zero percent excess air, on a 12-hour rolling average basis. In response to the commenter's concerns, the Department has revised the Permit to Construct so, similar to other emissions units at the facility (see Comments 25.a through 25.c and Response to Comment 25.a. through 25.c), the limit more stringent than required by rule is now clearly stated (See Permit to Construct Condition II.A.8.a.). This limit is not new and was already required for the facility to demonstrate compliance with the potential to emit calculations and annual emissions restrictions set forth in the draft permit to construct (Condition II.D.4).

3) The emissions values used were taken from AP-42, NSPS Subpart IIII and vendor data (see the emission calculations provided with the permit to construct application for details). These emissions factors are considered technically accurate for the Davis Refinery. In response to the commenter's concern, the Department has revised the Permit to Construct to remove the phrase "from non-emergency operations" from the facility emissions limit calculations under Condition II.D to ensure synthetic minor status is retained when operating in emergency situations. Note that this does not relax any condition within the draft Permit to Construct.

Comment 21.a
(from the January 26, 2018 Gray letter)

(1) ND's modeled emission rates do not match the draft permitted emission rates for a handful of sources/pollutants, including SO_2 emissions (other than the SRU), NO_X emissions from the flares (modeled far too low), and PM_{10} emissions from the cooling towers.

Response to Comment 21.a

SO_2

In reviewing the April 2017 application submittal, the Department recognized SO_2 emissions that were potentially unachievable for long-term operations. Therefore, the Department recommended that the Davis Refinery reevaluate potential SO_2 emissions and add more conservatism in

calculations—as such, this affected the SO_2 modeling and was subsequently re-submitted by Meridian as supplementary information in June 2017 with the updated values. The increased SO_2 levels, as included in the permit, are greater than the original plan, but they are still well below the regulatory limits established under NSPS Ja (adopted under N.D.A.C. ch. 33-15-12-02) and well below any AAQS impacts (N.D.A.C. § 33-15-02).

NO_x Flare

The NO_x flare comment appears to refer to emissions related to Startup, Shutdown, Maintenance (SSM) emissions (see Response to Comment 21.b).

PM10

The rate of 0.473 lb/hr is combined for four of the five cooling towers, and 0.118 lb/hr is for each cell. The correct emission rate was modeled; however, the forms supplied in the application (pages 144 to 157 - pdf page numbers) incorrectly list the PM_{10} rates for four cells vs. a single cell. The correct calculation for the cooling towers was provided in the Revised Emissions Inventory_Controlled_PTC Amendment-Full Refinery - Leaks & 15 ppm H_2S in RFG.xlsx submitted by Meridian as supplementary information in June 2017.

Comment 21.b

(from the January 26, 2018 Gray letter)

(2) The modeled flare emissions consider routine operations only and do not account for periods when blowdown emissions will be exhausted through the flares. These blowdown emissions are not expected to occur often and may therefore have little effect on long-term air quality impacts; however, short-term air quality can be significantly impacted by these blowdown emissions.

The state did not properly evaluate the impacts of the intermittent blowdown emission on short-term air quality. I used the state's modeling files to re-run the AERMOD model to evaluate the potential short-term impacts that could occur during blowdown periods. These results are presented below. The state should use the CALPUFF model to assess the potential for significant short-term visibility impacts in the nearby Class I area (Theodore Roosevelt National Park) associated with flare emission during blowdown periods.

Response to Comment 21.b

The Davis Refinery was not subject to PSD review and only requiring a model analysis under the Department's October 6, 2014 Memo, Criteria Pollutant Modeling Requirements for a Permit to Construct, and must comply with 40 CFR Part 51 Appendix W. It has been long established by EPA that malfunctions or other non-normal operating conditions should not be modeled for new source review (see 40 CFR 51 Appendix W, Section § 8.2.2.d.) Should excess emissions be the result "of poor maintenance, careless operation, or other preventable conditions, it may be necessary to consider them in determining source impact" (Appendix W); however, this only applies after a facility has been built and is not included in new source review. With CEMS monitoring of H_2S and flow rates from the flare, along with gas analysis, the Department can model emissions from SSM and pair with MET data from the period(s) of the SSM event for compliance with the AAQS and N.D.A.C. § 33-15-02.

Additionally, per the October 6, 2014 Department Memo Criteria Pollutant Modeling Requirements for a Permit to Construct and referenced March 1, 2011 EPA memorandum Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard (NAAQS), modeling of emergency engines (including fire pumps) and emergency flare operations are not required to be modeled.

Meridian and the Department modeled the normal operations from the flares. SSM emissions are intermittent and not modeled per 40 CFR Part 51 Appendix W, Section § 8.2.2.d.

Visibility impacts are evaluated for major sources or major modifications as defined in the PSD rules. The proposed Davis Refinery is not a new major source nor a major modification, as defined under the PSD rules, and is not subject to the visibility requirements of N.D.A.C. ch. 33-15-19. Even though it was not required, dispersion modeling for potential haze contributing pollutants, including NO_x, SO_2, PM_{10}, and $PM_{2.5}$, was conducted by the Department. Permit to Construct Condition II.A. limits the amount of visibility-impacting pollutants, inherently minimizing visibility impacts.

Comment 21.c
(from the January 26, 2018 Gray letter)

(3) The draft permit does NOT appear to limit boiler operations to "no more than three of the Medium Pressure Steam Boilers at a time," as indicated in Table 13 of the AQIA. Therefore, the fourth medium pressure boiler (and the third high pressure steam boiler) should be added to the list of modeled sources.

Response to Comment 21.c

Footnote [D] under the table in I.B.5 of the draft PTC states that "Under normal operations, two will be in service and one on stand-by." In addition, per 40 CFR Part 51, Appendix W (2017) § 8.2.2.d: "Malfunctions which may result in excess emissions are not considered to be a normal operating condition" and are not modeled.

In response to the commenter's concern, the Department has revised Permit to Construct Condition II.A.17 to clarify that "under routine operating conditions the facility is only allowed to operate three of the four Medium Pressure Boilers (EUs 8A-8D) and two of the three High Pressure Boilers (EUs 8E-8G)." Note that the facility is also required to comply with the annual emissions restrictions listed in the Permit to Construct. This will inherently limit the operability of the boilers if the facility is encroaching on the permitted limits.

Comment 21.d
(from the January 26, 2018 Gray letter)

(4) During malfunction and upset conditions, emissions from the Davis facility can be orders of magnitude higher than the modeled emissions rate (especially for NO_X and SO_2). The large increase in emissions associated with malfunction and upset events can have a significant impact on short-term air pollutant concentrations and visibility. These potential short-term impacts were not adequately evaluated in the state's impact analysis. For example, the state's modeling does not include any emissions from the emergency generators or firewater pumps.

Response to Comment 21.d

See Response to Comment 21.b.

Comment 21.e
(from the January 26, 2018 Gray letter)

(5) The state used the AERMOD modeling system to assess the air quality concentration impacts associated with routine operation from the proposed Davis facility. In reviewing the modeling process used by the state, including the

development of meteorological data (using AERMET and AERSURFACE) and the AERMOD dispersion model, a few (mostly minor) issues were identified:

(1) Slightly different receptor elevations were used for the NO_2 and SO_2 modeling. Similarly, the NO_2 and SO_2 modeling used slightly different source elevations for the Davis units. The differences are typically less than 1 meter, so the overall effect on model results would be expected to be very small.

(2) The NO_2 modeling conducted by the state includes impacts from nearby sources, including the Tesoro Belfield Gas Plant, Tesoro Dickinson Refinery, Petro-Hunt Little Knife Gas Plant, and ND Landholdings Rail Terminal. The SO_2 modeling does not include the impacts from nearby sources.

(3) In the AQIA (pg. 26), it is indicated that both the Davis Refinery and the state ("Department") used the Tier 2 (ARM) method to account for NO to NO_2 conversion within the AERMOD model. The state acknowledges that the use of ARM2 per Appendix W (2017) could have been used and would have likely produced the least conservative results. Examination of the state's AERMOD modeling files shows that the state's NO_2 modeling actually employed the Tier 2 ARM2 method to account for NO to NO_2 conversion. The ARM2 method adjusts the modeled NO_X concentrations based on an empirical relationship between ambient NO_X and ambient NO_2 concentrations to estimate ambient NO_2 concentrations.

The ARM2 option within AERMOD includes default upper and lower limits on the ambient NO_2/ NO_X ratio that are applied to the modeled NO_X concentration of 0.9 and 0.5, respectively. The default ratios for ARM2 option can be modified by the user. According to the most recent AERMOD User's Guide, the default minimum ratio utilized in the ARM2 method may not be appropriate in cases where the sources being modeled are known to have relatively high in-stack NO_2/ NO_X ratios. The state modified the default lower NO_2/NO_X ratios to be 0.2. While this may be an appropriate value, there is no justification presented for the use of this value.

Response to Comment 21.e

1) Slight variations in source elevations are likely the result of rounding and re-processing AERSURFACE when importing the receptor grid into each of the different model runs. These are minor and would not change concentrations reported.

2) SO_2 modeled results were below the Class I and Class II Significant Impact Levels (SILS) and thus demonstrate compliance with the NAAQS and PSD Increments. SILs are significantly lower thresholds than NAAQS and Increments (0.1 percent of the NAAQS). The Department did

compare the SILs to background monitoring data to ensure that NAAQS were not violated (See Section 3 and Section 5.3.8 of AQIA).

3) Meridian modeled using the ARM method, while the Department used ARM2 (renamed in AERMOD 16216r to ARM). The updated ARM2 was developed to focus on short-term (i.e., hourly) averages of NO_2 concentrations. During the update, it was established that the maximum and minimum limits on the NO_2/NO_X ratio are used at the upper and lower ends of the range of potential NO_X concentrations (0.9 maximum and 0.2 minimum) (see Technical Support Document (TSD) for NO2-related AERMOD Modifications, July, 2015, EPA-454/B-15-004). Therefore, this is a default option in the current version of AERMOD and was not modified as the commenter suggests.

Comment 22.a
(from the January 26, 2018 NPCA letter)

The facility is not a minor synthetic [sic] source; it is a major source subject to PSD permitting requirements. The emission numbers cited in the draft permit underestimate the amount of air pollution this facility has the potential to emit. If the estimates of Potential to Emit were accurate, this project could not qualify for synthetic minor treatment.

Response to Comment 22.a

See Response to Comment 19.a Response to Comment 19.b, Response to Comment 19.c, Response to Comment 19.d, Response to Comment 19.e, and Response to Comment 19.f.

Comment 22.b
(from the January 26, 2018 NPCA letter)

The draft permit lacks practically enforceable conditions and limitations to ensure that the refinery will not exceed major source thresholds.

Response to Comment 22.b

The Permit to Construct contains significant monitoring (Condition II.E), reporting, and recordkeeping (Condition II.F) to ensure compliance with the emission limits (Condition II.A) and caps (Condition II.D) established in the permit. The Permit to Construct provides enforceable emissions limits and caps for all pollutants which, in the judgment of the Department, have a reasonable possibility of exceeding an applicable regulatory threshold. Following long-standing Department practice, facility-wide emissions caps for pollutants that have no reasonable possibility of exceeding a regulatory threshold were not included in the Permit to Construct; these pollutants are accounted for in annual emissions inventory reporting (Condition II.F.4.c). The PTE of each of the pollutants cited by the commenter (PM_{10}, $PM_{2.5,}$ and lead) is well below the PSD and Title V major source threshold of 100 tons/year based on an accurate estimation of PTE using well-established calculation methods and accounting for the physical and operational design of the facility.

The PSD rules include a definition of "reasonable possibility"; see 40 CFR § 52.21(r)(6)(vi) that applies to modifications at major PSD sources. While not applicable to the Davis Refinery (since the Davis Refinery is not a major PSD source), the definition establishes what EPA considers to be a "reasonable possibility" of an emissions threshold being exceeded at a major PSD source. The PSD rules establish that the emissions increase must be at least 50 percent of the regulatory threshold for there to be a "reasonable possibility" that the project will exceed the threshold; if emissions are projected to be less than 50 percent of the regulatory threshold, then tracking of emissions is not required. The PTE for PM_{10}/$PM_{2.5}$ from the Davis Refinery is approximately 13 tons/year and the PTE for lead is well below 1 ton/year; each of these levels is well below the regulatory threshold of 100 tons/year.

The Davis Refinery is also bound by representations made in the permit application which represent the facility as a minor source (see N.D.C.C. § 23-25-10, which provides for civil and criminal penalties for making a false statement, representation, etc. in an application and Condition II.G. of the draft Permit to Construct, which requires construction of the facility to be in accordance with information provided in the permit application). Furthermore, the Davis Refinery is required to submit an annual emission inventory report quantifying emissions from the facility; this report will then be reviewed by Department staff to ensure that the emissions report is accurate. If emissions exceed the major source threshold for any pollutant, the Davis Refinery will be subject to enforcement action.

Under N.D.A.C. § 33-15-14-02(5)(b), the Department has determined that the Davis Refinery will "provide all necessary and reasonable methods of emission control." Through permit conditions, as well as enforceable representations in the permit application, all reasonable methods of emission control are required to ensure that the Davis Refinery will be restricted to minor source levels.

Comment 22.c
(from the January 26, 2018 NPCA letter)

The draft permit does not accurately account for startup, shutdown, flaring, and emergency emissions and therefore does not adequately address the refinery's peak emissions.

Response to Comment 22.c

The permit accurately accounts for all emissions required. Facility-wide emissions restrictions are included for the primary pollutants of concern based on extensive Department review (see Condition II.D in the Permit to Construct and Response to Comment 22.b.) This ensures the facility must operate at or below the permitted limits to comply with the Permit to Construct. Actual emissions resulting from significant operations[3] will be tracked and reported in an annual emissions inventory report to ensure the facility remains in compliance with the permitted limits and below major source thresholds. Additionally, monthly calculations based on the previous 12-months of operation are required to be performed. These are required to be submitted if the limits listed under Condition II.D of the Permit to Construct are exceeded. Therefore, the Permit to Construct has already addressed this issue. See number 7 of Response to Comment 19.d for additional information.

Comment 22.d
(from the January 26, 2018 NPCA letter)

Hazardous air pollutants (HAPs) exceed the threshold of a synthetic minor source and make the Davis Refinery a major source of HAPs.

[3] From the standard Department annual emissions inventory report letter sent each year, "A complete form *(annual emissions inventory report form)* must be submitted for each source unit even if it did not operate during the year. Report pollutants which are emitted at or above quantities of 1.0 ton (criteria air pollutants) or 0.1 ton (hazardous air pollutants) per emission unit."

Response to Comment 22.d

The Department reviewed the potential to emit calculations and utilized emissions limits to ensure that the Davis Refinery will remain a synthetic minor source. See Response to Comment 22.c.

Comment 22.e
(from the January 26, 2018 NPCA letter)

The draft permit does not include all reasonable and necessary emission controls.

Response to Comment 22.e

The draft permit requires emissions limits which go well beyond the regulatory requirements. Many of these emissions limits are likely stricter than what would be required if the Davis Refinery was a major source and a PSD Best Available Control Technology (BACT) analysis was performed, as BACT takes cost into consideration. See 40 CFR § 52.21(b)(12). The controls are likely similar to a Lowest Achievable Emission Rate (LAER) limit (where cost is not a factor). See 40 CFR § 51.165(a)(1)(xiii). LAER is applicable in non-attainment areas, of which there are none in North Dakota.

The commenter states some of the additional control methods could be "Geodesic domes on floating roof tanks to reduce HAPs and VOCs." Each storage vessel subject to the requirements of NSPS Kb or MACT 6B will operate an internal floating roof (i.e., a roof that floats at the liquid level and a fixed roof above). An internal floating roof is essentially equal to a geodesic dome. Geodesic domes are only installed on existing external floating roof tanks, as needed.
The commenter also states, "Leakless fugitive components to reduce HAPs and VOCs" is stated as additional emission control that should be included. The fugitive component technology will be designed according to the service in which it operates (e.g., proper material selection). A completely "leakless" fugitive component does not currently exist, as stated by EPA under the rationale for the proposed changes to NSPS Subparts VVa and GGGa[4]:

> *We also considered an equipment standard requiring installation of "leakless" equipment. "Leakless" equipment, such as diaphragm valves, is less likely to leak than standard equipment, but leaks may still develop. Therefore, monitoring or other type of observation is appropriate to ensure that leaks are caught if they develop. In addition, these types of*

[4] https://www.regulations.gov/document?D=EPA-HQ-OAR-2006-0699-0080, or See Federal Register Vol. 72, No. 221, Friday November 16, 2007, Rules and Regulations, Part III, Environmental Protection Agency, Section III.A.

equipment may not be suitable for all possible process operating temperatures, pressures, and fluid types. We could not identify any new "leakless" technologies that could be applied in all applications. Therefore, requiring "leakless" equipment is not technically feasible, and this option was not considered to be BDT for SOCMI or petroleum refining sources. We note that 40 CFR part 60, subpart VV does include provisions for equipment designed for no detectable emissions, so owners or operators that do replace existing equipment with "leakless" equipment have options for compliance.

Based on this information, the Department believes the best option to reduce emissions from leaks at a petroleum refinery is through a strict LDAR program (i.e., the eLDAR program; see Permit to Construct Condition II.A.10, Condition II.E.11, and Condition II.F), which includes: design standards, routine monitoring, low detection levels that trigger action to be taken, replacement requirements, reporting requirements, and recordkeeping requirements.

Additionally, the commenter indicates that SCR could be used on the remaining fuel combustion sources to further reduce NO_x emissions by 79 percent from these sources. The Department disagrees with the viability of this statement. NSPS Ja regulates NO_x emissions from fuel gas combustion sources with a rated capacity of greater than 40 MMBtu/hr; these limits are either 0.040 lb/MMBtu or 0.060 lb/MMBtu daily on a 30-day rolling average basis. The permit requires a limit of 0.0063 lb/MMBtu daily on a 30-day rolling average basis for all fuel combustion sources greater than 37 MMBtu/hr. The smaller units (<37 MMBtu/hr) also have a limit below the regulatory requirement of 0.040 lb/MMBtu. The permit requires 0.030 lb/MMBtu daily on a 30-day rolling average basis. The reduction of 79 percent NO_X from these sources would amount to ~17 tons per year of reduction. Practical knowledge of industry operations and control equipment tells us that a formal BACT analysis on the economic feasibility of installing SCR on these small units would result in an unreasonable dollar per ton reduction. To confirm this, the Department used estimated data from EPA on SCR control and cost <https://www3.epa.gov/ttn/ecas/docs/SCRCostManualchapter7thEdition_2016.pdf>, and determined that, at a minimum, the capital cost would be ~$340,000 per ton of NO_x emissions controlled (in 1999 dollars) to achieve the reduction. For BACT, an acceptable economically feasible amount is on the order $10,000 to $20,000 per ton of emissions reduction. Therefore, a formal BACT analysis would have resulted in higher emission limits (more pollution) on the fuel gas combustion source devices.

Comment 22.f

(from the January 26, 2018 NPCA letter)

The Department's modeling does not include the impact of all emissions from the refinery. When a portion of the short-term emissions are modeled, significant impact levels are exceeded.

Response to Comment 22.f

See Response to Comment 21.b.

Comment 22.g
(from the January 26, 2018 NPCA letter)

Permit conditions regarding the timing of performance testing and the issuance of a Title V operating permit, relative to the first and second phases of construction, are vague and unlawfully delay these mandatory steps.

Response to Comment 22.g

The commenter appeared to misinterpret Permit to Construct Condition II.B. The facility shall fulfill the requirements of Condition II.B within 180 days (at the latest) of start-up for each affected facility. The Department has the delegated responsibility to ensure compliance with the Clean Air Act in North Dakota and to maintain the air quality within acceptable federal standards (the ambient air quality standards). The commenter quotes N.D.A.C. § 33-15-14-02(10)(b), while leaving out a relevant section and appears to misinterpret the rule by stating "NDDoH's State Implementation Plan requires that construction be completed within eighteen months of the issuance of this permit to construct."

N.D.A.C § 33-15-14-02(10)(b) states:

> *A permit to construct shall become invalid if construction is not commenced within eighteen months after receipt of such permit, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The department may extend the eighteen-month period upon a satisfactory showing that an extension is justified.* ***This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within eighteen months of the projected and approved commencement date*** [emphasis added]. *In cases of major construction projects involving long lead times and substantial financial commitments, the department may provide by a condition to the permit a time period greater than eighteen months when such time extension is supported by sufficient documentation by the applicant.*

As illustrated above, it does not require that construction on phased projects must be completed within 18 months.

The commenter had concerns with Permit to Construct Condition II.L. (identified incorrectly by the commenter as Condition L) regarding the issuance of the future Title V permit to operate. It must be noted that the facility has met the requirements to obtain the Permit to Construct, and only upon satisfactory demonstration of compliance and Department receipt of a timely application can the Davis Refinery be issued a Title V permit to operate. Under N.D.A.C. § 33-15-14-06(4)(a), the facility is required to submit a timely application as defined in N.D.A.C. § 33-15-14-06(4)(a)(1) within one year of the source becoming subject to this section. The source shall become subject to this requirement upon start-up (as defined in 40 CFR § 60.2, adopted under N.D.A.C. § 33-15-12-02) of the affected facility (as defined in 40 CFR § 60.2, adopted under N.D.A.C. § 33-15-12-02). In this case, the Davis Refinery will become subject to the Title V requirements (to submit a timely application) upon startup of the affected units regulated under 40 CFR § 60.100a (adopted under N.D.A.C. § 33-15-12-02).

Further, no construction timeline has been established or requested for the Davis Refinery construction. Therefore, construction shall be completed in accordance with N.D.A.C § 33-15-14-02(10)(b).

Comment 22.h
(from the January 26, 2018 NPCA letter)

Meridian is exploiting loopholes in North Dakota law by providing different production output numbers to different regulatory agencies.

Response to Comment 22.h

See Comment 3.

Comment 22.i
(from the January 26, 2018 NPCA letter)

The draft permit fails to prevent visibility impairment at Theodore Roosevelt National Park. The commenter references the National Park Service's CALPUFF model which demonstrates that emissions from the proposed Meridian refinery would cause visibility impairment for seven days over a three-year period, including six days in one year, exceeding the 0.5 deciview threshold for establishing that a source is the cause of visibility impairment (referring to Clean Air Act Section 169A).

Response to Comment 22.i

See Response to Comment 21.b. It should be noted that the visibility impacts are only evaluated for major sources or major modifications as defined in the PSD rules. The NPS conducted a VISCREEN Level 1 analysis, which assumes worst-case meteorological data and produces the most conservative (i.e., worst-case) results. The VISCREEN Level 1 modeling indicated that there may be some impact; at this point, however, the proper procedure was for the NPS to conduct a VISCREEN Level 2 analysis (which would likely produce less conservative, i.e. more realistic, results). If the VISCREEN Level 2 analysis showed a potential impact, the proper procedure was for the NPS to conduct a PLUVUEII analysis, which would likely produce the least conservative results of the three methods (i.e., most realistic). (See N.D.A.C. § 33-15-19-02(2) which references "Workbook for Estimating Visibility Impairment" (EPA-450/4-80-031, November 1980). Given that this review was not required and the NPS only performed a partial review, no violation of Clean Air Act Section 169A was demonstrated.

Comment 22.j
(from the January 26, 2018 NPCA letter)

Cumulative air quality modeling should be done to determine Class I increment consumption and impact on air quality-related values.

Response to Comment 22.j

See Response to Comment 21.b.

Comment 22.k
(from the January 26, 2018 NPCA letter)

The draft permit lacks safeguards to ensure that potential future expansions of the Davis Refinery would be appropriately evaluated.

Response to Comment 22.k

The North Dakota Air Pollution Control Rules require that a Permit to Construct be obtained prior to any future construction, installation, or establishment of a new stationary source within a source category designated in Section 33-15-14-01 (N.D.A.C § 33-15-14-02(1), and any physical change

in, or change in the method of operation of, a stationary source already existing which increases or may increase the emission rate or increase the ambient concentration by an amount greater than that specified in subdivision a of subsection 5 of any pollutant for which an ambient air quality standard has been promulgated under this article or which results in the emission of any such pollutant not previously emitted must be considered to be construction, installation, or establishment of a new source (N.D.A.C § 33-15-14-02(3). The Department will thoroughly examine any future activities as described above prior to making a determination regarding issuance of a Permit to Construct. See Response to Comment 6.

Comment 23.a

(from Mr. Wayne Fisher comment)

On January 13, 2018 the Air Quality Index in Bismarck-Mandan was rated very unhealthy. This area was considered one of the highest five in the nation for having the poorest air quality at that time. Enclosed are 3 copies demonstrating the problems with refineries.

(Note: the commenter enclosed printouts from the Department web page showing the Air Quality Index for the Bismarck-Mandan area on January 13, 2018).

Response to Comment 23.a

The data used by the Air Now site to develop the Air Quality Index (AQI) is calculated using un-verified raw ozone and particulate matter (PM) data from the air quality monitoring site located in Bismarck and operated by the Department. The Department operates an ozone monitor and two identical monitors for fine particulate matter (known as $PM_{2.5}$) at the Bismarck location. Raw data for wind speed, wind direction, temperature, ozone concentration, and $PM_{2.5}$ concentrations (from both monitors) from the site for January 13, 2018 are shown in the table below:

Raw Monitoring Data, Bismarck Monitoring Location
January 13, 2018

Time (CST)	Wind Speed (mph)	Wind Direction (Degrees)[A]	Wind Direction	Temperature (Degrees F)[B]	Ozone Concentration (ppb)[C]	Monitor 1 $PM_{2.5}$ Concentration ($\mu g/m^3$)[D]	Monitor 2 $PM_{2.5}$ Concentration ($\mu g/m^3$)[D]
12:00 AM	4.0	250	WSW	-13.5	7	37	39.3
1:00 AM	3.7	264	W	-14.3	11	37.1	41.8
2:00 AM	3.0	242	WSW	-15.7	2	41.0	41.9
3:00 AM	3.7	194	SSW	-16.6	3	41.0	43.6
4:00 AM	3.8	195	SSW	-17.0	1	41.9	45.2
5:00 AM	3.7	136	SE	-18.0	2	39.0	45.2

6:00 AM	5.1	95	E	-19.5	11	40.1	45.8
7:00 AM	5.8	83	E	-22.4	13	**46.3**	**29.6**
8:00 AM	5.2	120	ESE	-19.3	17	**113.6**	**24.3**
9:00 AM	4.3	120	ESE	-18.9	18	**98.6**	**27.2**
10:00 AM	6.4	148	SSE	-15.5	26	**29.5**	**15.3**
11:00 AM	7.5	143	SE	-12.3	26	15.8	11.4
12:00 PM	10.0	145	SE	-8.7	29	9.9	7.2
1:00 PM	10.2	152	SSE	-5.8	29	6.0	6.3
2:00 PM	10.9	148	SSE	-3.5	31	6.0	6.2
3:00 PM	11.8	153	SSE	-0.4	33	6.9	5.1
4:00 PM	9.8	157	SSE	1.6	31	4.9	5.2
5:00 PM	8.5	151	SSE	2.5	29	2.0	5.8
6:00 PM	6.2	147	SSE	3.6	28	3.1	5.8
7:00 PM	6.3	146	SE	5.0	28	5.0	6.1
8:00 PM	4.8	173	S	6.3	25	5.9	6.0
9:00 PM	5.4	192	SSW	7.7	21	3.0	5.4
10:00 PM	5.3	193	SSW	9.0	22	3.0	5.3
11:00 PM	6.2	201	SSW	9.7	23	2.0	5.4
Average	**6.3**	**162**	**SSE**	**-7.4**	**19**	**26.6**	**20.0**

A **The raw wind data is reported in degrees (a direct north wind equates to a direction of 0 degrees, a direct south wind equates to a direction of 180 degrees, etc.). The equivalent wind direction in traditional terms (north, south, east, west, etc.) is listed on the table.**

B **The raw temperature data is reported in degrees Celsius (C). For ease of reference, the temperature in the table is shown in degrees Fahrenheit (F).**

C **ppb = parts per billion**

D **µg/m^3 = micrograms per cubic meter**

The high AQI was likely calculated based on the relatively high Monitor 1 readings from 7:00 am to 10:00 am on January 13, 2018. It is unclear why the Monitor 1 readings are significantly higher than the Monitor 2 readings during this time period given that the monitors show similar readings throughout the rest of the day. Regardless of the reason for the difference in the readings, the 24-hour average $PM_{2.5}$ concentration at both monitors remains below the 24-hour ambient air quality standard for $PM_{2.5}$ (see table below). The ambient air quality standards are established at levels to be protective of human health and the environment.

Comparison of 24-hour Average $PM_{2.5}$ Concentrations with the Ambient Air Quality Standard (AAQS)		
Monitor 1 24-hour Average Concentration (µg/m^3)	Monitor 2 24-hour Average Concentration (µg/m^3)	24-hour Average $PM_{2.5}$ AAQS (µg/m^3)

26.6	20.0	35

The commenter infers that the relatively high AQI calculation based on the monitoring data from the Bismarck monitoring station on January 13, 2018 is due to emissions from a refinery. The Andeavor (formerly Tesoro) Refinery in Mandan, ND is the only refinery located near the monitoring site. The Andeavor Refinery is located over 5 miles west-northwest of the Bismarck monitoring site, while the high monitor readings occurred when the wind direction was from the east, east-southeast, and south-southeast. Therefore, since the high instantaneous readings were obtained when the emissions from the refinery were being carried away from the Bismarck monitoring station, there is a low probability that the refinery emissions were impacting the monitor at the time of the high readings.

Based upon the above information, it is concluded that:

1) The monitoring data collected at the Bismarck monitoring station indicates that actual PM2.5 concentrations at the station did not exceed the 24-hour ambient air quality standard for PM2.5 on January 13, 2018.

2) It is unlikely that the relatively high instantaneous PM2.5 readings obtained at the Bismarck monitoring station on January 13, 2018 are due to emissions from a refinery.

Comment 23.b
(from Mr. Wayne Fisher comment)

Mr. Fisher expresses concerns regarding the potential impact of the Davis Refinery on mercury levels in fishing areas.

Response to Comment 23.b

Petroleum refineries are not known to be a significant source of mercury emissions; therefore, the Davis Refinery is not expected to result in any appreciable impact on the mercury levels in fishing areas near the Davis Refinery.

Comment 24

(from Mr. Berlin Nelson, Jr. comment)

In his letter, Mr. Nelson provides a copy of wind roses (diagrams which show wind directions at a particular location) for the weather station located at Dickinson, ND. Mr. Nelson points out that the wind direction is often from the east, east-southeast, and south-southeast during the summer months and states that "wind blowing in that direction will carry any pollutants directly over or right adjacent to the National Park."

Response to Comment 24

Computer dispersion models are used to predict the impacts on the air quality from a proposed facility (such as the Davis Refinery) on the surrounding area. The EPA-approved AERMOD model calculates the expected impact using five years of meteorological data (which includes temperature, wind speed, wind direction, etc.). Based upon the computer model, expected pollutant concentrations occurring in the TRNP are expected to be well below the allowable levels established for Class I areas (less air pollution impact is allowed for Class I areas such as national parks).

In summary, the EPA-approved computer model utilized to calculate expected air pollution impacts did consider wind direction, using data provided from the National Weather Service (NWS) at the Dickinson Airport MET station, when calculating the expected impacts at TRNP. The expected air pollution impacts were found to be well below AAQS and PSD Increment thresholds. Additionally, the Department compared the wind rose data from the Painted Canyon ambient monitor to the NWS's Dickinson wind rose data for any localized variation due to the terrain; no significant variation in wind speed or direction was shown between the two sites.

Additionally, under Appendix W, if the Painted Canyon MET data were used, Meridian would have only had to model 1 year of weather data (i.e., weather variability); whereas using the NWS data requires evaluating 5 years of data (i.e., more weather variability).

Comments 25.a to 25.k

From January 25, 2018 letter from the U.S. Environmental Protection Agency (EPA) Region 8

Comment 25.a

(from January 25, 2018 EPA letter)

1. "Equipment at the Facility Table Pages 1-5" As staff from our agencies discussed on December 21, 2017, NDDH agreed to clarify the applicability of the New Source Performance Standards (NSPS) to the various process units listed in the table. For example, the flare system listed on page 4 of the table lists NSPS Ja in the Air Pollution Control Equipment or Design Features heading. The facility uses the applicable emission limits of NSPS Ja to establish the potential to emit. In addition to the flare system, the refinery fuel gas combustion devices (FGCDs) in the table are also subject to NSPS Ja. However, none of the listed FGCDs are listed with NSPS Ja as an applicable requirement. We recommend that NSPS Ja applicability be included in the table in order to eliminate possible confusion for the reader. In addition to NSPS Ja applicability to the FGCDs, Region 8 notes the absence of NSPS De applicability listed in the table for the units in the Boiler house, the underlying NSPS or MACT requirement to conduct Leak Detection and Repair for those units subject the Enhanced Leak Detection and Repair Program (ELDAR Program), and NSPS Kb for those internal floating roof (IFR) tanks in the Feedstock, Intermediate Products, Blend Stocks, and Final Products groups. Region 8 recommends NDDH clarify the NSPS applicability for these emission units and associated permit conditions. North Dakota Administrative Code (NDAC) 33-15-14-02(5)(b) includes provisions that are relevant to this and our other comments on the NSPS permit conditions.

Response to Comment 25.a.

The Department has addressed this comment by adding each unit's applicable NSPS into the equipment list table on pages 1-5 (Condition I.B.5) of the Permit to Construct. Note: this helps to provide better clarity of the applicable regulations and does not add any new condition(s) to the draft Permit to Construct requirements.

Comment 25.b
(from January 25, 2018 EPA letter)

2. "Condition II.A Emissions Limits Pages 6-13" As staff from our agencies discussed on December 21, 2017, NDDH planned to examine the table in Condition II.A and include all applicable emission limits for the associated emission unit. Additionally, while not explicitly discussed on the call, we want to clarify that if the permit relies on two emission limits to demonstrate synthetic minor compliance at one unit, we recommend including both limits in the table, and adding an explanation to the Air Quality Effects Analysis document to explain if NDDH intends to streamline the facility's compliance requirements. It appears that all units subject to a federal NSPS have one or more other limits in the proposed permit, and we recommend that NDDH conduct the same analysis and revisions recommended in the prior paragraph.

Response to Comment 25.b

The permittee shall comply with each applicable emissions limit including, but not limited to, the limits listed in the emissions limits table. When a unit is subject to a federal NSPS requirement, it must comply with the limits stated in NSPS. For some cases, compliance with a less stringent limit (i.e., NSPS Ja NO_X limit) is inherently achieved by complying with the more stringent limit stated in the Permit to Construct emissions limit table (Condition II.A). Only the most stringent limit is reflected in the emissions limit table. In response to this comment, the Department has revised the Permit to Construct to include additional limits (required by regulation) in the referenced condition(s) text applicable to the unit for the pollutant in question (i.e., NSPS Ja H_2S limits are now directly listed in the referenced condition text). Additionally, the gasoline loadout VOC limit (in mg/l loaded) has been included in the table for clarity.

Comment 25.c
(from January 25, 2018 EPA letter)

3. "Condition II.A Emissions Limits Pages 6-13 (Averaging Times)" As staff from our agencies discussed on December 21, 2017, NDDH agreed to include the averaging times for the emission limits in the permit. The table in this condition contains a column labeled "Emission Limit or Design/Work Practice" where the various pollutant limits are stated in relation to the corresponding Emission Unit. For all of the listed limits, there is a stated numeric value that the emissions point must meet to comply with the permit. However, while the facility-wide totals for each of the criteria pollutants provides for a 12-

month rolling sum (page 13), none of these stated individual emissions limits have a corresponding averaging time that the source must use in demonstrating compliance. Region 8 recommends that NDDH review this table and the associated permit documents (e.g., Air Quality Effect Analysis for Permit to Construct, and the input assumptions used in the state's air quality modeling completed in November 2017) and add the appropriate averaging times to the individual emission limits, if applicable, to assist in clarity.

Response to Comment 25.c

The Department agrees. For ease of understanding emissions limits compliance requirements, averaging times have been included in the revised Permit to Construct emission limits table on pages 6-13 (Condition II.A).

Comment 25.d
(from January 25, 2018 EPA letter)

4. "Condition II.A.10 LDAR Pages 16-18" These conditions contain an analysis of cross-references between applicable NSPS regulations and suggest that compliance with certain NSPS requirements allows the facility to comply with a MACT standard. NSPS and MACT rules allow for the EPA to approve alternative compliance methods. While the permit proposes alternative compliance methods for NSPS applicable to the proposed facility, the relevant regulatory provisions to allow the proposed alternative compliance methods differ from the regulatory provisions cited in the permit. Condition II.A.10 states that the Davis facility is subject to 40 CFR subpart GGGa - Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction of Modification Commenced After November 7, 2006 (NSPS GGGa). This subpart references NSPS VVa - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006 (NSPS VVa). In 60.592a(a), NSPS GGGa requires compliance with the standards in NSPS VVa found in 60.482-1 a to 60.482-10a for units subject to NSPS GGGa. NDDH further states in this condition II.A.10 that the Davis Refinery is allowed, under NSPS VVa, to comply with 40 CFR part 63 subpart H - National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks (MACT H). The authority to comply the MACT H to demonstrate compliance with NSPS VVa is found in 40 CFR 60.480a(e)(2)(i). NSPS GGGa never references 40 CFR 60.480a(e)(2)(i) as a condition of NSPS GGGa. There is no condition in NSPS GGGa that would allow a source subject to NSPS GGGa to directly comply with MACT H to demonstrate compliance with NSPS GGGa. 40 CFR 60.592a(c) does allow the owner or operator of a source subject to NSPS GGGa to apply to the Administrator for

a determination of equivalency for any means of emission limitation that achieves a reduction in emissions of VOC at least equivalent to the reduction in emissions of VOC achieved by the controls required in NSPS GGGa. In the case of this NSPS, the authority of the Administrator resides with the EPA. Region 8 recommends that NDDH cite the appropriate compliance language in NSPS GGGa in the permit and inform Meridian that if they wish to obtain a determination of equivalency for compliance with NSPS GGGa using the provisions of MACT H, that a formal application must be made to the EPA Administrator.

Response to Comment 25.d

In lieu of having the permittee request an equivalency determination from the EPA for the use of MACT H (a rule for which the Department is the delegated authority), the Department has revised the Permit to Construct to only list NSPS GGGa (the applicable NSPS regulation for equipment leaks in VOC service, adopted under N.D.A.C. § 33-15-12-02). For facility compliance with the proposed potential to emit (enforceable under N.D.C.C. § 23-25-10) for VOCs from equipment leaks, the permittee will implement an eLDAR program (needed for synthetic minor status), Permit to Construct Condition II.A.10. This program is more stringent than what is required by NSPS GGGa, Permit to Construct Condition II.A.10. Compliance with the permitted emissions (represented as potential to emit in the permit application) will be determined by the Department based on the eLDAR program results. Compliance with the remaining aspects of LDAR applicability (testing, monitoring, recordkeeping, reporting, etc.) will be determined against NSPS GGGa.

This change has no effect on the regulatory applicability, permitted emissions, or the proposed eLDAR program for the facility.

Comment 25.e
(from January 25, 2018 EPA letter)

5. "Condition II.A.12 Volatile Organic Liquids Storage Tanks Page 20" Condition II.A.12 states that all internal floating roof storage tanks (IFRT) at the Davis facility are subject to 40 CFR part 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 (NSPS Kb) and that all of these NSPS Kb storage tanks that store gasoline at the Davis Refinery are subject to 40 CFR part 63, subpart BBBBBB - National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk terminals, Bulk Plants, and Pipeline Facilities (MACT 6B). NDDH states that owners of IFRTs are allowed

to comply with the more stringent requirements of 40 CFR part 63, subpart WW - National Emission Standards for Storage Vessels (Tanks) - Control Level 2 (MACT WW). NDDH cites 40 CFR 63.640(n) "Overlap of this subpart with other regulations for storage vessels" to allow sources subject to both NSPS Kb and MACT CC to comply with only one of the subparts. Region 8's concern is that this source is not subject to MACT CC due the source's synthetic minor status for hazardous air pollutants. NSPS Kb does not contain any provisions that would allow a subject source to demonstrate compliance with a separate regulation to demonstrate compliance with NSPS Kb. MACT 6B does state: "If your gasoline storage tank is subject to, and complies with, the control requirements of 40 CFR part 60, subpart Kb of this chapter, your storage tank will be deemed in compliance with this section. You are to report this determination in the Notification of Compliance Status report under §63.11093(b)." While NDDH can apply more stringent control requirements to IFRT at the Davis Refinery to reduce emissions of volatile organic compounds and hazardous air pollutants, these more stringent control requirements are not to be used to demonstrate compliance with NSPS Kb without first being approved. 40 CFR 60. 11 4(b) does contain provisions that would allow an owner or operator to demonstrate an alternative means of compliance for NSPS Kb. Region 8 recommends that NDDH cite the appropriate compliance language for NSPS Kb into the permit and inform Meridian that if they wish to obtain an alternative means of compliance for NSPS Kb, that they submit the appropriate information as required in 40 CFR 60. 114(b).

Response to Comment 25.e

Same as Response to Comment 25.d, except for the applicable storage vessel regulations.
In lieu of having the permittee request an equivalency determination from EPA for the use of MACT WW (a rule for which the Department is the delegated authority), the Department is revising the Permit to Construct to only list NSPS Kb (the applicable NSPS regulation for tanks in VOC service, adopted under N.D.A.C. § 33-15-12-02). For facility compliance with the proposed potential to emit from the tanks, the permittee will implement more advanced tank controls (needed for synthetic minor status). These controls are more stringent than what is required by NSPS Kb (enforceable under N.D.A.C. § 33-15-01-17). Compliance with the permitted emissions (represented as potential to emit in the permit application) will be determined by the Department based on the tank design, construction, operation, and throughput. Compliance with the remaining aspects of storage vessel regulatory applicability (testing, monitoring, recordkeeping, and reporting) will be determined against NSPS Kb.

Comment 25.f
(from January 25, 2018 EPA letter)

6. "Condition II.D.1 through Condition II.D.4 - Annual Emissions Restrictions Pages 26-32" Condition II.D contains several equations that the Davis Refinery would use to demonstrate compliance with the overall pollutant emission limits. For example, Condition II.D.1 requires that the source calculate the VOC emissions from all sources including the VOC emissions from all heaters and boilers at the facility. Region 8 recommends that the permit specify all the data necessary to perform these calculations. For example, the calculation for the VOC content of the heaters and boilers requires that the total heat content of refinery gas combusted in 1A, 1B, 2A, 3A, 3B, 3C, 4A, 4B, 4C, 4D, 5A, SB, 6A, 6B, 7A, 8A, 8B, 8C, 8D, 8E, 8F, and 8G be used in the equation found on page 27 of the permit. It appears the permit does not require monitoring and reporting of the total heat content and volume of cubic feet used during a particular time period for these combustion devices. This is necessary to demonstrate compliance with the facility-wide limit, because both the Btu/ft3 of the refinery fuel gas and the volume of gas used are required to calculate total VOC emissions to show compliance with the rolling 12-month VOC limit. Region 8 recommends NDDOH clarify that the data required to comply with facility-wide, pollutant specific emission limits found in Condition II.D must be monitored, recorded and reported, and records kept such that the data is sufficient to determine compliance with the synthetic minor and other permit conditions.

Response to Comment 25.f

The Department agrees that the information EPA outlines is required to demonstrate compliance with Permit to Construct Condition II.D.1 through Condition II.D.4. The Department's position is that all information needed to demonstrate compliance with the facility wide emissions restrictions has been included in the permit; either directly listed in the draft permit to construct, the permit application, or by applicable regulations.

Both monitoring and reporting of the heat content of the fuel gas and the volume of the fuel gas combusted are required under NSPS Ja, specifically, §60.107a(d), which applies to the units in question (adopted under N.D.A.C. § 33-15-12-02) at the facility (See Condition II.E.6). Since this is already an applicable regulation and common process information needed for refinery operability of the fuel gas system, the Department believes this is adequately addressed in the permit.

Comment 25.g
(from January 25, 2018 EPA letter)

7. "Condition II.E.1 through Condition II.E.18 – Monitoring Conditions Pages 32-42" Condition II.E lists the Monitoring requirements for the units at the facility. For the combustion devices listed (Units 1A, 1B, 2A, 3A, 3B, 3C, 4A, 4B, 4C, 4D, 5A, 5B, 6A, 6B, 7A, 8A, 8B, 8C, 8D, 8E, 8F, and 8G), only exit gas characteristics are monitored, and no devices are required to monitor the volume or heat content of gas burned. Region 8 recommends that Condition II.E be revised to require monitoring for the volume and heat content of gas burned.

Response to Comment 25.g

The Department agrees that the information EPA outlines is required to demonstrate compliance with Permit to Construct Condition II.E.1 through Condition II.E.18. The Department's position is that all information needed to demonstrate compliance with the monitoring conditions is included in the permit. This is a requirement under NSPS Ja (adopted under N.D.A.C. § 33-15-12-02). Additionally, the facility is required to gather the necessary data to demonstrate compliance with conditions of the permit (Permit to Construct Condition II.F). See Response to Comment 25.f.

Comment 25.h
(from January 25, 2018 EPA letter)

9. "Condition II.K. - Fugitive Emissions Page 44" The Air Quality Effects Analysis (AQEA) states that the permit contains provisions to control fugitive emissions. (See AQEA at page 20.) Permit Condition II.K requires that "[t]he release of fugitive emissions shall comply with the applicable requirements in NDAC 33-15-17.," which is in reference to the particulate matter emissions and the state's fugitive emission rules. The rule contains certain overarching restrictions (NDAC 33-15-17-02) and examples of ways to abate and prevent fugitive emissions (33-15-17-03); however, it is unclear what operations the rule applies to, what actions the permittee will take to comply with the rules, and how the permittee will demonstrate compliance with these rules. The EPA recommends clarifications to the permit to address these questions. Region 8 recommends that the permit include provisions that: (1) explain what activities are covered by fugitive source permit condition (Condition II.K); (2) describe what the permittee is required to do to comply with

the state's fugitive emissions rules; and (3) describe how the permittee will demonstrate compliance with the permit.

Response to Comment 25.h

The permit states that the permittee must comply with N.D.A.C. ch. 33-15-17. The fugitive emissions restrictions apply to the entire facility and the permittee must take reasonable precautions as outlined in N.D.A.C. § 33-15-17-03. The permit states that the permittee must comply with an applicable rule and does not create any additional requirements; therefore, no additional permit language is necessary.

Comment 25.i
(from January 25, 2018 EPA letter)

10. "Applicability of NSPS XX" In addition to the MACT 6B requirements in the proposed permit, NSPS XX also applies, and the permit requirements overlap with several in the NSPS. Therefore, as discussed via staff email between NDDH and the EPA on January 10, 2018, we recommend the permit state that the source is subject to NSPS XX since the Davis Refinery meets the definition for a bulk gasoline terminal as defined in the subpart.

Response to Comment 25.i

The Department agrees that NSPS XX is applicable and added this information, Permit to Construct Condition II.A.13. For consistency with the updates applied to the eLDAR condition (NSPS GGGa) and the tanks condition (NSPS Kb), the Department will indicate regulatory applicability of only NSPS XX and MACT 6B for the gasoline loadout. Additionally, a gasoline loading loss limit (lower than NSPS XX and/or MACT 6B) of 10 mg/l loaded has been specifically listed.

The draft permit required the facility to meet the 10 mg VOC/l loaded limit to demonstrate compliance with the potential to emit and permitted emissions. However, the 10 mg VOC/l loaded limit is now more clearly stated with this revision in the final permit (see Condition II.A.13).

Comment 25.j
from January 25, 2018 EPA letter)

11. "Modeling" The state's website for the permit record contains several air quality modeling analyses. Based on conversations between our Region 8 modeler and the state's modeler, we understand that the state relied on the modeling analysis they completed in November 2017 for its proposed permit decision. Since the state's proposal did not rely on the additional analyses, we did not review those analyses. During our review, we found that NDDH did not appear to include any qualitative analysis or quantitative modeling to determine the potential impacts of the Phase I build of the Davis Refinery. While the proposed permit approves a full build-out of Phase II of the refinery, the permit also provides for facility construction as a "Phase I built" refinery for an indefinite period of time. There does not appear to be any discussion in the permit or supporting documentation of the effects on ambient air quality from emissions during Phase I construction and operation. NDAC 33-15-14-02 (4), (5)(a). Region 8 recommends that NDDOH analyze the potential impacts of emissions from the "Phase I built" refinery to determine whether emissions from the refinery during that phase will cause or contribute to a violation of any applicable ambient air quality standard.

Response to Comment 25.j

Per 40 CFR Part 51, Appendix W (2017) § 8.2.2.d: "As a minimum, the source should be modeled using the design capacity (100 percent load)" and "[t]he load causing the highest concentration, in addition to the design load, should be included in refined modeling."

The full Phase II buildout was modeled and is expected to produce the highest emissions (worst case modeling scenario) due to increased load on equipment and more equipment operating than during Phase I. Based on EPA-approved methods for dispersion modeling, emissions from the Phase II full build-out are expected to comply with the AAQS and PSD Class I and II increments. Since Phase I has fewer emissions, Phase I is also expected to meet AAQS and PSD increments. Further, Meridian supplied Phase I model results, and the Department compared the results against the NAAQS and PSD Class I and Class II increments. As expected, results showed expected compliance with NAAQS and PSD Increments and lower concentrations than those of Phase II.

Comment 25.k
(from January 25, 2018 EPA letter)

12. "Director's Discretion Permit Provisions" In several instances in the permit, the phrase "test procedures approved by the Department" or Department-approved performance test" is used to describe allowable test and monitoring methods to comply with permit conditions (see page 18 Condition 10.m Alternative Work Practice Monitoring, page 25-26 Condition 11.B.4, page 29 footnote #5, page 30 footnote #6, and page 38 Condition II.E.3a and 4a). These phrases give the state the sole discretion to approve alternative test methods without EPA approval. Under provisions for SIP-approved programs, at 40 CFR 51.212 ("Testing, inspection, enforcement, and complaints"), states may use, as enforceable methods, the methods in 40 CFR 51 appendix M, or in 40 CFR 60 appendix A, or an alternative method following review and approval of that method by the Administrator. A letter dated March 31, 1994, from the EPA' s Office of Air Quality Planning and Standards to the state of Iowa (available on EPA's NSR Policy and Guidance website), makes it clear that the EPA interprets "Administrator" in 40 CFR 51.212 to mean only the EPA Administrator. NDDH's AQEA explains that it relies on the authority in North Dakota rule Chapter 33-15-14 to create "federally enforceable emission limitations via a synthetic minor permit." (See AQEA at page 19.) Consistent with 40 CFR 51.212, and the EPA's approval of the referenced rule in North Dakota's SIP, the rule contains no provisions giving the state the sole discretion to approve alternative test methods. 60 FR 43396, 43398 (August 31, 1995). We recommend revising or removing the provisions in the permit that give the state the sole discretion to approve test methods. We suggest revised language such as, "appropriate EPA-approved reference method" or other similar language so that the permit contains conditions that are permanent, quantifiable, and enforceable as a practical matter.

Response to Comment 25.k

The Department agrees that only appropriate EPA-approved reference methods can be used to determine compliance with applicable emissions limits. The permit language referenced by EPA simply states that the Department must approve of any testing procedures prior to the facility conducting the performance test (using only EPA-approved reference methods). The approval process is clearly outlined in the Department's Division of Air Quality Emission Testing Guideline dated February 2, 2009. Neither the permit language nor the Emission Testing Guideline should be interpreted as giving "the state the sole discretion to approve alternative test methods without EPA approval" as asserted by EPA.

Comments 26.a to 26.b

from January 19, 2018 letter from the National Park Service (hereafter referred to as the January 19, 2018 NPS letter)

Comment 26.a
(from the January 19, 2018 NPS letter)

"Control Technology Analysis"

Response to Comment 26.a

In the comment, the NPS states that the control technology on eight of the process heaters represents BACT. While the technologies appear to be among the best controls available, the Department notes that the technologies and associated emissions rates are not considered BACT from a regulatory standpoint as a BACT review was not required nor conducted for this project.

For the remaining fuel gas combustion devices (those without SCR), the NPS requests that Meridian consider meeting lower emission limits than those proposed in the draft permit. Although Meridian may choose to voluntarily accept lower emission limits, the Department cannot require Meridian to meet limits more stringent than those required by a regulatory requirement. See N.D.C.C. § 23-25-03(3)(1).

Comment 26.b
(from the January 19, 2018 NPS letter)

"Air Quality Impacts Modeling Analysis"

In this comment, the NPS questions the following
:

1) The permit application lists three high pressure steam boilers and four medium pressure steam boilers; however, it appears that only two high pressure steam boilers and three medium pressure steam boilers were modeled by the Department. The draft permit does not limit boiler operation.

2) With the exception of the SRU, it appears that the SO_2 emission rate modeled is about five times greater than the SO_2 emissions estimates.

3) For the flares it appears that the NO_x emission rate modeled is about one-fifth of the NO_x emissions estimations.

4) For the cooling towers, it appears that the PM_{10} emission rate modeled is about one-fourth of the PM_{10} emissions estimates.

5) It appears that flare emissions during blowdown scenarios were not included in the modeling analysis. NPS points out that this approach is consistent with EPA policy but requests that these emissions be evaluated for impacts on short-term NAAQS and visibility in TRNP.

Response to Comment 26.b

1) See Response to Comment 21.c.

2) See Response to Comment 21.a.

3) See Response to Comment 21.b.

4) See Response to Comment 21.a.

5) See Response to Comment 21.b.

Comments 27.a to 27.d
from National Parks Conservation Association Member Emails (see Attachment N)

Comment 27.a

"impact of air pollution from the proposed Davis Oil Refinery on Theodore Roosevelt National Park"

Response to Comment 27.a

See Response to Comment 19.f.

Comment 27.b

"unusually low emissions, but doesn't prove low limits can be met or require adequate monitoring to make sure they are."

Response to Comment 27.b

See Response to Comment 19.b and Response to Comment 22.e.

Comment 27.c

"flaring as well as startups, shutdowns, and malfunctions" and "could emit pollution well beyond the levels permitted"

Response to Comment 27.c

See Response to Comment 21.b.

Comment 27.d

"request it conduct a more rigorous assessment of the Davis Oil Refinery and require the refinery go through a major source of air pollution permit review, including requirements for the best available controls."

Response to Comment 27.d

The Department has conducted a very rigorous assessment; see Response to Comment 7. The commenters requested a PSD major review be conducted by the Department; however, this source is a minor source (see Response to Comment 19.f). The Department conducted a thorough review of the proposed facility (see table below which compares review requirements).

	TRUE MINOR	SYNTHETIC MINOR	PSD	MERIDIAN DAVIS REFINERY
Regulation Applicability Review	✓	✓	✓	✓
Emission Calculation Review	✓	✓	✓	✓
Set Emission Limits	✓	✓	✓	✓
Set Control Equipment Required	✓	✓	✓	✓
Air Toxics Review	✓	✓	✓	✓
Ambient Modeling			✓	✓
PSD Increment Modeling			✓	✓
Public Comment (PC)		✓	✓	✓

	TRUE MINOR	SYNTHETIC MINOR	PSD	MERIDIAN DAVIS REFINERY
EPA Review (concurrent w/ PC)		✓	✓	✓
Federal Land Manager Review			✓	Consulted
Best Available Control Technology			✓	BACT-Like Controls

The commenters requested that the Department conduct a BACT review. BACT is a process which PSD sources must go through to choose the level of control technology for major new facilities or major modifications to existing facilities. A BACT analysis includes consideration of the cost of the installation and lifetime operation of all technically and economically feasible control options when determining the BACT control technology. See 40 CFR § 52.21(b)(12). Given the level of control that Meridian is installing, a BACT review would have likely resulted in less stringent limit requirements on fuel gas combustion devices, the leak detection and repair program, the limits on gasoline loadout, and the requirements for storage vessels. Essentially, it appears that Meridian is installing better than BACT controls on a number of the emission sources and BACT-like level control on the remaining units. Additionally, see Response to Comment 22.e for an overview of what a BACT analysis would yield for the fuel gas combustion units smaller than 37 MMBtu/hr.

Comments 28.a to 28.g

From the standard email titled, “Please Reject the Air Permit for the Meridian Energy Davis Refinery” (multiple emails; see Attachment L)

Comment 28.a

“The plume of this proposed…”

Response to Comment 28.a

See Response to Comment 10.

Comment 28.b

"…increased risk of breathing dirtier air each year."

Response to Comment 28.b

See Response to Comment 5.

Comment 28.c

"How much pollution will this facility really emit?"

Response to Comment 28.c

This information is (and has been) readily available for review on the Department's website dating back to April 2017. An explanation of the emissions, the spreadsheet calculations, and extensive supplemental information for this project is available with the Meridian project files.

In addition, the AQEA prepared by the Department and posted as a document for review during the public comment period lists the Potential to Emit for the Davis Refinery.

Comment 28.d

"How will the company monitor emissions to assure the public that they are meeting required limits?"

Response to Comment 28.d

The facility is required to conduct initial performance testing and annual testing of CEMs. Recordkeeping and reporting are reviewed by the Department, and inspections will be conducted at least annually. Monitoring conditions are included under Permit to Construct Condition II.E.

Comment 28.e

"Oil refineries are a significant source of air pollutants including particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO), hydrogen sulfide (H_2S), and sulfur dioxide (SO_2). All of these pollutants threaten our hearts and lungs, and they are the building blocks of smog and acid rain. They harm people, wildlife, waterways, and forests."

Response to Comment 28.e

See Response to Comment 5.

Comment 28.f

"In short, they threaten the visitors to the national park and the diverse wildlife and beautiful vistas that bring people to the park."

Response to Comment 28.f

See Response to Comment 1, Response to Comment 2, Response to Comment 5, Response to Comment 10, Response to Comment 11, and Response to Comment 12.

Comment 28.g

"Please protect our health and these priceless natural resources by rejecting this proposed permit."

Response to Comment 28.g

See Response to Comment 2 and Response to Comment 5.

Comments 29.a to 29.l
(from a January 24, 2018 letter from Mr. Bruce Bale)

Comment 29.a

The commenter expresses concern with several exemptions, such as Permit to Construct Condition II.A.9.b, which is included in federal regulations.

Response to Comment 29.a

The exemptions identified are established in federal regulations (adopted under N.D.A.C. § 33-15-12-02). The Department implements and enforces federal regulations but does not have the authority to change federal regulations. The EPA has the authority to add/change/remove federal regulations through the rulemaking process.

Comment 29.b

The commenter notes that flares are not subject to initial performance testing requirements.

Response to Comment 29.b

The flares in question only operate in upset conditions. Performance testing is impracticable and not required by regulation the unit(s) are applicable to (NSPS Ja, adopted under N.D.A.C. § 33-15-12-02). Testing would require that the facility be intentionally operated in an upset condition to allow for the testing (testing requires pre-planning and coordination with a testing team).
There are no EPA approved methods for stack testing flares. However, flow rate monitors and gas analysis allow the Department to calculate emissions from the flares, which are subject to facility-wide emissions caps, See Permit to Construct Condition II.D, Condition II.E.3 and Condition II.E.4.

Comment 29.c

The commenter asks how the Class I areas will be protected during malfunction events.

Response to Comment 29.c

See Response to Comment 21.b

Comment 29.d

The commenter quotes the Department Air Quality Effects Analysis, which indicates that the facility is not subject to review under the federal Prevention of Significant Deterioration of Air Quality (PSD) rules.

Response to Comment 29.d

The AQEA is correct in stating that the facility is not subject to PSD review. See Response to Comment 19.f

Comment 29.e

The commenter asks if a source is considered "major" under the PSD rules if facility is located within 10 kilometers of a Class I area and the increased emissions would increase the 24-hour average ambient air concentration of a regulated pollutant in the Class I area by at least one microgram per cubic meter. *(The portion of the PSD rules cited by the commenter is 40 CFR 52.21(b)(23)(iii).)*

Response to Comment 29.e

The Department reviewed 40 CFR § 52.21(b)(23)(iii) during the review process and determined that the requirements cited only apply when determining if a project is a "major modification", which is a modification to an existing major source. Since the Davis Refinery is not a major source, the above provision of the PSD rules is not applicable.

Comment 29.f

The commenter questions why the facility is not required to follow the major source MACT requirements if the source is considered a major source under the PSD rules.

Response to Comment 29.f

The facility must follow the major source MACT requirements if the facility is classified as a major source under 40 CFR Part 63 (National Emissions Standards for Hazardous Air Pollutants for Source Categories) (See N.D.A.C. ch. 33-15-22). HAPs are not a criterion used to determine whether a source is a major source under the PSD rules (40 CFR § 52.21). Since the potential emissions of HAPs from the facility are less than 10 tons/year of any single HAP and 25 tons/year of combined HAPs, the facility is not classified as a major source under 40 CFR 63 (MACT) and is therefore not subject to the maximum achievable control technology (MACT) standards for major sources.

Comment 29.g

The commenter is concerned that the permit allows for non-compliance during periods of start-up, shutdown and malfunction.

Response to Comment 29.g

See Response to Comment 19.f, Response to Comment 21.b, Response to Comment 22.c.

Comment 29.h

The commenter requests that a lengthy list of requirements be added to the permit, including electronic reporting of SSM events, that emissions be subject to lowest achievable emission rate (LAER) requirements, provide for automatic penalties, require offset reductions in routine emissions, require the facility to shut down after a certain number of excess emission events, include excess emissions in PTE calculations, etc.

Response to Comment 29.h

The Department believes all the requirements needed to demonstrate compliance with the permit to construct are included (e.g. monitoring, reporting, and recordkeeping). Further, this information will be available to the public. The Department implements and enforces federal regulations but does not have the authority to change federal regulations. The EPA has the authority to add/change/remove federal regulations through the rulemaking process. For example, LAER emission limits are only required in areas which are not in attainment with a NAAQS . North Dakota is in attainment with all ambient air quality standards; therefore, LAER emission limits are not required. Even though LAER emission limits are not required, the draft permit establishes emission limits which are very stringent.

When assessing penalties for a violation, the Department considers a variety of factors (level of violation, length of violation, whether the violation was due to negligence, etc.). These must be determined on a case-by-case basis, making the assessment of automatic penalties very difficult.

Comment 29.i

The commenter requests that an additional impacts analysis be required to assess the impact on soil and vegetation, growth and visibility, as well as an estimate of the increased emissions from industrial, commercial, and residential growth associated with the project (if either or both are required under the applicable requirements).

Response to Comment 29.i

The analyses listed are required if the facility is classified as a major source under the PSD rules (see 40 CFR § 52.21, adopted under N.D.A.C. ch. 33-15-15). Since the facility is not classified as a major PSD source, these analyses are not required. Visibility impacts and impacts on sulfur and nitrogen deposition were conducted by the NPS and are addressed in Response to Comment 19.f and Response to Comment 21.b

Comment 29.j

The commenter requests that the flare management plan required under NSPS Subpart Ja be required before the facility is operated.

Response to Comment 29.j

NSPS Ja specifically requires the flare management plan be submitted upon startup of the affected facility (i.e., the flare system). See 40 CFR §60.103a(a) and 40 CFR §60.103a(b) for the specific regulatory language (adopted under N.D.A.C. § 33-15-12-02).

Comment 29.k

The commenter asks why benzene fenceline monitoring is limited to only five years.

Response to Comment 29.k

Benzene fenceline monitoring records are required to be kept for a minimum of five years (see Permit to Construct Condition II.F). The permit does not establish an end date for the fenceline monitoring. Recordkeeping is required under N.D.A.C. § 33-15-14-03(6)(d) and N.D.A.C. § 33-15-4-06(5)(a)(3)(b)[2].

Comment 29.l

The commenter (in the body of a January 26, 2018 email) requests that the Department require: continuous emission monitoring systems (CEMS), continuous video monitoring for opacity, Fourier transformation infrared spectroscopy (FTIR) for monitoring of emissions and differential light adsorption, and ranging (DIAL) for fenceline monitoring.

Response to Comment 29.l

CEMS are required by the draft permit for several pollutants/sources (See Condition II.E). Continuous video monitoring of opacity (plume darkness) is not considered by the Department to be necessary since opacity is expected to be well below the opacity standards (e.g., exhaust from the gas-fired heaters is expected to have virtually no opacity). See AQEA, page 11. Emissions must be measured in accordance with EPA reference methods and performance specifications. The benzene fenceline monitoring program will be reviewed and must be approved by the Department prior to implementation of the program; the Department will review the proposed monitoring technology to determine if the technology is adequate.

Comments 30.a to 30.s
from January 18, 2018 and January 24, 2018 letters from Mr. Kevin Uttech

Comment 30.a
(from the January 18, 2018 letter)

The commenter asked if the public meeting held for the air quality permit for the Davis Refinery was open to all individuals or only to local individuals.

Response to Comment 30.a

The public meeting was open to anyone and was not restricted to local individuals. All comments received are considered equally in the review process. See Response to Comment 9.

Comment 30.b
(from the January 18, 2018 letter)

The commenter suggested that the Department was simply "going through the motions" at the public meeting as the Department's "minds were already made up and nothing said would seriously be taken into consideration or that it even mattered."

Response to Comment 30.b

The Department considered all comments received during the comment period in making its final determination. The Department made revisions to the draft permit based on comments, where appropriate. See Response to Comment 7.

Comment 30.c
(from the January 18, 2018 letter)

The commenter states that the Department's presentation "showing how other places pollute more came across as callous and portrayed that this project in your eyes was not going to be a big deal to the surrounding area."

Response to Comment 30.c

The graph in question was included in the presentation to show the emissions from the proposed facility in relation to other more familiar sources in the state. The graph shows that expected emissions from the Davis Refinery will be well below the emissions of the only other full-scale refinery in North Dakota; the Department believes that this is useful information, as it shows the emissions relative to another full-scale refinery (as well as other facilities, including the Dickinson Refinery) with which the public may be familiar. The graph also states, "These facilities are compliant with the air regulations, and the ambient air met the health-based standards."
See Response to Comment 7.

Comment 30.d
(from the January 18, 2018 letter)

The commenter states that he is an advocate for a senior citizen that lives approximately 1 mile from the facility and contends that the refinery "is a very BIG deal that I believe is being taken lightly." The commenter further states that, "if this refinery goes in, she will be a prisoner within her home and worse will be forced from her property where she has lived for over 30 years." The commenter indicates that he has researched air pollution around refineries and refers to a three-mile radius around a refinery as the "death zone" (the Department is unfamiliar with this term). The commenter discusses the fact that the refinery is expected to emit toxic pollutants including benzene, which he points out is a known human carcinogen.

Response to Comment 30.d

See Response to Comment 5.

Comment 30.e
(from the January 24, 2018 letter)

1. The commenter states that the facility has the potential to emit over 100 tons/year of a pollutant.

Response to Comment 30.e

See Response to Comment 19.f

Comment 30.f
(from the January 24, 2018 letter)

2. The commenter questions why the Department changed positions regarding the major source status of the Davis Refinery.

Response to Comment 30.f

Initial information received from Meridian Energy did not sufficiently establish that the facility would be able to operate and maintain emission levels below the major source thresholds. Meridian Energy submitted a significant amount of additional information (including actual testing data). After a thorough review of the additional information, the Department made its preliminary determination that the facility is capable of maintaining emission levels below the major source thresholds (See AQEA). See Response to Comment 7.

Comment 30.g
(from the January 24, 2018 letter)

3. The commenter states that the Davis Refinery is classified as a major source and bases this on an independent analysis. The commenter requests that the Department recalculate the emissions and also requests that the Permit to Construct be denied.

Response to Comment 30.g

As outlined elsewhere in this document, the conclusion of the independent analysis that the Davis Refinery must be classified as a major source is based on inaccurate information and misinterpretations of regulatory requirements. See Response to Comment 2. See Response to Comments 19.a to 22.k. .

Comment 30.h
(from the January 24, 2018 letter)

4. The commenter claims that Meridian has split a single project into two smaller projects to avoid triggering major source new source review (NSR) and that the permit should be classified as a sham permit.

Response to Comment 30.h

While there are two phases outlined for the Davis Refinery, the entire emissions from the two phases were aggregated when calculating emissions from the Davis Refinery. The commenter's claim that the project was split to avoid major source NSR review is inaccurate.

To classify the permit as a "sham" permit, it must be shown that the permittee intends to operate the facility as a major source (see "Guidance on Limiting Potential to Emit in New Source Review," June 13, 1989). The minor source permit restrictions are enforceable requirements, and any permit application requesting a relaxation of the limits will be heavily scrutinized by the Department to ensure that the PSD requirements have not been circumvented.

Comment 30.i
(from the January 24, 2018 letter)

5. The commenter asks if the Federal Land Manager was notified of the Davis Refinery project due to the proximity to Theodore Roosevelt National Park.

Response to Comment 30.i

Since the Class I area potentially affected is a national park, the National Park Service is the Federal Land Manager for this project. The Department held conference calls with the National

Park Service prior to the comment period and received formal comment from the National Park Service. See Response to Comment 7.

Comment 30.j
(from the January 24, 2018 letter)

6. The commenter requests an explanation as to how emissions from the flares were calculated and requests that a realistic calculation of emissions be conducted.

Response to Comment 30.j

An explanation of the emissions, the spreadsheet calculations, and extensive supplemental information for this project is available on the Department's website with the Meridian project files.

Comment 30.k
(from the January 24, 2018 letter)

1. The commenter questions how NO_x emissions were calculated.

Response to Comment 30.k

An explanation of the emissions, the spreadsheet calculations, and extensive supplemental information for this project is available on the Department's website with the Meridian project files.

Comment 30.l
(from the January 24, 2018 letter)

1. The commenter asks how emissions of formaldehyde were calculated and whether the refinery will report emissions of formaldehyde.

Response to Comment 30.l

An explanation of the emissions, the spreadsheet calculations, and extensive supplemental information for this project is available on the Department's website with the Meridian project files. The Department evaluated HAPs (including formaldehyde) in the AQIA.

The refinery will be required to report on specific chemicals that may pose a threat to human health and the environment through the Toxics Release Inventory (TRI) Program (formaldehyde is included in this list) and to the Department in an annual emission inventory report, Permit to Construct Condition II.F.4. For more information, refer to: https://www.epa.gov/toxics-release-inventory-tri-program.

Comment 30.m
(from the January 24, 2018 letter)

2. The commenter asks if differential light absorption and ranging (DIAL) technology will be used to detect VOC emissions.

Response to Comment 30.m

An explanation of the emissions, the spreadsheet calculations, and extensive supplemental information for this project is available on the Department's website with the Meridian project files. See Response to Comment 29.l.

Comment 30.n
(from the January 24, 2018 letter)

3. The commenter asks if the sulfur recovery unit has redundant capacity to handle sudden spikes in the sulfur content of the waste streams.

Response to Comment 30.n

Bakken crude tends to have very low sulfur, so significant spikes in the sulfur content are not expected; however, sulfur dioxide emissions from the sulfur recovery unit are restricted by a federal regulation (40 CFR Part 60, Subpart Ja, adopted under N.D.A.C. § 33-15-12-02) (see

Permit to Construct Condition II.A.8). Sulfur dioxide emissions from the sulfur recovery unit are required to be continuously monitored (Condition II.E.5).

Comment 30.o
(from the January 24, 2018 letter)

4. The commenter asks if the emissions data takes into account a change in feedstock.

Response to Comment 30.o

The facility must comply with all emission limits at all times regardless of any changes in feedstock. If changing crude results in higher "emissions per barrels of processed crude," then the refinery must limit processing capacity to remain within the permitted limits. See Response to Comment 6.

Comment 30.p
(from the January 24, 2018 letter)

5. The commenter asks if Meridian was required to include a consideration of impacts on vegetation.

Response to Comment 30.p

Vegetation impacts analysis (nitrogen and sulfur deposition and O_3 impacts) are required for projects subject to PSD review (40 CFR § 52.21). This source is a minor source and not required to conduct a vegetation impacts analysis. However, the Department did consult with the National Park Service during the Department's review. The NPS conducted an analysis for AQRVs, including visibility and acid deposition on plants. Its results indicated that during normal operations "the refinery would not contribute significantly to diffuse haze or acid deposition" (see letter dated January 19, 2018 Re: Air Permit for Meridian Energy Davis Refinery).

Comment 30.q
(from the January 24, 2018 letter)

6. The commenter questions the counting of startup, shutdown, and malfunction emissions.

Response to Comment 30.q

See Response to Comment 19.a.

Comment 30.r
(from the January 24, 2018 letter)

7. The commenter states that the Davis refinery will impact the air quality of the area and will threaten Theodore Roosevelt National Park.

Response to Comment 30.r

See Response to Comment 19.f

Comment 30.s
(from the January 24, 2018 letter)

8. The commenter requests that an environmental justice analysis be conducted. The commenter requests that the permit to construct be denied based on what he determines to be a disproportionate burden on the low income individuals who do not have the resources to relocate to a safer locality.

Response to Comment 30.s

Based upon a thorough analysis of the emissions from the proposed facility, emissions from the facility are not expected to negatively impact the air quality in the area. Given that no detrimental impacts to human health or the environment are expected, no adverse impact on any individual (of

any income level) is expected. See Response to Comment 5. Additionally, the commenter offers no information to support his claim that there will be a disproportionate burden on low income individuals.

Comment 31
(Connie Triplett Testimony)

"N.D.C.C. §23-25-03(1)" This commenter expresses concern that the process for obtaining an air permit does not involve a more comprehensive review of all the regulations Meridian must comply with to construct the Davis Refinery. The commenter recognizes that current law provides for a limited role of the North Dakota Department of Health but argues the language in N.D.C.C. § 23-25-03(1) provides the Department with considerable latitude in these matters. At one point the commenter states, "People want a more comprehensive process and the way that the system is set up it really only works if all the agencies work together, the Water Commission, the Health Department, the PSC, and others, and the PSC is the agency that has the ability to have the most comprehensive look at the environmental issues, and so my suggestion here tonight, to resolve this concern of so many people, is that if you go through and offer a permit, if you issue a permit to construct, that you condition that permit on the applicant's submission to the jurisdiction of the Public Service Commission, and if you did that then many of the concerns and questions that are being asked here tonight would be resolved through their hearing process because they do have the ability to look at the bigger picture and whether the siting is appropriate." The commenter also spends considerable time discussing that the Department needs to consider the fact that Meridian has an option to purchase additional property in the area; that the North Dakota Public Service Commission has the authority to require entities who may wish to site an energy conversion facility to file a "10 Year Plan;" and the Department should also consider the impact a water well, which may produce salt water, will have on the air quality in the area. The commenter closes with a quote from the North Dakota Century Code which provides as follows: "It is hereby declared to be the policy of this state and the legislative intent of this chapter to achieve and maintain the best air quality possible, consistent with the best available control technology, to protect human health, welfare, and property, to prevent injury to plant and animal life, to promote the economic and social development of this state, to foster the comfort and convenience of the people."

Response to 31

During the permit review process, the Department engaged our regulatory partners including EPA Region 8, NPS, USFWS. In addition, Department staff participated in meetings between PSC and the Davis Refinery and responded to questions from the PSC. An explanation of the emissions, the spreadsheet calculations, and extensive supplemental information for this project are available on the Department's website with the Meridian project files.

The Department's Air Pollution Control Rules, N.D.A.C. art. 33-15, are consistent with public policy and the legislative intent of balancing various factors (N.D.C.C. § 23-25-01.1). See Response to Comment 1. See Response to Comment 3. See Response to Comment 7.

Comments 32.a to 32.kk
(from January 3, 2018 letter from Ms. Laura Grzanic)

Comment 32.a

The commenter states that "Permit deviations and permit revisions should be made through variances and must go through an appropriate review process, including the public review."

Response to Comment 32.a

Deviations from the permit are not allowed and will subject the facility to enforcement action. Revisions to the permit must be made through the process established by the North Dakota Air Pollution Control Rules, N.D.A.C. § 33-15-14-02(3). See Response to Comment 6.

Comment 32.b

The commenter implies that the Department did not conduct an independent analysis and instead relied on data from Meridian Energy.

Response to Comment 32.b

The Department has expertise in air quality permitting, and the Department utilized this expertise when independently reviewing the information submitted by Meridian Energy. The Department carefully reviews and verifies all information submitted.

Comment 32.c

The commenter states that degrading equipment will cause emissions to increase and reach major source levels.

Response to Comment 32.c

Based on the Department's judgement and experience, the Department expects that maintaining emissions from the facility as a minor source when processing at maximum capacity will require good operation and maintenance of the equipment, required under Permit to Construct Condition II.A.1. The commenter's conclusion that the facility will emit at major source levels is based on speculation. In addition, operation at major source levels would be a violation of the permit and will result in enforcement action.

Comment 32.d

The commenter states, "It is already calculated that 58 tpy of VOC's will trigger the National Air Quality Standards on VOC's of 50 tpy."

Response to Comment 32.d

The NAAQS are allowable ambient air concentration levels (in parts per billion or in micrograms per cubic meter) established by the EPA, adopted under N.D.A.C § 33-15-02-04. The tpy (tons/year) quantities discussed by the commenter are annual emissions quantities, not ambient air concentrations. In addition, there is no NAAQS established for VOCs. VOCs are a precursor that requires NO_x in high enough concentrations in the atmosphere, along with certain atmospheric conditions, to trigger the chemical reaction to form ozone (O_3). The O_3 NAAQS is a concentration of 70 parts per billion (ppb). North Dakota has little geographic variation in O_3 concentrations and has observed little change in the ambient ozone concentrations for several years.

The above comment appears to be the result of confusion on the part of the commenter regarding units of measurement and regulatory requirements. The Department has conducted a thorough analysis which demonstrates that emissions from the Davis Refinery are expected to comply with the applicable ambient air quality standards (see AQIA).

Comment 32.e

The commenter states that "a Title V review should be done sooner than one year."

Response to Comment 32.e

A Title V permit application is required to be submitted within one year after startup in accordance with state and federal regulations; see N.D.A.C. § 33-15-14-06(4) (see Permit to Construct Condition II.L). The Department implements the federal Title V regulations but does not have authority to change the federal Title V regulations. Concerns regarding the Title V regulations should be addressed to the EPA.

Comment 32.f

The commenter states that Bakken crude has benzene characteristics similar to gasoline and states that the emissions of HAP will be greater than 10 tons/year.

Response to Comment 32.f

HAP emissions from a facility are largely dependent on the leak detection and repair (LDAR) standards for a facility. The Davis Refinery will be subject to very stringent eLDAR requirements which are expected to result in low levels of HAP emissions (including benzene) from the facility; benzene will also be monitored via benzene fenceline monitoring (See Permit to Construct Condition II.A.10 and Condition II.E.18). The Department has calculated expected HAP emissions from the Davis Refinery to be less than 10 tons/year, and the commenter includes no data to support her claim that HAP emissions will be greater than 10 tons/year (see AQEA).

Comment 32.g

The commenter questions why the calculations by Dr. Phyllis Fox show higher emissions for VOCs and HAPs than stated by the Department.

Response to Comment 32.g

See Response to Comment 19.d.

Comment 32.h

HAPs are not required to be tested (referencing page 23 of the draft permit).

Response to Comment 32.h

Based on established emission factors and the good combustion practices that will be required for the heaters/boilers to meet the low carbon monoxide emission rates, HAPs from the point sources at the facility are expected to be well below any regulatory threshold. HAPs from tanks are also expected to be low (based on control of volatile liquid storage tanks by installation and proper operation of internal floating roofs). HAPs from fugitive emissions are expected to be low, based on the operation of a stringent leak detection and repair program where VOC emissions from leaks are monitored/repaired. Given the low expected HAP emissions, the Department determined that establishment of emission limits for the individual HAPs and emissions testing for the individual HAPs is not warranted.

Comment 32.i

Given the close proximity to TRNP, will before/after ambient monitoring be conducted?

Response to Comment 32.i

The ambient monitoring station at the Painted Canyon Visitor Center of TRNP will continue to be operated, and fenceline benzene monitoring will be required at the Davis Refinery (Permit to Construct Condition II.E.18). Based on the low level of expected emissions and low expected impact on the ambient air, the Department does not deem an additional monitoring station near the Davis Refinery to be necessary. The Department has been monitoring the ambient air across North Dakota since 1958, and a monitor near TRNP has been in place since before 1983.

Comment 32.j

The commenter suggests that Meridian Energy be required to install, certify, calibrate, operate, and maintain a continuous emissions monitoring system equipped with video data on stack emissions.

Response to Comment 32.j

As explained in the Department presentation for the air quality permit for the Davis Refinery, the larger heaters/boilers are required to operate continuous emissions monitoring systems (See Permit to Construct Condition II.E). Visible emissions from the stacks at the facility are not likely to occur; therefore, video monitoring of the stacks is determined by the Department to not be warranted (see AQEA). It should be noted that steam plumes are expected to be visible from the stacks under certain conditions; however, steam (water) is not an air pollutant and is therefore not regulated by the Department.

Comment 32.k

What are the penalties and fines for excess emissions in 24-hour periods for a refinery?

Response to Comment 32.k

Under N.D.C.C. § 23-25-10(4), "[a]ny person who violates this chapter, or any permit condition, rule, order, limitation, or other applicable requirement implementing this chapter, is subject to a civil penalty not to exceed ten thousand dollars per day per violation."

Comment 32.l

Why is a PSD review being avoided?

Response to Comment 32.l

A PSD review is only required for a major stationary source as defined by the PSD rules. See 40 CFR § 52.21, adopted under N.D.A.C. § 33-15-15-01(2). The Davis Refinery is not classified as a major stationary source; therefore, a PSD review is not required.
See Response to Comment 19.f.

Comment 32.m

Will there be a Risk and Technology Review (in reference to the EPA December 2016 publication titled Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards)?

Response to Comment 32.m

The Risk and Technology Review referenced is a review that the EPA undertook to justify the establishment of New Source Performance Standards for refineries. Once an NSPS is established, a refinery such as the Davis Refinery is required to comply with the NSPS as applicable. The Risk and Technology Review is **part of the regulatory development process** and is not done on a case-by-case basis for a particular facility. The Department reviewed the technologies, modeled the expected ambient air impacts from the Davis Refinery, and concluded that the facility is expected to comply with all applicable rules and regulations.

Comment 32.n

The commenter questions the fenceline monitoring (number of monitors, location of monitoring, type of chemicals to be monitored, whether meteorological data will be included, whether the information will be posted for the public, the requirements for sampling times, etc.). The commenter also suggests that the refinery be required to take action if the average benzene concentration "falls into question" after 10 samples.

Response to Comment 32.n

See "Response to Laura Grzanik's Written Comments (WC-19 – WC-25)," Response 24 (page 8): Meridian states:

> *Benzene fenceline monitoring for compliance purposes is a specific provision of 40 CFR Subpart CC (MACT CC), and it is only applicable to refineries that are major sources of air pollution. As a minor synthetic source, Meridian Energy is not required to conduct Benzene fenceline monitoring to satisfy the requirements of MACT CC.* ***However, conscious of the health concerns with potential Benzene emissions from its proposed refinery, Meridian Energy is in agreement with NDDoH's requirement in draft Permit Condition II.E.18 to implement "a Department approved benzene fenceline monitoring***

program" [emphasis added] *with a five (5) year record retention requirement that "can be readily accessed within 24 hours upon Department request."*

40 CFR § 63.658 contains the requirement for fenceline monitoring provisions at sources subject to MACT CC (adopted under N.D.A.C. § 33-15-22-03). Many of the criteria the commenter requested (e.g., number of monitors, locations, meteorological data) will be included in the plan, consistent with the requirements of MACT CC.

The specific details of the fenceline monitoring program have not been established at this time. Consistent with other rules (such as the flare management plan required under NSPS Ja adopted under N.D.A.C. § 33-15-12-02), the proposed plan shall be submitted to the Department upon start-up of the facility. The Department will work with Meridian on the specific fenceline monitoring plan requirements necessary to provide a reasonable level of compliance assurance that the facility is not causing an impact on benzene concentrations. Given the strict environmental program requirements (e.g., leak detection and repair program and tanks program), the Department expects there will be no benzene issues at the fenceline. As indicated in the draft Permit to Construct Condition II.E.18, the fenceline monitoring program shall be used for additional operational and compliance monitoring (e.g., if the eLDAR program is being implemented and tanks are operating properly, the fenceline monitoring results will be insignificant). Any benzene issues identified at the fenceline will be indicative of a larger problem at the facility and will require further evaluation.

Comment 32.o

Does the draft permit include the impact from nearby sources?

Response to Comment 32.o

The Department prepared the AQIA document, which pertains to air dispersion modeling and made that document available for review during the public comment period. See Response to Comment 21.b.

Comment 32.p

Will there be an analysis for each pollutant subject to regulation?

Response to Comment 32.p

Yes, the Department prepared the AQEA and the AQIA, which pertain to regulatory applicability and air dispersion modeling, respectively. Those documents were available for review during the public comment period and included an analysis for each pollutant subject to regulation.

Comment 32.q

Will a soil and vegetation analysis be done?

Response to Comment 32.q

See Response to Comment 19.f and Response to Comment 21.b.

Comment 32.r

The commenter requests that the Department "enforce this writing of HAP regulation since this facility is in a concerned community and close to TRNP. It is also part of the Clean Air Act Sec 112"?

Response to Comment 32.r

The Department analysis demonstrates that the Davis Refinery is expected to comply with the applicable requirements of the Policy for the Control of Hazardous Air Pollutant Emissions in North Dakota (Air Toxics Policy). Clean Air Act Section 112 authorized the development of the maximum achievable control technology (MACT) standards under 40 CFR Part 63; Meridian Energy is required to comply with all applicable MACT standards for the Davis Refinery, adopted under N.D.A.C. § 33-15-22-03.

Comment 32.s

A list of known or possible carcinogenic chemicals should be analyzed for this facility.

Response to Comment 32.s

The Department has analyzed this information. The Department's analysis is available in Section 6 of the AQIA. The analysis showed expected compliance with the Air Toxics Policy. See Response to Comment 5.

Comment 32.t

There should be reports made available to the public or state agency websites of SSM and upset emissions.

Response to Comment 32.t

The reports are public information; however, at this time an open records request must be submitted to obtain the records. Currently, the Department is looking into obtaining an electronic system for permitting and reporting, with the capability to have those documents available electronically to the public. Getting such an electronic system requires the Department to follow procurement procedures (which take time) and budget limitations; it is expected that such a system would not be available for several years.

Comment 32.u

Have rail loading emissions been calculated? Does the Department have accurate numbers for predicting emissions from truck loading/unloading?

Response to Comment 32.u

Rail loading is not currently proposed; additional permitting is required for rail loading. The Department has accurately estimated emissions from truck loading/unloading. These estimates are available in the AQEA and permit to construct application files submitted by Meridian.

Comment 32.v

The commenter interprets N.D.A.C. § 33-15-14-02(4)(b)(4) as requiring EPA written approval prior to issuance of the Davis Refinery air quality permit.

Response to Comment 32.v

N.D.A.C. § 33-15-14-02(4)(b)(4) requires written EPA approval when an air quality impact model (i.e., AERMOD) is modified or substituted for an air quality impact model meeting the requirements of N.D.A.C. § 33-15-14-02(4)(a). The model utilized for the Davis Refinery impact analysis is the most current version of AERMOD, the EPA's preferred and approved model, and thus meets the requirements of N.D.A.C. § 33-15-14-02(4)(a); therefore, the requirements of N.D.A.C. § 33-15-14-02(4)(b)(4) are not applicable to the Davis Refinery permit application. Even if N.D.A.C. § 33-15-14-02(4)(b)(4) was applicable, only EPA approval of the model (not the permit) would be required.

In summary, EPA approval is not required prior to issuance of the Davis Refinery permit. It should be noted that the Department consulted with EPA, the National Park Service, and the U.S. Fish and Wildlife Service during the permit application review process.

Comment 32.w

The commenter contends that the permit is a sham permit.

Response to Comment 32.w

See Response to Comment 30.h

Comment 32.x

The commenter requests that a flare management plan be submitted at an earlier date than required by the permit.

Response to Comment 32.x

See Response to Comment 29.j

Comment 32.y

The commenter requests that flares be tested in emergency conditions.

Response to Comment 32.y

See Response to Comment 29.b

Comment 32.z

The commenter asks if the facility will have a cooling tower.

Response to Comment 32.z

As demonstrated in the draft permit, AQEA, AQIA, application and the supporting documents, the facility is designed to have a cooling tower.

Comment 32.aa

What are the new technologies that separate this project from existing refineries? Is this old technology operating in a different manner or is there modern equipment being used?

Response to Comment 32.aa

As with most technologies, refinery technology has evolved significantly over several decades. New burner technologies, more advanced instrumentation, better control technologies, better valves/connectors, and better emissions monitoring are expected to result in significantly reduced emissions from a new refinery. Of course, good operations and maintenance of equipment will be required to achieve low emission levels, Permit to Construct Condition II.A.

Comment 32.bb

What parts of the draft permit are operational plans and what parts are estimated plans?

Response to Comment 32.bb

The Permit to Construct outlines the requirements the facility must take to operate under both Phase I and Phase II. See Permit to Construct Condition I.B.4, Condition I.B.5, Condition II.A, and Condition II.B.

Comment 32.cc

The commenter expresses concern regarding future development of the site for the production of additional products.

Response to Comment 32.cc

See Response to Comment 6.

Comment 32.dd

The facility has a capacity of 55,000 barrels and requires PSC siting.

Response to Comment 32.dd

The Public Service Commission (PSC) is a separate state agency and administers its own laws and rules. The Department has no authority over siting.

See Response to Comment 3.

Comment 32.ee

Is this a hydroskimmer facility or a full conversion facility? Is this draft permit for both processes?

Response to Comment 32.ee

The project has two phases, with the first phase being a smaller diesel refinery and the second phase providing for a full-scale refinery (which produces significantly larger quantities of gasoline

and involves more complex operations). The draft permit clearly delineated which units are Phase I units and which are Phase II (see Permit to Construct Condition I.B.5).

Comment 32.ff

Have secondary emissions such as dust from traffic been included in the calculations for fugitive emissions?

Response to Comment 32.ff

See Response to Comment 13.

Comment 32.gg

The commenter questions why meteorological data was used from the Dickinson and Bismarck airports but not at the Painted Canyon station. The commenter suggests that Meridian Energy install their own meteorological station.

Response to Comment 32.gg

See Response to Comment 24.

Comment 32.hh

The commenter suggests that "refinery emissions be added to the ones already in the area to establish significant impact levels."

Response to Comment 32.hh

SILs are levels established by regulation 40 CFR § 52.21, adopted under N.D.A.C. § 33-15-15-01(2), which are used to determine if a new source or a modification to an existing source will "cause or contribute" to an exceedance of a standard. The SILs are the same for all facilities and are not determined on a case-by-case basis as suggested by the commenter.

Comment 32.ii

The commenter suggests that the permit be denied based on unknown aspects of the water source for the refinery.

Response to Comment 32.ii

See Response to Comment 16.

Comment 32.jj

The commenter questions whether certain provisions of the PSD rules relating to project emissions changes are applicable to the Davis Refinery.

Response to Comment 32.jj

The PSD rules applicable to project emissions changes are not applicable to the Davis Refinery since the refinery is not classified as a major stationary source under the PSD rules. See Response to Comment 19.f (from the August 22, 2017 Fox Document).

Comment 32.kk

The commenter includes the following statement in her comments: "I would like to be able to trust the Department of Health in making the decision in regard to its concerned citizens, but I am reminded of the Billings County Zoning / Commissioner meeting in Summer 2016 where the Department failed to show up, and called it a "schedule conflict." The dates were presented and agreed on, but had failure of NDDoH representation, resulting in citizens, some working away from home, to change plans. I feel that this was a result to lower meeting numbers and evade questions."

Response to Comment 32.kk

It is unclear which meeting in the summer of 2016 the commenter is referring to; however, the Billings County Board of County Commissioners meeting minutes for June 7, 2016 and July 6, 2016 document that two representatives of the Department were available by teleconference for the June 7, 2016 meeting to discuss air quality permitting issues, and three Department representatives attended the July 6, 2016 meeting and presented information regarding air quality, water quality, and waste management permitting issues. The meeting minutes indicate that "public comments and questions were taken" at the July 6, 2016 meeting.